CS 5306
INFO 5306:
Crowdsourcing and Human Computation

Lecture 11

9/28/17

Haym Hirsh

Upcoming Speakers

- Thursday, Aug 31, 4:15 (after class)
  Louis Hyman. The Return of The Independent Workforce: The History and The Future of Work
  (extra credit)
- Thursday, Sep 7, 4:15 (after class)
  Henry Kautz, Mining Social Media to Improve Public Health
  (extra credit)
- Tuesday, Sep 12 (in class)
  Serge Belongie
- Thursday, Sep 28, 4:15 (after class)
  Michael Bernstein
  (extra credit)

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- ~~Tuesday, Sep 12 (in class)~~
  ~~Serge Belongie~~
- Thursday, ~~Sep 28~~ Oct 5, 4:15 (after class)
  Michael Bernstein
  (extra credit)

Tuesday, October 3, 4:15 (after class), Gates G01

Star Wars Uncut

Upcoming Movie

Parimutuel Betting in Horse Racing

- Tote board:

Parimutuel Betting in Horse Racing

- Horse $h_1, \ldots, h_n$
- Totals wagers for each horse $w_1, \ldots, w_n$
- Total wagers across all horses $W = \sum_{i=1}^{n} w_i$
- House take: $r \times W$ (r = ~15-17%)
- Each horse h_i returns $\frac{(1-r) \times W}{w_i}$ per dollar if it wins

J. R. Statist. Soc. A,
(1974), **137**, *Part* 2, p. 227

Reliability of Subjective Evaluations in a High Incentive Situation

By ARTHUR E. HOERL and HERBERT K. FALLIN

University of Delaware *U.S. Army Material Systems Analysis Agency*

SUMMARY

This paper presents the results of an analysis of horse race data collected from Aqueduct and Belmont Park in 1970. These data are used to demonstrate the reliability of subjective evaluations when incentive is offered to the subjects.

Keywords: SUBJECTIVE PROBABILITY; PERSONAL PROBABILITY; INCENTIVE

1. INTRODUCTION

1.1. *Background*

ON May 19th, 1965, Professor Cedric A. B. Smith (1965) read a paper entitled "Personal probability and statistical analysis" before the Royal Statistical Society. Professor Smith considered a hypothetical example of the effect of some treatments, i.e. fertilizer or sprays, on some fruit trees in order to illustrate some methods using personal or subjective probability. Professor E. S. Pearson raised a question during a discussion on Professor Smith's paper as to what progress has been made at this date regarding the arguments for and against the Bayesian (subjective vs objective) approach. Addressing the question himself, Professor Pearson concluded in part: "In the first place, our discussions are still nearly always based on what are, after all, somewhat artificial examples. These serve to illustrate the mechanics of applying a specific piece of theory, but they tell us little of the extent of which this theory is usable and helpful to the practical statistician. We still, I feel, lack any adequate reporting on real case histories which would show how the working statistician, as distinct from the writer on theory, does or can in fact use these and other methods in marshalling the information that leads him to make real recommendations in practice."

A very recent study by Pearn (1973) discusses the application of subjective interpretation of risks in genetic counselling. As stated by Pearn, "One essential part of the genetic counselling interview is the communication to patients of the recurrence risks to relatives, usually to future children." But even this study, although indicative of areas of application, does not contain actual validation of the subjective procedure.

1.2. *Purpose and Scope*

The purpose of this paper is to demonstrate the reliability of subjective estimates in a high incentive situation using data that may be regarded as real case histories in which actual outcomes are known. The data used comprised the results of all the thoroughbred horse races run at Aqueduct and Belmont Park in 1970 (a total of 1,825 races).

2. SUBJECTIVE PROBABILITY

2.1. *Definition*

The subjective probability of an event can be defined as the degree of belief an individual has that that event will occur. It has sometimes been interpreted in the

Parimutuel Betting in Horse Racing

Gamblers (collectively) are good predictors of race outcomes

TABLE 1

Comparison of subjective probabilities of winning and actual frequencies of wins as a function of odds rank of horse

No. of entries	*No. of races*		*Ranking by odds* 1	2	3	4	5	6	7	8	9	10	11	12	*Computed* χ^2	$\psi^2_{0.95}$
5	69	Subj. prob.	0·42	0·25	0·17	0·11	0·06								3·2	9·5
		Obs. freq.	0·41	0·30	0·20	0·07	0·03									
6	181	Subj. prob.	0·36	0·23	0·17	0·12	0·08	0·04							10·5	11·1
		Obs. freq.	0·43	0·21	0·20	0·11	0·03	0·02								
7	312	Subj. prob.	0·33	0·22	0·16	0·12	0·09	0·06	0·03						5·7	12·6
		Obs. freq.	0·34	0·21	0·16	0·12	0·08	0·08	0·02							
8	352	Subj. prob.	0·31	0·20	0·15	0·12	0·09	0·06	0·04	0·03					7·1	14·1
		Obs. freq.	0·33	0·25	0·13	0·09	0·07	0·06	0·04	0·02						
9	283	Sub. prob.	0·30	0·20	0·15	0·11	0·09	0·06	0·05	0·03	0·02				13·1	15·5
		Obs. freq.	0·35	0·15	0·17	0·13	0·08	0·06	0·02	0·01	0·02					
10	241	Subj. prob.	0·29	0·19	0·14	0·11	0·08	0·06	0·05	0·03	0·02	0·02			5·0	16·9
		Obs. freq.	0·31	0·17	0·16	0·10	0·07	0·07	0·06	0·04	0·02	0·01				
11	154	Subj. prob.	0·27	0·18	0·14	0·11	0·08	0·07	0·05	0·04	0·03	0·02	0·01		11·8	18·3
		Obs. freq.	0·27	0·18	0·19	0·08	0·05	0·05	0·05	0·05	0·04	0·04	0·01			
12	233	Subj. prob.	0·26	0·17	0·13	0·10	0·08	0·07	0·05	0·04	0·03	0·02	0·02	0·01	3·2	19·7
		Obs. freq.	0·28	0·14	0·17	0·12	0·10	0·06	0·02	0·05	0·03	0·03	0·01	0·00		

Journal of Economic Perspectives—Volume 2, Number 2—Spring 1988—Pages 161–174

Anomalies
Parimutuel Betting Markets: Racetracks and Lotteries

Richard H. Thaler and William T. Ziemba

Economics can be distinguished from other social sciences by the belief that most (all?) behavior can be explained by assuming that agents have stable, well-defined preferences and make rational choices consistent with those preferences in markets that (eventually) clear. An empirical result qualifies as an anomaly if it is difficult to "rationalize," or if implausible assumptions are necessary to explain it within the paradigm. This column will present a series of such anomalies. Of course, "difficult" and "implausible" are judgments, and others might disagree with my assessment. Therefore, I invite readers to submit *brief* explanations (within the paradigm or otherwise) for any of the anomalies I report. To be considered for publication, however, proposed explanations must be falsifiable, at least in principle. Future topics for this column will come from as many fields of empirical economics as possible. Readers are invited to suggest topics by sending a note with some references to (or better yet copies of) the relevant research. The address is: Richard Thaler, c/o *Journal of Economic Perspectives*, Johnson Graduate School of Management, Malott Hall, Cornell University, Ithaca, NY 14853.

Introduction

Economists have given great attention to stock markets in their efforts to test the concepts of market efficiency and rationality. Yet wagering markets are, in one key

■ *Richard H. Thaler is the Henrietta Johnson Louis Professor of Economics at the Johnson Graduate School of Management, Cornell University, Ithaca, New York. William T. Ziemba is Alumni Professor of Management Science, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver, Canada.*

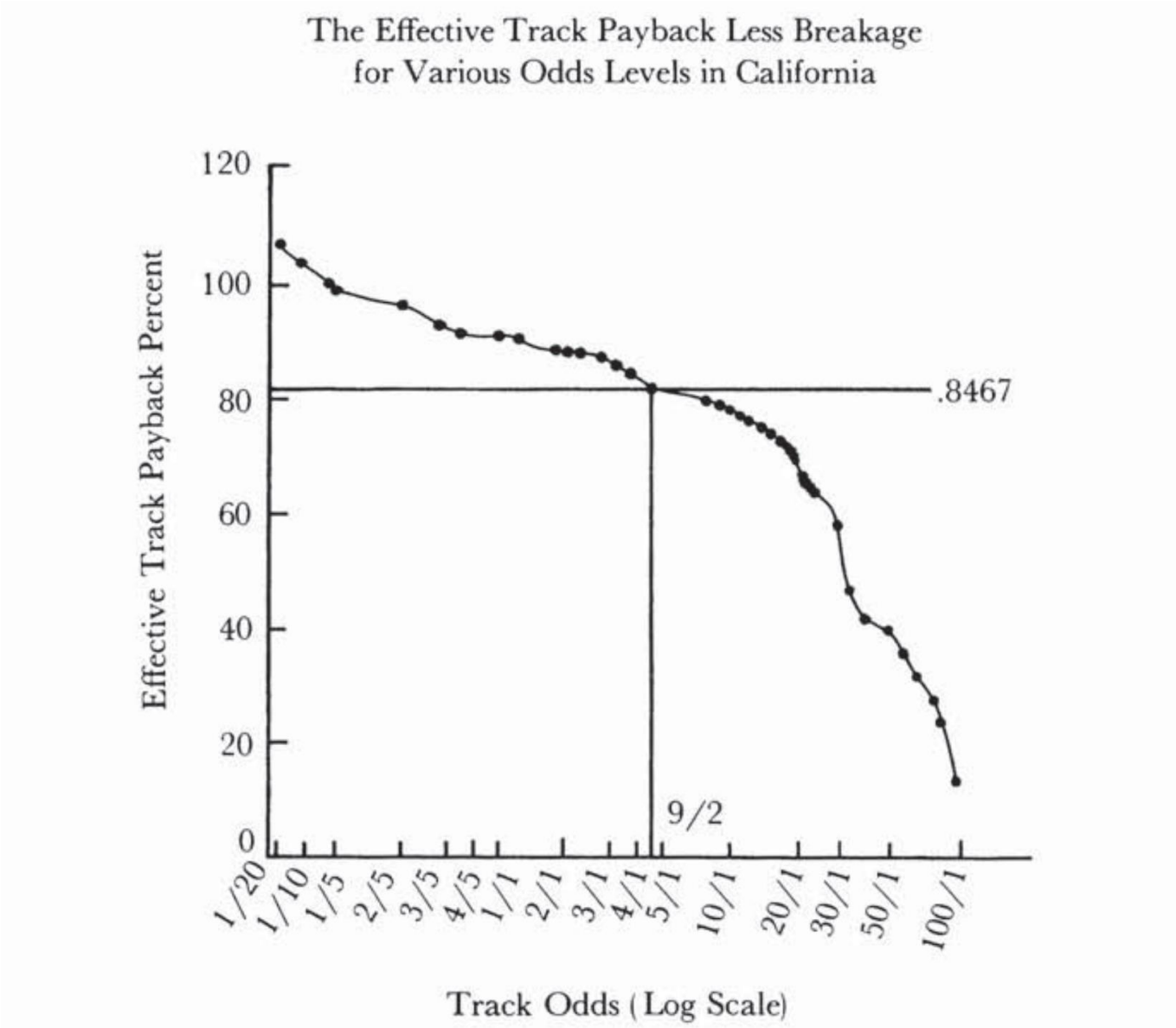


Fig. 1. The effective track payback less breakage for various odds levels in California

Parimutuel Betting in Horse Racing

- Humans are biased estimators
- Favorite Long-Shot Bias: People have a preference away from low-return bets and toward “long shots”

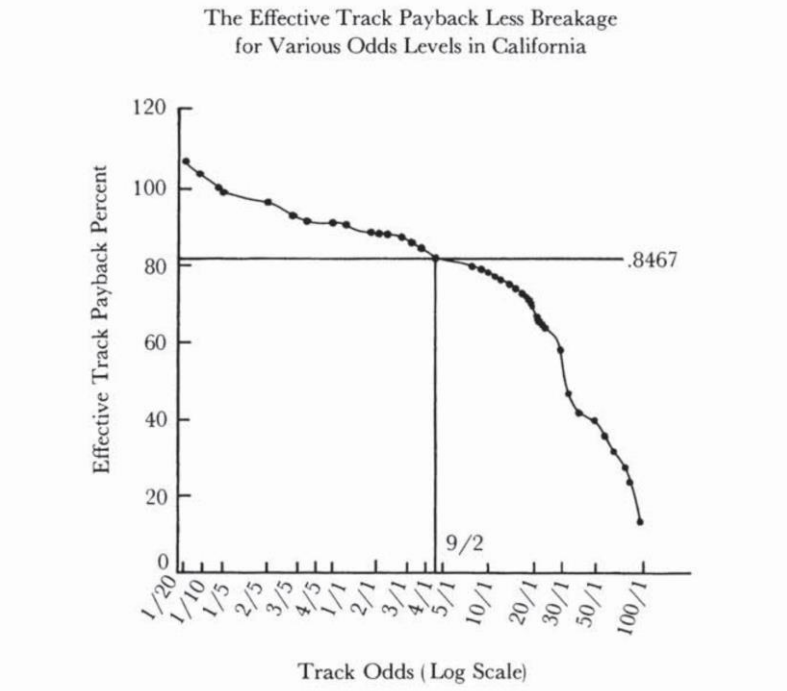


Fig. 1. The effective track payback less breakage for various odds levels in California

Ziemba and Hausch 1986

Parimutuel Betting in Horse Racing

- Favorite Long-Shot Bias Explanations:
  - Cognitive:
    - Misestimating probabilities
    - Preference for risks
    - ….
  - Economic:
    - Large bettors would damage their return if they bet all on one horse
    - “Insider” bookmakers placing bets to entice bets on losers
    - ….

ELSEVIER

Journal of Corporate Finance 9 (2003) 453–479

Journal of CORPORATE FINANCE

www.elsevier.com/locate/econbase

The complexity of price discovery in an efficient market: the stock market reaction to the Challenger crash☆

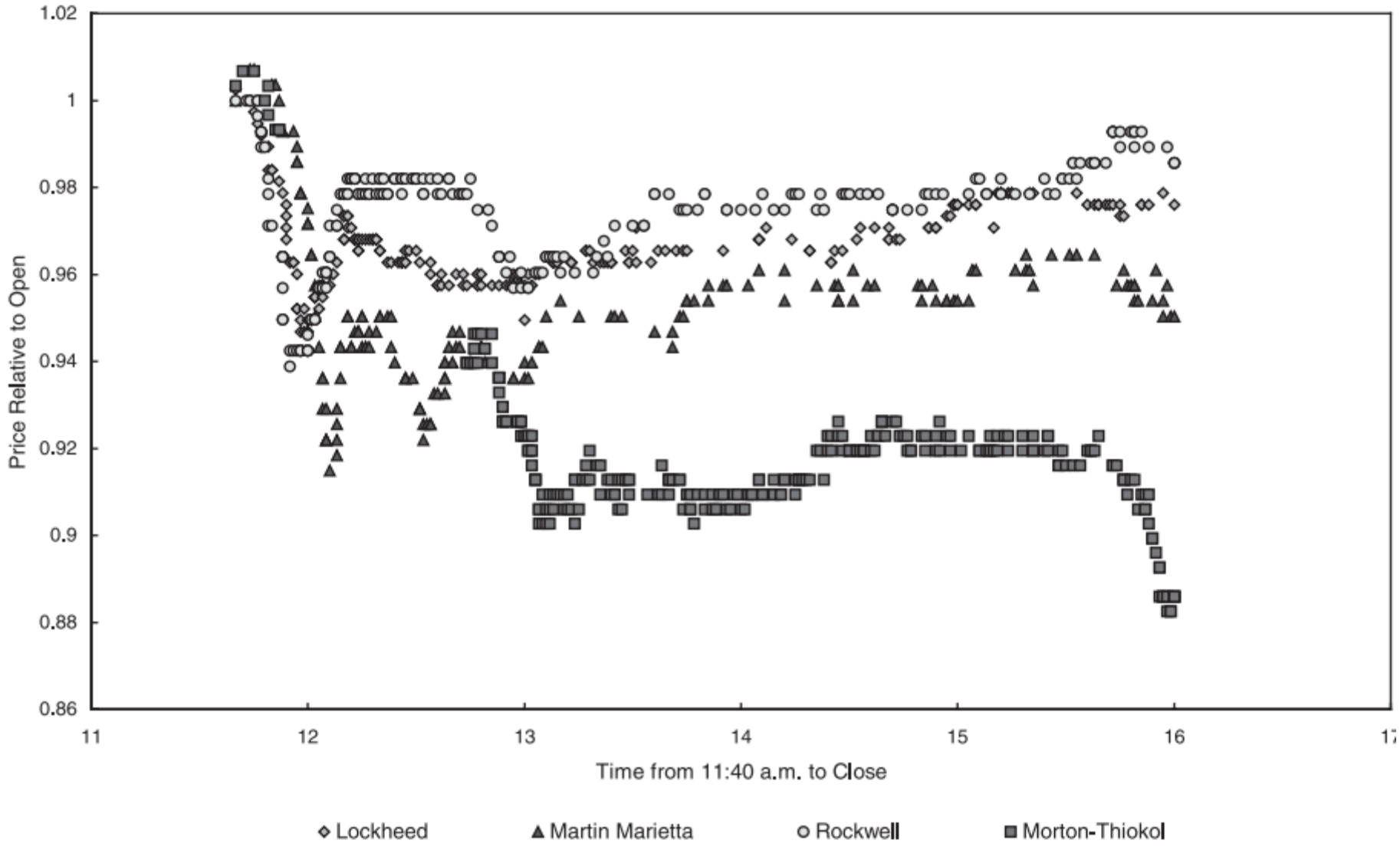
Michael T. Maloney[a,*], J. Harold Mulherin[b,1]

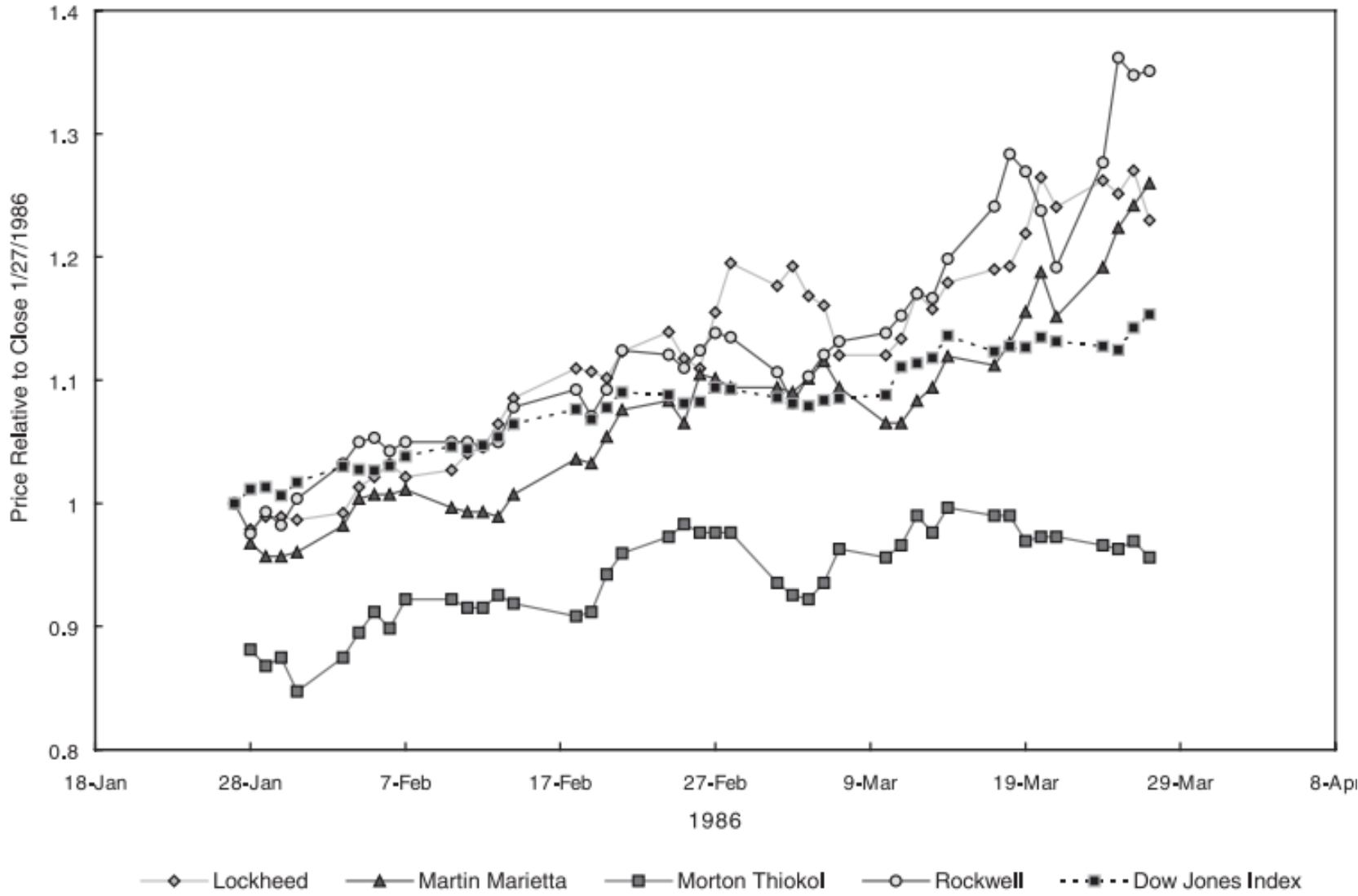
[a] *Department of Economics, Clemson University, Clemson, SC 29634, USA*
[b] *Department of Economics, Claremont McKenna College, Claremont, CA 91711, USA*

Received 15 November 2001; received in revised form 8 February 2002; accepted 12 July 2002

Abstract

We provide evidence on the speed and accuracy of price discovery by studying stock returns and trading volume surrounding the crash of the space shuttle Challenger. While the event was widely observed, it took several months for an esteemed panel to determine which of the mechanical components failed during the launch. By contrast, in the period immediately following the crash, securities trading in the four main shuttle contractors seemingly singled out the firm that manufactured the faulty component. We show that price discovery occurred without large trading profits and that much of the price discovery occurred during a trading halt of the firm responsible for the faulty component. Finally, although we document what are arguably quick and accurate movements of the market, we are unable to detect the actual manner in which particular informed traders induced price discovery.


1.02
1
0.98
0.96
0.94
0.92
0.9
0.88
0.86
Price Relative to Open
11
12
13
14
15
16
17
Time from 11:40 a.m. to Close
Lockheed
Martin Marietta
Rockwell
Morton-Thiokol


1.4
1.3
1.2
1.1
1
0.9
0.8
Price Relative to Close 1/27/1986
18-Jan
28-Jan
7-Feb
17-Feb
27-Feb
9-Mar
19-Mar
29-Mar
8-Apr
1986
Lockheed
Martin Marietta
Morton Thiokol
Rockwell
Dow Jones Index

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a (fair) coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise.

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a (fair) coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise.

- Would you sell it if someone offered you
  - $7?

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a (fair) coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise.

- Would you sell it if someone offered you
  - $7?
  - $3?

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a (fair) coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise.

- Would you buy it if someone offered to sell it at
  - $7?
  - $3?

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a *biased* coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise (and you don’t know the bias).

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a *biased* coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise (and you don’t know the bias).
- Imagine you could flip the coin 10 times before deciding, and it came up heads 8 times and tails 2 times

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a *biased* coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise (and you don’t know the bias).
- Imagine you could flip the coin 10 times before deciding, and it came up heads 8 times and tails 2 times
  - How much would you sell this stock for?
  - How much would you buy this stock for?
  - = *Price* of the stock

Prediction Markets: Intuition

- Imagine you owned a “stock” that flips a *biased* coin on March 9, 2016, and gives you $10 if it’s heads and $0 otherwise (and you don’t know the bias).
- Imagine 100 people (including you) owned this stock, and each gets a (private) opportunity to flip the coin 10 times before setting a price

- What would you buy/sell the stock for? Would you get it?

Predict Markets

- Traditional stock market:
  - Buy and sell pieces of companies
  - Prices reflects collective sense of the value of the companies
- Prediction markets:
  - Buy and sell stocks whose value is determined by some unknown future event
  - Example: A stock that pays $10 if the Republican candidate wins the US Presidency

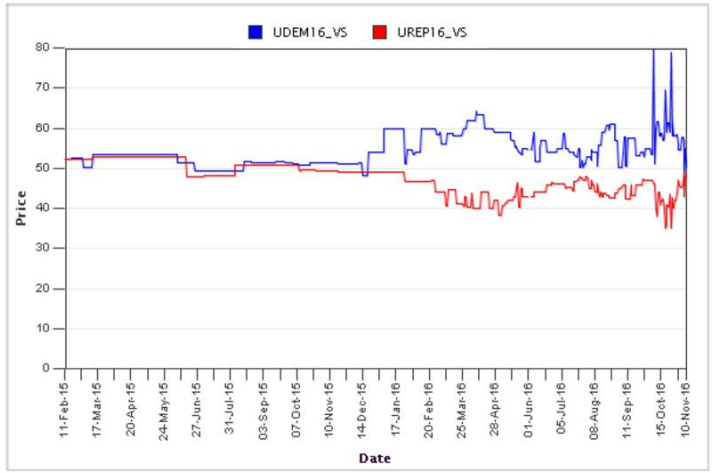
The Iowa Electronic Markets is a futures market run for research and teaching purposes. Traders can buy and sell real-money contracts based on their belief about the outcome of an election or other event. Using this "wisdom of crowds," the price of a contract at any given time is a forecast of the outcome.

2016 U.S. PRESIDENTIAL ELECTION MARKETS

This is a real-money futures market where contract payoffs will be determined by the popular vote cast in the 2016 U.S. Presidential Election.
There are two markets in this set:

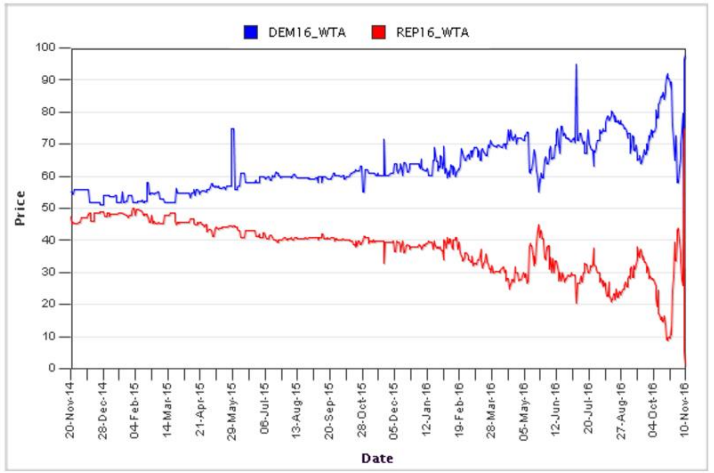
Vote Share Market

PRICES DAILY PRICE GRAPH MARKET OVERVIEW



Winner-Take-All Market

PRICES DAILY PRICE GRAPH MARKET OVERVIEW



Market PRES16_STA

- You pay $1
- You get two “assets”
  - DEM16_WTA – pays off $1 if Democrat wins
  - REP16_WTA – pays off $1 if Republican wins
  - Only 1 option will win, so the market pays out the same amount that it takes in
  - You can sell the “assets” independently

Market Information: PRES16_WTA

| Assets | Bundles | Prospectus | Price History | Graph | Other Information |

**** You must read the prospectus before trading ****

Market:

Name: PRES16_WTA
Description: 2016 US Presidential Election Winner-Takes-All Market
Open Date: 11/19/14 11:30 AM
Close Date:

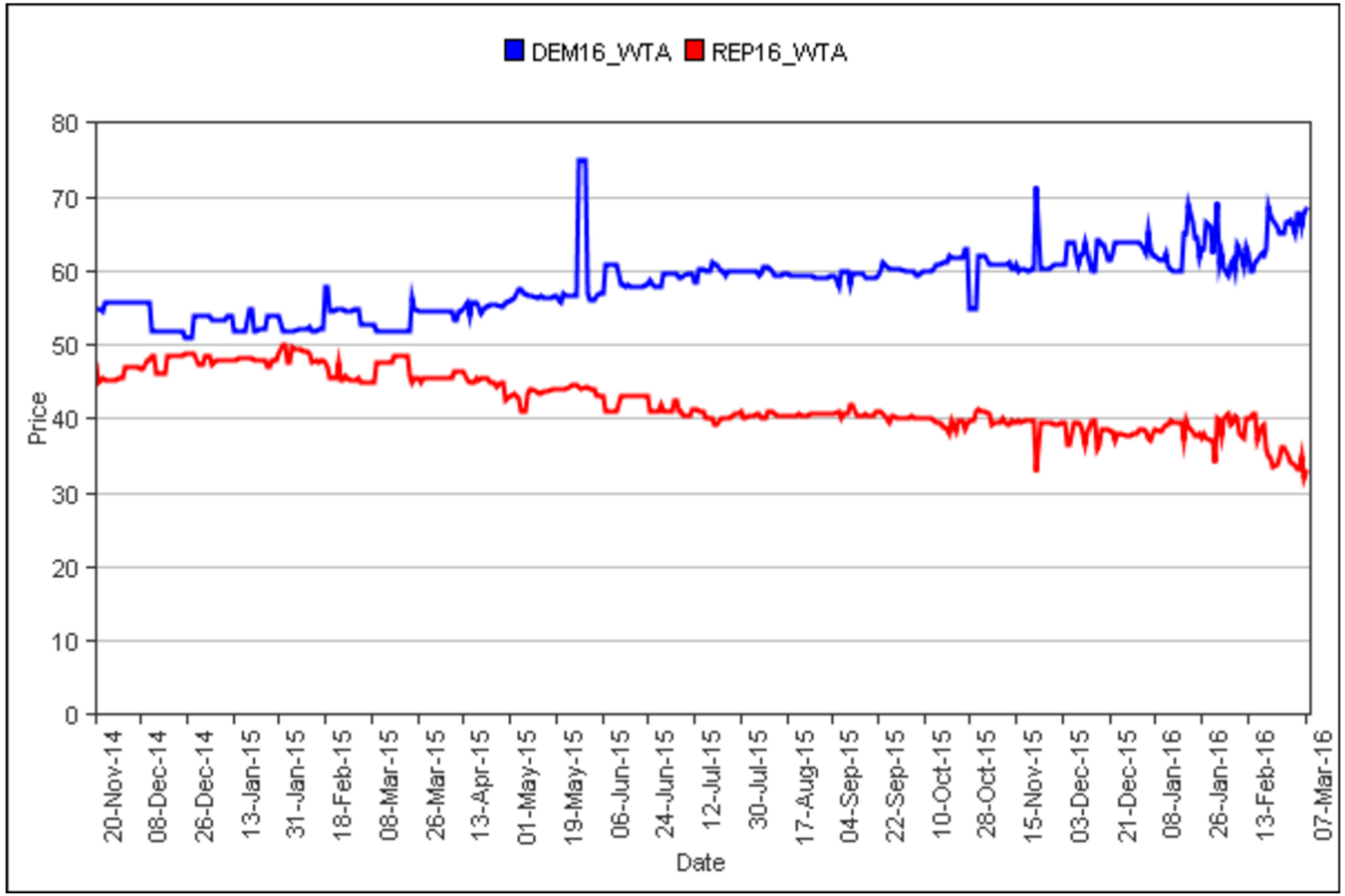
Assets:

Name	Description
DEM16_WTA	$1 if the Democratic Party nominee receives the majority of popular votes cast for the two major parties in the 2016 U.S. Presidential election, $0 otherwise
REP16_WTA	$1 if the Republican Party nominee receives the majority of popular votes cast for the two major parties in the 2016 U.S. Presidential election, $0 otherwise

Bundles: (To buy or sell bundles, select the bundle from the -Market Orders- list in your trading console. You may need to use the slide bar on the select box to see the bundle names.)

Name	BundleType	Price	Net Issued	Description
PRES16_WTA	Fixed Price	1.000	22,647	One of each contract in the PRES16_WTA market
PRES16_WTA	Market Price			One of each contract in the PRES16_WTA market

Pres16_WTA
2016 US Presidential Election Winner Takes All Market



Market Information: PRES16_VS

| Assets | Bundles | Prospectus | Price History | Graph | Other Information |

**** You must read the prospectus before trading ****

Market:

Name: PRES16_VS
Description: 2016 US Presidential Vote Share Market
Open Date: 11/19/14 11:30 AM
Close Date:

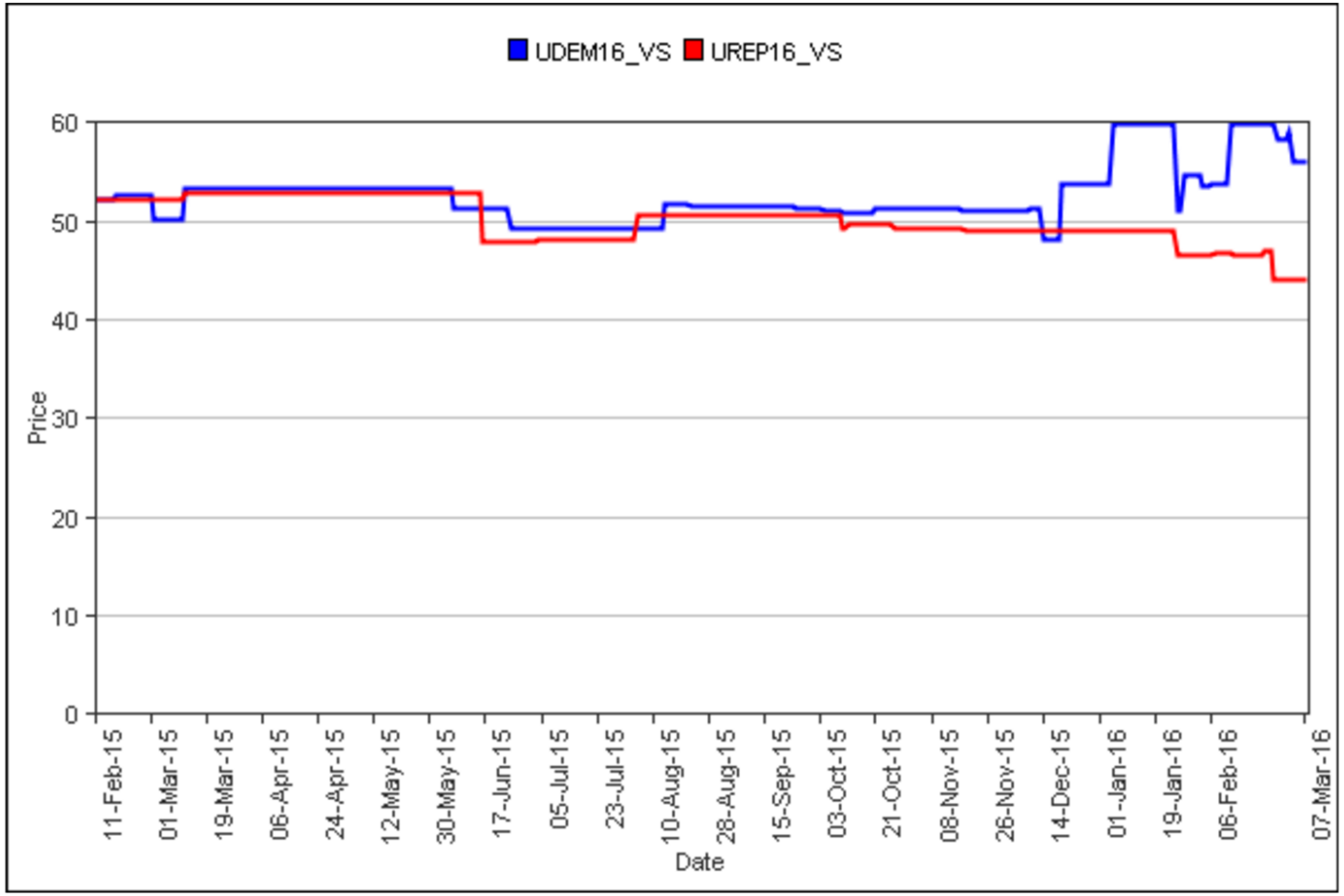
Assets:

Name	Description
UDEM16_VS	$1 times the Unnamed Democratic Nominee share of the two-party popular vote in the 2016 U.S. Presidential election
UREP16_VS	$1 times the Unnamed Republican Nominee share of the two-party popular vote in the 2016 U.S. Presidential election

Bundles: (To buy or sell bundles, select the bundle from the -Market Orders- list in your trading console. You may need to use the slide bar on the select box to see the bundle names.)

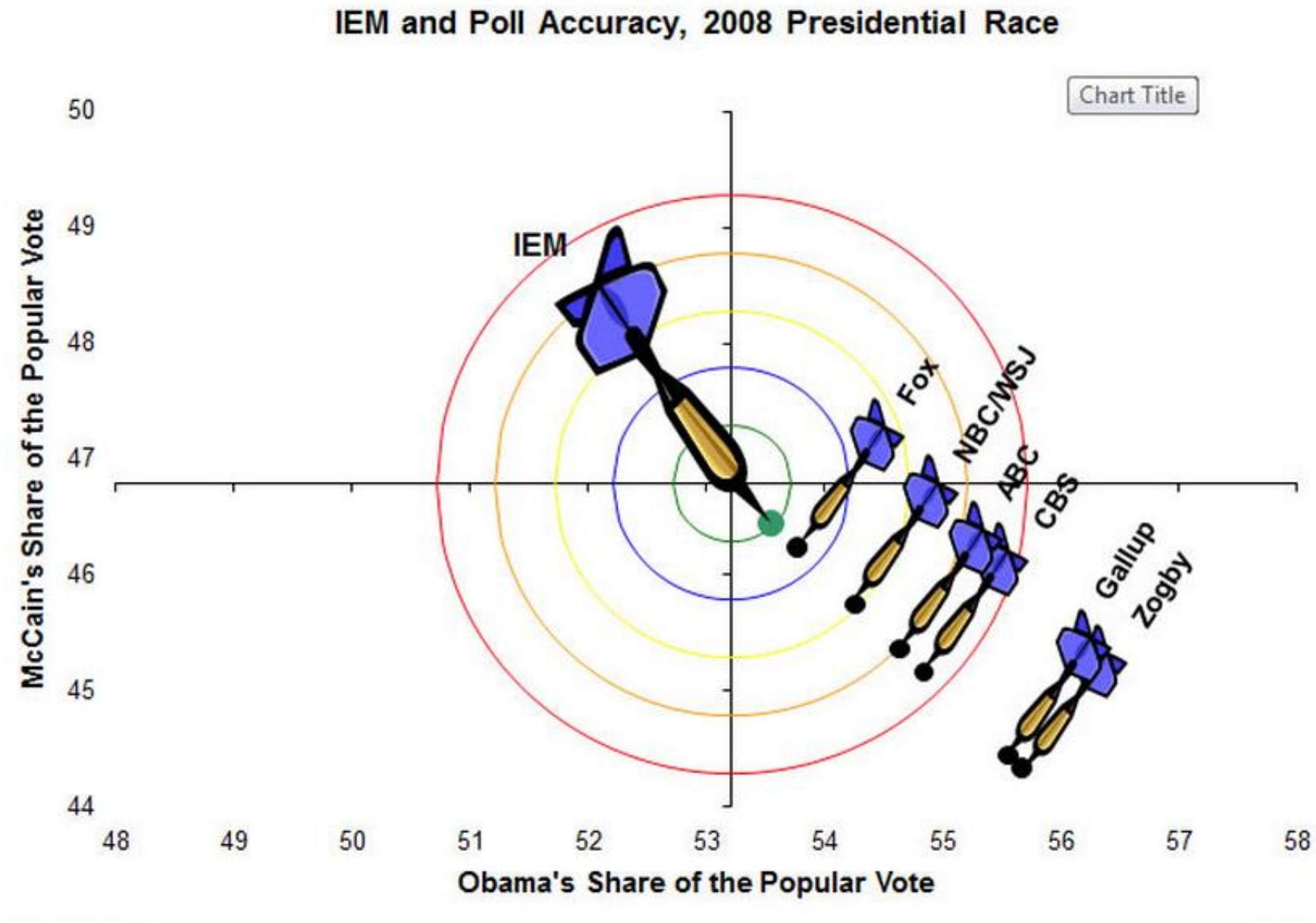
Name	BundleType	Price	Net Issued	Description
PRES16_VS	Fixed Price	1.000	1,974	One of each contract in the PRES16_VS market
PRES16_VS	Market Price			One of each contract in the PRES16_VS market

Pres16_VS
2016 US Presidential Election Vote Share Market

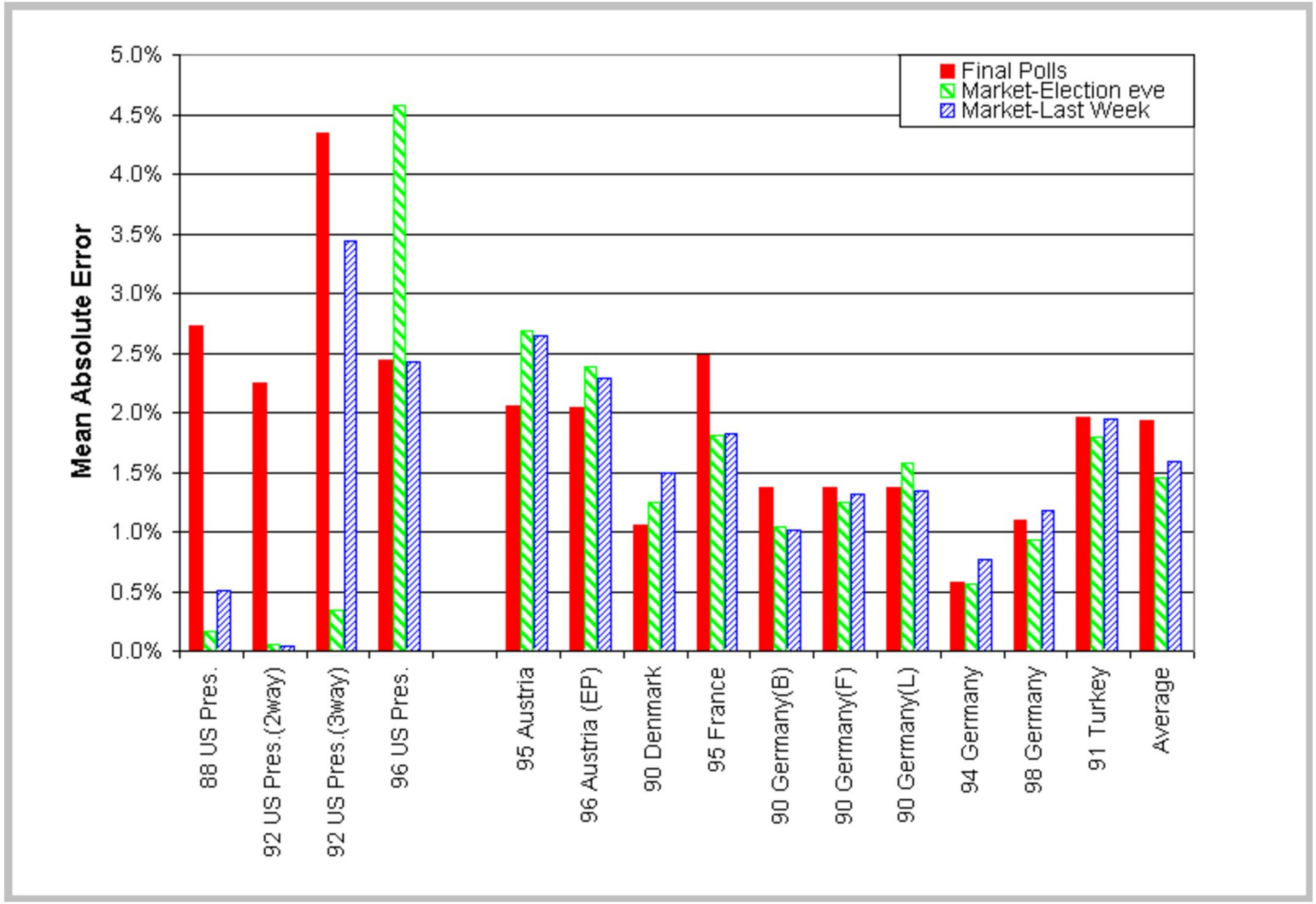


Iowa Electronic Markets

- Most Recent Markets
  - 2016 U.S. Presidential Election Markets
  - 2016 U.S. Presidential Nomination Markets
  - 2016 U.S. Congressional Control Market
- Closed Markets
  - Twilight Movie Box Office Market
  - Disney Price Level Market
  - Computer Industry Returns Market
  - Mexican Peso Market
  - ….



IEM Accuracy Compared to Polls



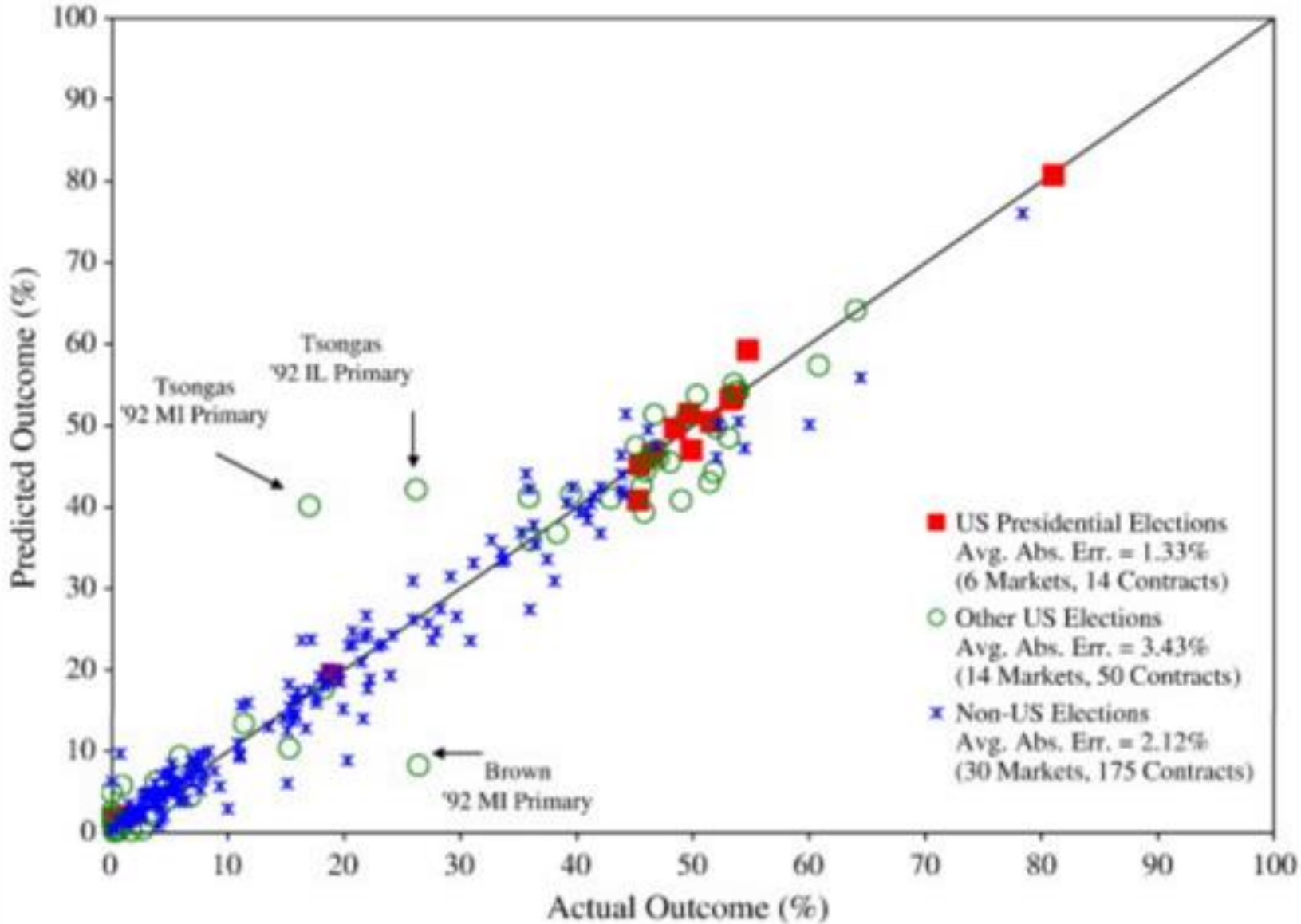

Predicted Outcome (%)
Actual Outcome (%)
0
10
20
30
40
50
60
70
80
90
100
Tsongas
'92 IL Primary
Tsongas
'92 MI Primary
Brown
'92 MI Primary
US Presidential Elections
Avg. Abs. Err. = 1.33%
(6 Markets, 14 Contracts)
Other US Elections
Avg. Abs. Err. = 3.43%
(14 Markets, 50 Contracts)
Non-US Elections
Avg. Abs. Err. = 2.12%
(30 Markets, 175 Contracts)

Fig. 1

Details

- Person i makes a “bid order” to buy m units at price p
- Person j makes an “ask order” to sell n units at price q
- Match up trades:
  - If p>q then i gets min(m,n) units from j at some cost between p and q
  - There are various approaches to deciding on which i and j and at what cost

Details

- Person i makes a “bid order” to buy m units at price p
- Person j makes an “ask order” to sell n units at price q
- Match up trades:
  - If $p<q$ for all i and j, then the market has reached equilibrium – no more trades
  - Max p and Min q bound the value of the unknown variable

Types of Prediction Markets

- Winner Take All
- Index: Proportional to some value being predicted
- Spread: Bid on a cutoff value

Types of Markets

- Call markets
- Continuous double-auction
- Pari-mutuel
- ….

- Market maker

What Can You Buy and Sell?

- Winner-Take-All:
  - $1 if Cornell men's hockey beats Princeton, $ otherwise
- Index:
  - $X if Cornell men's hockey scores a proportion X of the final score
- More generally:
  - $f(X) for random variable X
- Combine multiple markets to estimate other quantities (e.g., histograms, distributions, variance) – Spread betting

- (Real or fake money)

Computing Uncertainty in Values

- Markets for: Value > 1, Value > 2, Value > 3, … , Value > 99
  - Exposes distribution of market's expectations
- Markets for: $E[X^2]$ and $E[X]$
  - SD = $\sqrt{E[X^2] - E[X]^2}$
- Spread Market: Pay $4 get $4 vs Pay $4 get $5
  - Gives market estimates for value with 50% vs 80% probability

Why Use Prediction Markets

- Expected value of a random variable:
  Integrate information about an unknown event
- Manage risk:
  If event is “Snow storm in October”, can buy stocks that pay you if it happens – you make money from the event, presumably to make up for money you’d lose if such an event happens (if it doesn’t, you’ve presumably only spent a little money)

What Can Prediction Markets Compute?

- Numerical quantities:
  - Probabilities
  - Means
  - Medians
  - Distributions
  - Histograms
  - Standard deviations
- Contingent outcomes
- “Meta” questions:
  - If the market “New Hires in Q305” is run, will it attract interest?”

Market Announcement: TVStocks for the Fall 2017 season are now trading.

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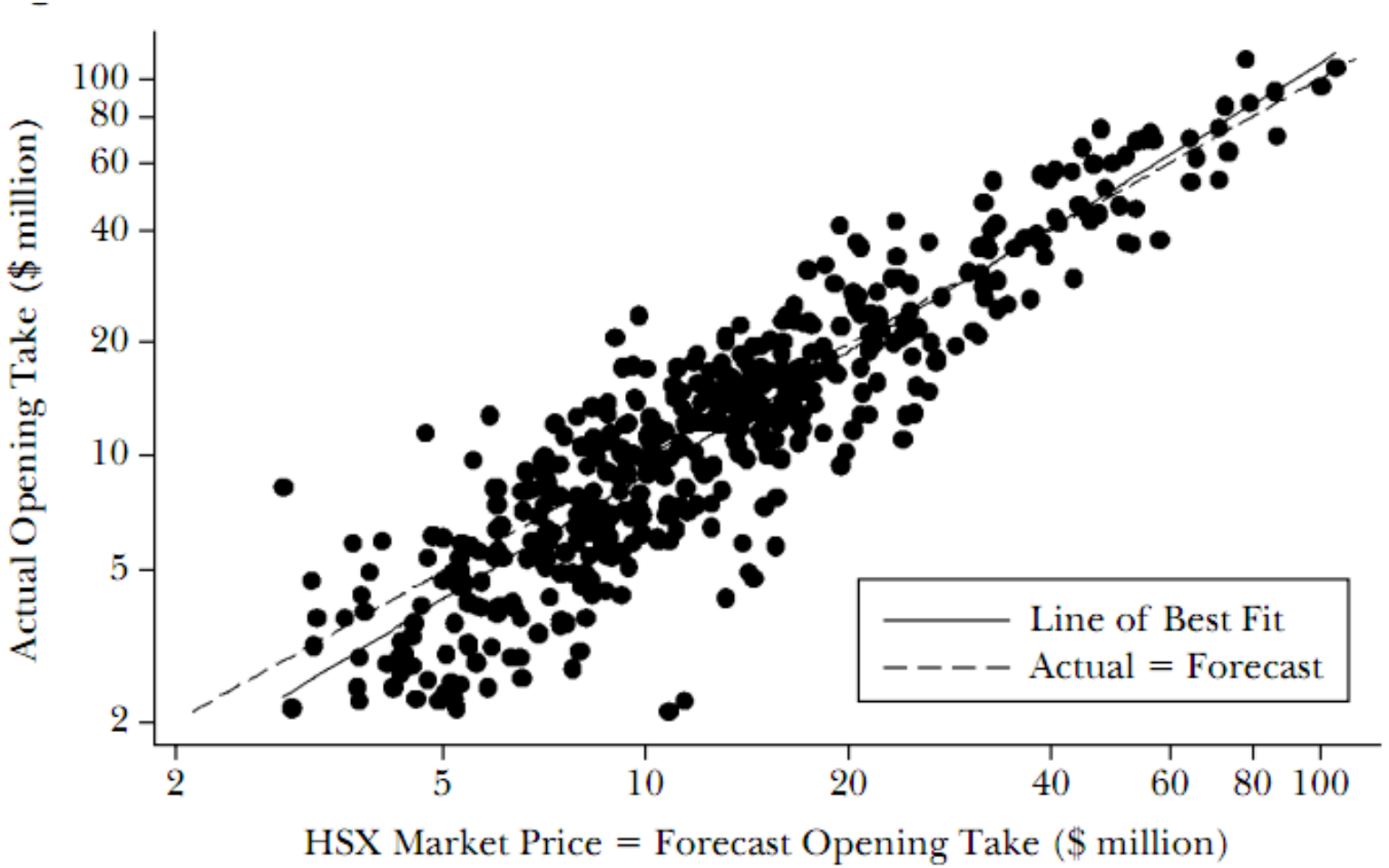
LATEST TWEETS

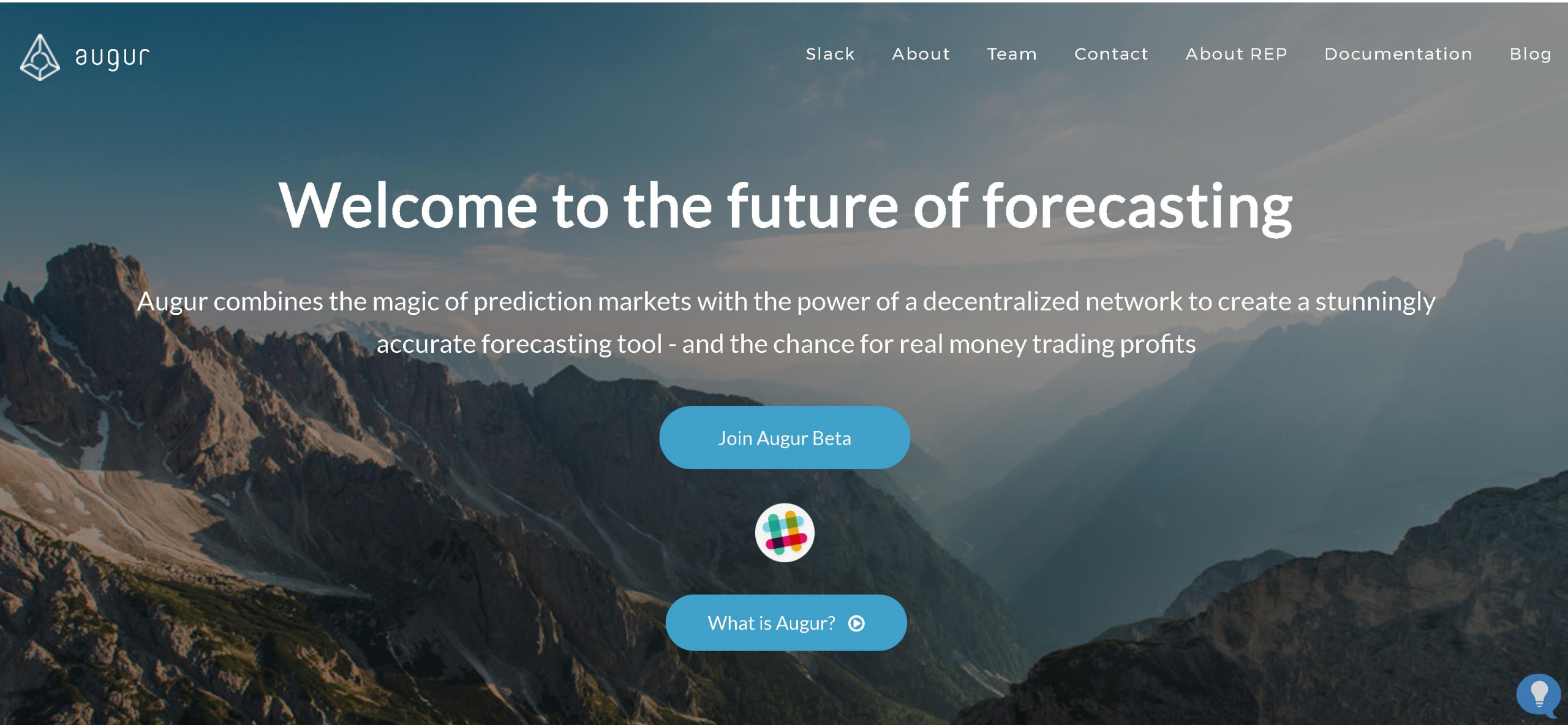
- New trailer for Father Figures starring Owen...
- Jonathan Levine to direct Coming to America 2
- Denis Villeneuve to direct Cleopatra
- Jimmy O. Yang joins The Happytime Murders

Levine to direct Coming to America 2 | Denis Villeneuve to direct Cleopatra | Jimmy O. Yang joins The Happytime Murders | CBS orders full season of Young Sheldon

ıgbird Project (HUMBP) 100000 10.00 (0.00) | Jigsaw (SAW8) 3000 39.44 (-0.01) | Happy Death Day - Opening Weeken (HTDTH.OW) 100000 18.17 (-1.83) | Happy Death

Hollywood Stock Exchange

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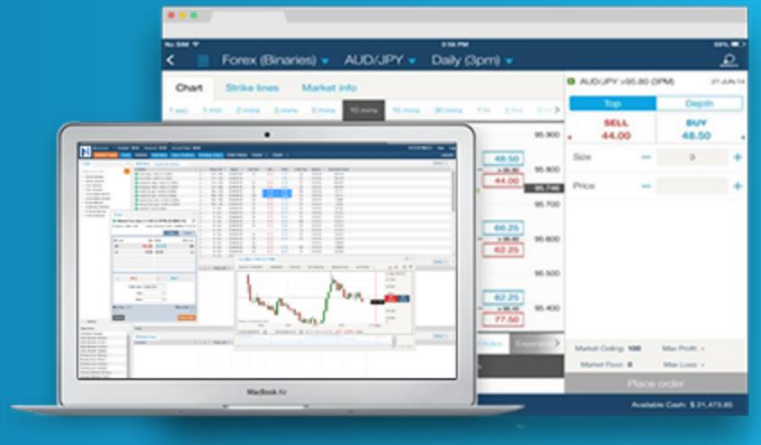
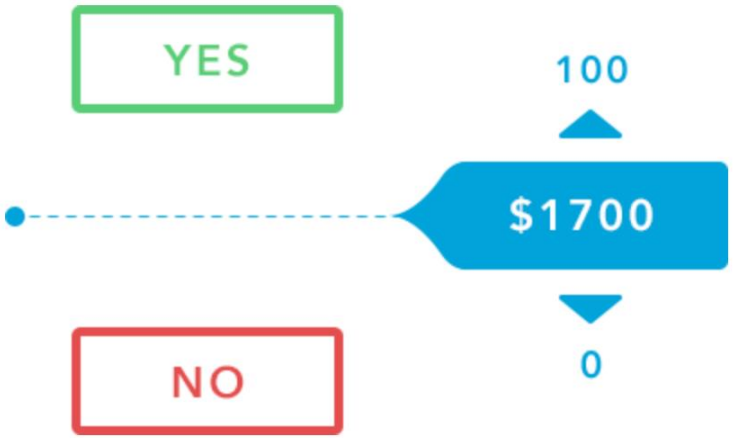
Slack
About
Team
Contact
About REP
Documentation
Blog
Welcome to the future of forecasting
Augur combines the magic of prediction markets with the power of a decentralized network to create a stunningly accurate forecasting tool - and the chance for real money trading profits
Join Augur Beta
What is Augur?

NADEX

Based on a simple yes/no proposition, exchange-traded binary options offer an intuitive, trusted way to trade the financial markets.





Binary options are limited-risk contracts based on a simple yes/no question about the market's price action, like this:

"Will *this* market be above *this* price at 3pm today?"

If you say yes, you buy the binary. If you think no, you sell. If at 3pm, you're right, you get the full $100. If not, you get zero. Binary trading is a simple, but powerful way to trade the most active stock indexes, forex, commodities & other markets, with limited risk, guaranteed.

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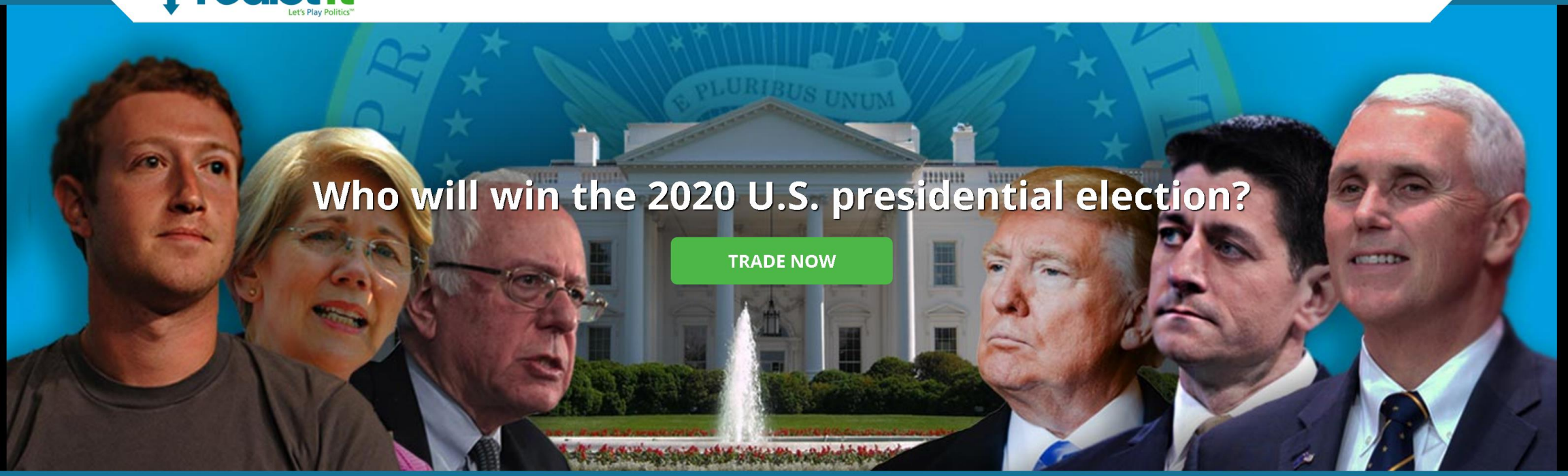
PredictIt
Let's Play Politics℠

Markets Analysis About Login Sign Up



The Prediction Market for Politics

PredictIt is a real-money political prediction market, a stock market for politics. A project of Victoria University of Wellington, PredictIt has been established to research the way markets can forecast future events. Our job is to study the wisdom of the crowd, yours is to use your skill and knowledge to get ahead.

PredictWise

PredictWise reflects **academic, peer-reviewed, research** into polling, prediction markets, and social media/online data. Our polling reflects bleeding-edge research into **cost-effective**, **fast**, **flexible**, and **accurate** polling with an emphasis on politics and finance. We infuse raw polling data with machine-learning-based post-polling analytics along with a host of other data. The backbone of predictions on this site are market-based, generated from real-money markets that trade contracts on upcoming events. New York Times Coverage: **PA key to election**, **Polling MOE bigger than reported**, and **FL +1 for Trump**.

PredictWise is run by David Rothschild an **innovative**, and **stylish** economist at **Microsoft Research in New York City**, but should in no way be construed as representing the views or predictions of Microsoft or any of its entities.

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What is this?

The simExchange uses the Wisdom of Crowds to predict the upcoming best selling and top rated video games.

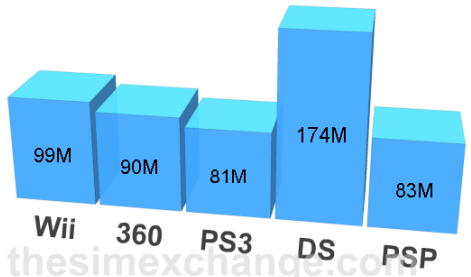
In this stock market for video games, use virtual money to buy stock in games you think will sell more than currently predicted. Sell stock in games you think will sell less than predicted.

Create your free account and start predicting right away!

Video Game Hardware Sales Predictions

Nintendo 3DS	74.9M	0.0%
Nintendo DS	173.8M	0.0%
PLAYSTATION 3	81.0M	0.0%
PSP Global	82.8M	0.0%
PlayStation Vita	15.8M	0.0%
Wii	98.8M	0.0%

Global Console Sales Forecast



Today's Top Video Game Stocks

No Image Available

Grand Theft Auto V (PS3)

2,093.40 DKP
+30.08 (1.46%)

Forecasts: 20.93M copies sold

Volume: 5

Grand Theft Auto V (Xbox 360)	1,619.83	+1.24%
Star Wars: The Old Republic (PC)	86.61	0.00%

Nav Box

Metacritic Futures

Global Lifetime Sales (GLS) Stocks:

- Platform - ▼

- Genre - ▼

- Publisher - ▼

Top 10 Players by Score, as of 2017/09/28 05:04:23 GMT

(Note: As of December 4, 2005, the score algorithm has been slightly modified.)

Rank	Uid	Score	Networth	Nym
1	73	8.842	17284.32	Karl Hallo
2	3536	8.375	16699.43	Genyin
3	5607	8.367	16784.57	biff
4	4176	7.183	13116.00	DavidSJ
5	97	6.560	15394.79	Loophole
6	157	6.091	12182.98	fh
7	303	5.041	10082.42	tucker
8	79	5.032	8988.55	jbs
9	7886	4.789	9578.66	crandles
10	1091	3.886	7772.48	Brian

Top 10 Claims by Transaction Volume in the Last 7 Days

Rank	Volume	%	Symbol	Bid/Ask/Last	Short Description
1	32	62.7%	GDNA	25/ 65/ 65	Germ-line DNA altered B4 2020
2	19	37.3%	Pot15	20/ 40/ 40	Pot legal in 15 states by 2020

Using Prediction Markets to Track Information Flows: Evidence from Google[1]

Bo Cowgill
Google

Justin Wolfers
Wharton, U. Penn
NBER, CEPR, IZA

Eric Zitzewitz
Dartmouth College

January 2009

Abstract

In the last three years, Google has conducted the largest corporate experiment with prediction markets we are aware of. In this paper, we illustrate how markets can be used to study how an organization processes information. We document a number of biases in Google's markets, most notably an optimistic bias. Newly hired employees are on the optimistic side of these markets, and optimistic biases are significantly more pronounced on days when Google stock is appreciating. We find correlated trading among employees who sit within a few feet of one another and employees with social or work relationships. The results are interesting in light of recent research on the role of optimism in entrepreneurial firms, as well as recent work on the importance of geographic and social proximity in explaining information flows in firms and markets.

THE ARENA FOR ACCOUNTABLE PREDICTIONS

The purpose of Long Bets is to improve long–term thinking. Long Bets is a public arena for enjoyably competitive predictions, of interest to society, with philanthropic money at stake. The Long Now Foundation furnishes the continuity to see even the longest bets through to public resolution. This website provides a forum for discussion about what may be learned from the bets and their eventual outcomes. **MORE »**

LONG BETS

FEATURED BET **DURATION 10 YEARS 02008-02017**

"Over a ten-year period commencing on January 1, 2008, and ending on December 31, 2017, the S&P 500 will outperform a portfolio of funds of hedge funds, when performance is measured on a basis net of fees, costs and expenses."

PREDICTOR
Warren Buffett

CHALLENGER
Protege Partners, LLC

STAKES $1,000,000

will go to *Girls Incorporated of Omaha* if Buffett wins,
or *Friends of Absolute Return for Kids, Inc* if Protege Partners, LLC wins.

review and discuss this bet »

more bets »

FEATURED PREDICTION **DURATION 53 YEARS 02017-02070**


POLICY ANALYSIS MARKET
P
P
q
Q

Home

Concept Overview

The Organizations behind PAM

Becoming a PAM Trader

A Market in the Future of the Middle East

The Policy Analysis Market will provide insight into the interactions among Middle Eastern and U.S. interests and policy decisions.

Trading begins October 1, trader registration begins August 1.

Focus on a Security of Interest

Clear

Security Structure	Name	Current Price	Recent Trading Price Range	Volume	Your Holdings
Base	lQcd4Q3<85	0.624	0.602 0.635	1,800	100
Base					
Cond.	TYum3Q3100-120				
Cond.					

Sort Market Transactions | Display in Portfolio | Transfer to Watch List | Transfer to Trading Screen

Market Information | Trades & Watch | Portfolio Views

Market Transactions

Security	Current Price	Recent Trading Price Range		Volume	Transfer To Focus
JNec4Q385-105	0.26	0.22	0.33	2,150	
lQcd4Q3<85	0.17	0.15	0.29	1,800	
TYum3Q3100-120					
SAmp4Q3>110	0.35	0.32	0.40	1,050	
lLu$1Q4>100	0.55	0.52	0.61	850	
ETu$1Q4<110	0.40	0.35	0.40	700	
lNec3Q3105-115	0.45	0.45	0.52	650	
JNec4Q385-105	0.26	0.22	0.33	2,150	
lQcd4Q3<85	0.17	0.15	0.29	1,800	
TYum3Q3100-120					
SAmp4Q3>110	0.35	0.32	0.40	1,050	
lLu$1Q4>100	0.55	0.52	0.61	850	
ETu$1Q4<110	0.40	0.35	0.40	700	
lNec3Q3105-115	0.45	0.45	0.52	650	
JNec4Q385-105	0.26	0.22	0.33	2,150	
lQcd4Q3<85	0.17	0.15	0.29	1,800	
TYum3Q3100-120					
SAmp4Q3>110	0.35	0.32	0.40	1,050	
lLu$1Q4>100	0.55	0.52	0.61	850	
ETu$1Q4<110	0.40	0.35	0.40	700	
lNec3Q3105-115	0.45	0.45	0.52	650	

# of Registered Traders = Total Funds Deposited =
# of Recent Traders = Value of Recent Trades =

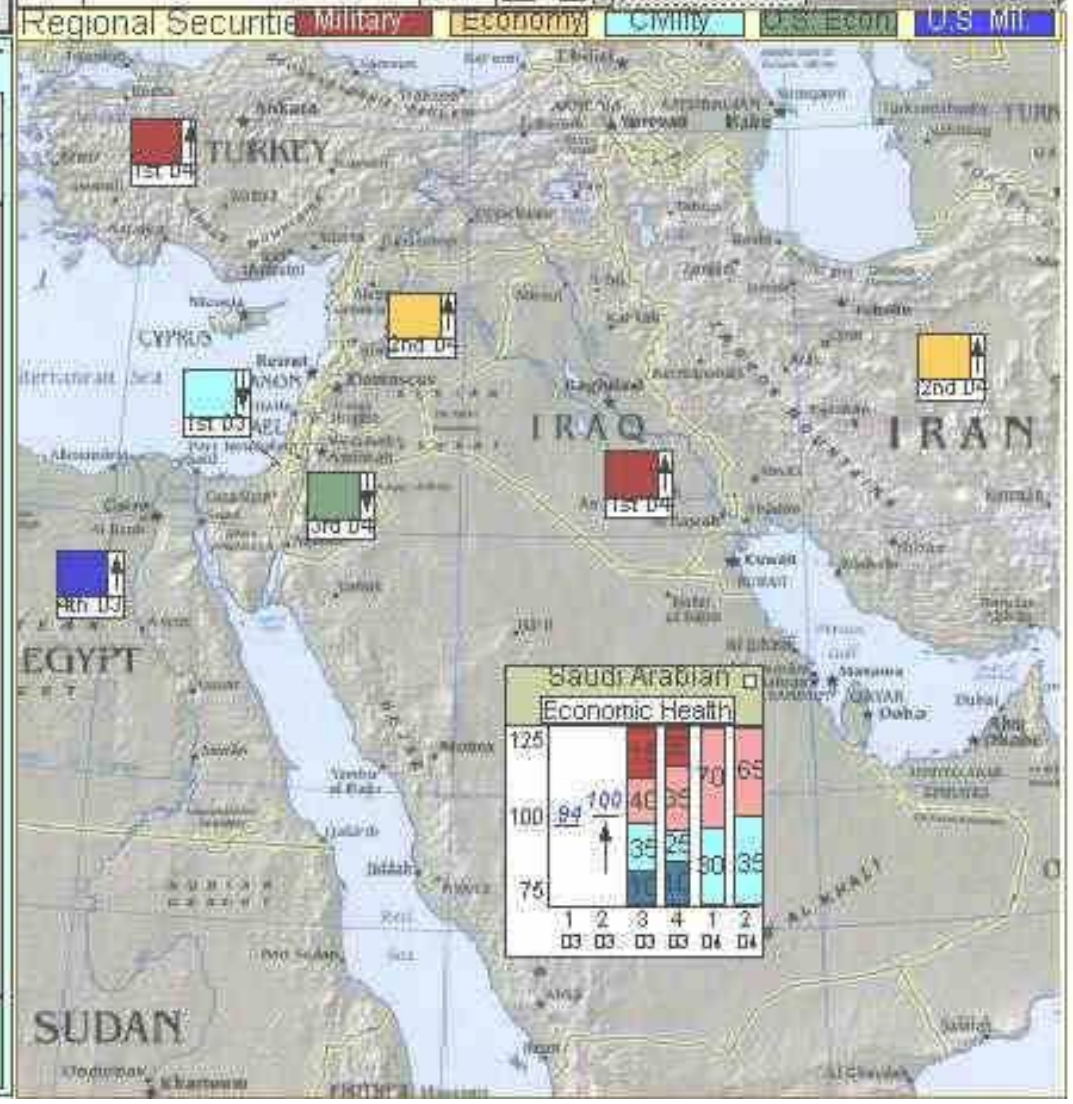
Special Event Securities

#	Brief (click for Detail)	Price	B or C
1.4.3	Jordan King Overthown 4th Q	0.24	B C
2.4.3	N. Korea Missile Attack 4th Q	0.15	B C
1.1.4	U.S. Recog. Palestine 1st 04	0.32	B C
2.1.4	Arafat Assassinated 1st 04	0.17	B C
			B C
			B C

Global Securities

	1 Q3	2 Q3	3 Q3	4 Q3	1 Q4	2 Q4
U.S. Equities	7.5	7.2	7.1	7.5	7.9	8.0
U.S. GDP	5.23	6.32	6.38	6.36	6.33	6.41
Global Trade	7.5	7.2	7.1	7.5	7.9	8.0
Terror Deaths	113	465	889	2143	654	334
U.S. Terr. Deaths	45	127	1743	500	230	436

Regional Securities: Military | Economy | Civility | U.S. Econ | U.S. Mil



Example of PAM futures and derivatives contracts

Issue **A**: Overthrow of Jordanian Monarchy

Issue **B**: Iraqi Regime persists after One Month of Hostilities

	A	~A	Price
B	AB 0.30	~AB 0.20	$0.50
~B	A~B 0.05	~A~B 0.45	$0.50
Price	$0.35	$0.65	

A and **~A** are futures contracts that *span* **A**

A~B is a derivative of the joint outcome

A|B (***A*** *given* ***B***) is a conditional derivative (a hedge)

July 28, 2003

- Senator Ron Wyden (D): "The idea of a federal betting parlor on atrocities and terrorism is ridiculous and it's grotesque“
- Senator Byron Dorgan (D): "useless, offensive and unbelievably stupid“

could get on with the business. I just tried to do that.

Mr. REID. But of course, Mr. President, we have two amendments ahead of that. It is not parliamentary procedure that is proper at this stage. When we get to the Campbell amendment, the distinguished Democratic leader said the Senator would have to do what he wanted in that regard. We stand on that.

Mr. DOMENICI. We can't proceed with any of the other amendments.

Mr. REID. But even at that time, even if the other two amendments were gone, the alternatives are, as the Senator said, second-degreeing the amendment or disposing of it with a motion to table or some other thing. But just

O-R-S. As we understand it, even terrorists would be allowed to bet on the likelihood of future terrorist attacks.

This program could provide an incentive, actually, to commit acts of terrorism. We are asking the administration this morning to renounce this plan to trade in death. The administration should issue a public apology, especially to the families of the victims of September 11. This is just wrong: The Pentagon calls its latest idea a new way of predicting events and part of its search for the ''broadest possible set of new ways to prevent terrorist attacks.'' I don't know how one can possibly use the marketplace for that purpose.

The initiative, which is called the

The PRESIDENT pro tempore. Very well. I thought the Senator yielded to the Senator from Nevada. The minority leader has the floor.

Mr. DURBIN. If the minority leader would further yield, through the Chair, is it not true that the site referenced here is policyanalysismarket.org, for those who question whether what you are saying is accurate?

Mr. DASCHLE. That is correct. I don't have the Internet reference in front of me.

Mr. DURBIN. Is it not also, I say through the Chair, that the administration is proposing spending $8 million of taxpayer money through the year 2005 in creating this marketplace to trade in speculation about assassina-

Tom Daschle: But I must say, this is perhaps the most irresponsible, outrageous, and poorly thought out of anything I have heard the administration propose to date. For the life of me, I cannot believe anybody would seriously propose that we trade in death, that we set up a futures market on when, as the Web site proposed, the King of Jordan could be overthrown, when a leader would be assassinated, when a terrorist attack would occur. Most traders try to influence their investments. How long would it be before you saw traders investing in a way that would bring about the desired result?

preciate the Senator yielding. I will not take a lot of time now.

TRADING IN DEATH

Mr. DASCHLE. Mr. President, I come to the floor in part to call to the attention of my colleagues an article which appeared in the New York Times this morning. The article is entitled ''Pentagon Prepares A Futures Market On Terror Attacks.''

The article reports that the Bush administration is prepared to spend $8 million on a program that actually encourages betting on the probability of future terrorist attacks. I am really amazed. This fits in that category: ''We are not making this up.''

You ask whether there are traders or traitors—T-R-A-D-E-R-S or T-R-A-I-T-

Defense to create some sort of investment speculation in the possibility of assassination and terrorism? Is that not a fact?

Mr. DASCHLE. The Senator from Illinois has exactly stated the fact. Policymarket.com can be called up on your Web site today. The Web site can be called up on the Internet and you can see for yourself.

Mr. DURBIN. In fairness to the Senator, I think the reference is policyanalysis.

The PRESIDENT pro tempore. Will the Senator please address through the Chair? The Senator from Nevada has the floor.

Mr. DURBIN. I believe the Senator from South Dakota has the floor.

Mr. DASCHLE. I sought recognition and the Chair recognized me.

that the Senator from Illinois has reported were on the Web site yesterday: When the first biological attack would occur in Israel, when the King of Jordan might be assassinated. Each of these were listed as possible investment opportunities. Of course, our distinguished colleagues—I cite them for their efforts, Senators WYDEN and DORGAN—called attention to these particularly unusual investments, and they were pulled from the Web site once the fact that these were listed was made public.

Mr. DURBIN. If the Senator would further yield, I would ask the Senator from South Dakota to reflect on the reaction of the United States and the Congress——

The PRESIDING OFFICER (Mr. ENSIGN). The Senator will suspend.

July 28, 2003

- Senator Ron Wyden (D): "The idea of a federal betting parlor on atrocities and terrorism is ridiculous and it's grotesque“
- Senator Byron Dorgan (D): "useless, offensive and unbelievably stupid“

July 29, 2003

- Criticized in Senate
- Program canceled
- John Poindexter (R) resigns

3 April 1997
Source: http://www.infowar.com/class_1/BELL1.html-ssi

Assassination Politics

by Jim Bell

Part 1

I've been following the concepts of digital cash and encryption since I read the article in the August 1992 issue of *Scientific American* on"encrypted signatures." While I've only followed the Digitaliberty area for a few weeks, I can already see a number of points that do (and should!) strongly concern the average savvy individual:

1. How can we translate the freedom afforded by the Internet to ordinary life?

2. How can we keep the government from banning encryption, digital cash, and other systems that will improve our freedom?

A few months ago, I had a truly and quite literally "revolutionary" idea, and I jokingly called it "Assassination Politics": I speculated on the question of whether an organization could be set up to legally announce that it would be awarding a cash prize to somebody who correctly "predicted" the death of one of a list of violators of rights, usually either government employees, officeholders, or appointees. It could ask for anonymous contributions from the public, and individuals would be able send those contributions using digital cash.

I also speculated that using modern methods of public-key encryption and anonymous "digital cash," it would be possible to make such awards in such a way so that nobody knows who is getting awarded the money, only that the award is being given. Even the organization itself would have no information that could help the authorities find the person responsible for the prediction, let alone the one who caused the death.

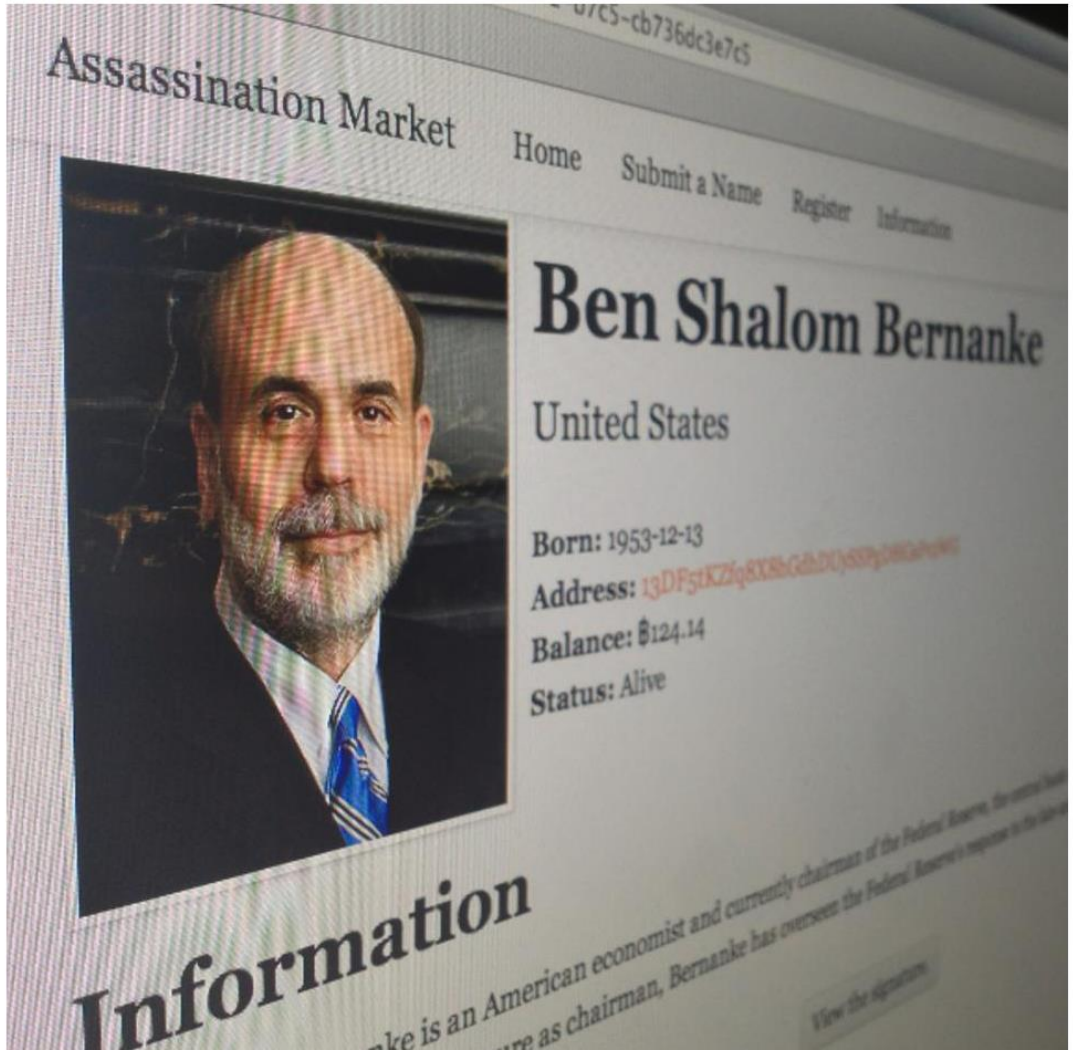
It was not my intention to provide such a "tough nut to crack" by arguing the general case, claiming that a person who hires a hit man is not guilty of murder under libertarian principles. Obviously, the problem with the general case is that the victim may be totally innocent under libertarian principles, which would make the killing a crime, leading to the question of whether the person offering the money was himself guilty.

On the contrary; my speculation assumed that the "victim" is a government employee, presumably one who is not merely taking a paycheck of stolen tax dollars, but also is guilty of extra violations of rights beyond this. (Government agents responsible for the Ruby Ridge incident and Waco come to mind.) In receiving such money and in his various acts, he violates the "Non-aggression Principle" (NAP) and thus, presumably, any acts against him are not the initiation of force under libertarian principles.

NOV 18, 2013 @ 08:30AM 414,668

Meet The 'Assassination Market' Creator Who's Crowdfunding Murder With Bitcoins

Andy Greenberg, FORBES STAFF
Covering the worlds of data security, privacy and hacker culture. FULL BIO



Problems for Prediction Markets

- Information cascades
- Matters with hidden information
- Manipulation?
- Low numbers
- Legal barriers
- Moral qualms

Problems for Prediction Markets

- Cognitive barriers
  - Favorite-longshot bias – low probability events
  - In-group bias
  - Optimism bias
  - Confirmation bias
  - Risk-seeking
  - Speculative bubbles

Readings for Next Time

- *Infotopia*, Chapter 5
- “CrowdDB: answering queries with crowdsourcing.” Franklin, M.J., Kossmann, D., Kraska, T., Ramesh, S. and Xin, R., 2011. In Proceedings of the 2011 *ACM SIGMOD International Conference on Management of Data* (pp. 61-72). ACM. https://amplab.cs.berkeley.edu/wp-content/uploads/2011/06/CrowdDB-Answering-Queries-with-Crowdsourcing.pdf