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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  (extra credit)

- **Tuesday, Sep 12 (in class)**
  Serge Belongie
  Oct 5

- **Thursday, Sep 28, 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: $r \times W$ ($r = \sim 15-17\%$)
- Each horse $h_i$ returns $\frac{(1-r) \times W}{w_i}$ per dollar if it wins
Reliability of Subjective Evaluations in a High Incentive Situation

By ARTHUR E. HOBL
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 counseling. As stated by Pearn, “One essential part of the genetic counseling 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

<table>
<thead>
<tr>
<th>No. of entries</th>
<th>No. of races</th>
<th>Ranking by odds</th>
<th>Computed $\chi^2$</th>
<th>$\psi_{0.05}$</th>
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<td>5</td>
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<tr>
<td></td>
<td>Subj. prob.</td>
<td>0.42, 0.25, 0.17, 0.11, 0.06</td>
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<td>9.5</td>
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<tr>
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<td>Obs. freq.</td>
<td>0.41, 0.30, 0.20, 0.07, 0.03</td>
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<td>Subj. prob.</td>
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<td>11.1</td>
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<tr>
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<tr>
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<td>Subj. prob.</td>
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<td>5.7</td>
<td>12.6</td>
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<tr>
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<td>14.1</td>
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<tr>
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<td>13.1</td>
<td>15.5</td>
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<td>0.35, 0.15, 0.17, 0.13, 0.08, 0.06, 0.02, 0.01</td>
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<td>5.0</td>
<td>16.9</td>
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<tr>
<td></td>
<td>Obs. freq.</td>
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<td>12</td>
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<td>Obs. freq.</td>
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<td></td>
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</table>
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.
The Effective Track Payback Less Breakage for Various Odds Levels in California

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”

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

Michael T. Maloney, J. Harold Mulherin

*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.
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
  o $7?
  o $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
  o $7?
  o $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.
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

** 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** | **Bundle Type** | **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
UDEM16_VS
UREP16_VS

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

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<tr>
<td>PRES16_VS</td>
<td>Market Price</td>
<td></td>
<td></td>
<td>One of each contract in the PRES16_VS market</td>
</tr>
</tbody>
</table>
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
  – ....
Figure 1: Scatter plot showing the predicted outcome vs. actual outcome for different categories of elections.

- **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)
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?”
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Hollywood Stock Exchange is the place to buy and trade movies, stars and more. Sign up and we'll get your portfolio started with H$2,000,000.

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

IPO OF THE DAY

THE HUMMINGBIRD PROJECT

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
Hollywood Stock Exchange

![Graph showing the relationship between HSX Market Price and Actual Opening Take](image)
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.
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.
Who will win the 2020 U.S. presidential election?

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
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, 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.
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!

Global Console Sales Forecast

Today's Top Video Game Stocks

- 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%

Global Lifetime Sales (GLS) Stocks:

- Platform - ▼
- Genre - ▼
- Publisher - ▼
Sign up free and bet your reputation on the future!

The Foresight Exchange is a public, play-money market allowing individuals to sign up for free and predict the future.

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.)

<table>
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<td>3.886</td>
<td>7772.48</td>
<td>Brian</td>
</tr>
</tbody>
</table>

Top 10 Claims by Transaction Volume in the Last 7 Days

<table>
<thead>
<tr>
<th>Rank</th>
<th>Volume</th>
<th>% Symbol</th>
<th>Bid/Ask/Last</th>
<th>Short Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>62.7%</td>
<td>25/ 65/ 65</td>
<td>Germ-line DNA altered B4 2020</td>
</tr>
<tr>
<td>2</td>
<td>19</td>
<td>37.3%</td>
<td>20/ 40/ 40</td>
<td>Pot legal in 15 states by 2020</td>
</tr>
</tbody>
</table>
Using Prediction Markets to Track Information Flows: Evidence from Google

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

the rules of long bets
bets & predictions on the record
make a prediction about long bets
FAQ & answers

FEATURED BET

“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 10 YEARS 02008-02017

DURATION 53 YEARS 022017-022070
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.
Example of PAM futures and derivatives contracts

**Issue A**: Overthrow of Jordanian Monarchy

<table>
<thead>
<tr>
<th>B</th>
<th>A</th>
<th>~A</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>0.30</td>
<td>~AB</td>
<td>$0.50</td>
</tr>
<tr>
<td>~A</td>
<td>0.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>~B</th>
<th>A~B</th>
<th><del>A</del>B</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>0.45</td>
<td></td>
<td>$0.50</td>
</tr>
</tbody>
</table>

**A~B is a derivative of the joint outcome**

<table>
<thead>
<tr>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.65</td>
</tr>
</tbody>
</table>

**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"
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?
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
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 Digital Liberty 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, officemates, 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.
Meet The 'Assassination Market' Creator Who's Crowdfunding Murder With Bitcoins
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