

Prediction market

From Wikipedia, the free encyclopedia

Prediction markets (also known as **predictive markets**, **information markets**, **decision markets**, **idea futures**, **event derivatives**, or **virtual markets**) are speculative markets created for the purpose of making predictions. Assets are created whose final cash value is tied to a particular event (e.g., will the next US president be a Republican) or parameter (e.g., total sales next quarter). The current market prices can then be interpreted as predictions of the probability of the event or the expected value of the parameter. Prediction markets are thus structured as betting exchanges, without any risk for the bookmaker.

People who buy low and sell high are rewarded for improving the market prediction, while those who buy high and sell low are punished for degrading the market prediction. Evidence so far suggests that prediction markets are at least as accurate as other institutions predicting the same events with a similar pool of participants.

Many prediction markets are open to the public. Betfair is the world's biggest prediction exchange, with around \$28 billion traded in 2007. Intrade is a for-profit company with a large variety of contracts not including sports. The Iowa Electronic Markets is an academic market examining elections where positions are limited to \$500. The simExchange, Hollywood Stock Exchange, NewsFutures, the Popular Science Predictions Exchange, Hubdub, The Industry Standard's technology industry prediction market, the Foresight Exchange Prediction Market and the Brazilian Mercado de Previsões are virtual prediction markets where purchases are made with virtual money. Bet2Give is a charity prediction market where real money is traded but ultimately all winnings are donated to the charity of the winner's choice. Internal enterprise prediction markets are used by companies like Google ^[1]; other companies that provide enterprise prediction markets include NewsFutures, Crowdcast ^[2], CrowdWorx, Inkling and Consensus Point.

Contents

- 1 History
- 2 Accuracy
 - 2.1 Sources of inaccuracy
- 3 Other issues
 - 3.1 Legality
 - 3.2 Controversial incentives
- 4 See also
- 5 References
- 6 Further reading
- 7 External links

History

One of the oldest and most famous is the University of Iowa's Iowa Electronic Market. The Hollywood Stock Exchange, a virtual market game established in 1996 and now a division of Cantor Fitzgerald, LP, in which players buy and sell prediction shares of movies, actors, directors, and film-related options, correctly predicted 32 of 2006's 39 big-category Oscar nominees and 7 out of 8 top category winners. HedgeStreet, designated in 2004 as a market and regulated by the Commodity Futures Trading Commission, enables Internet traders to speculate on economic events.

Prediction markets actually have a long and colorful lineage. Betting on elections was common in the U.S. until at least the 1940s, with formal markets existing on Wall Street in the months leading up to the race. Newspapers reported market conditions to give a sense of the closeness of the contest in this period prior to widespread polling. The markets involved thousands of participants, had millions of dollars in volume in current terms, and had remarkable predictive accuracy.^[3]

Around 1990 at Project Xanadu, Robin Hanson, now Chief Scientist at Consensus Point, used the first known corporate prediction market. Employees used it in order to bet on, for example, the cold fusion controversy.

In July 2003, the U.S. Department of Defense publicized a Policy Analysis Market and on their website speculated that additional topics for markets might include terrorist attacks. A critical backlash quickly denounced the program as a "terrorism futures market" and the Pentagon hastily canceled the program.

Prediction markets are championed in James Surowiecki's 2004 book *The Wisdom of Crowds*, Cass Sunstein's 2006 *Infotopia*, and *How to Measure Anything: Finding the Value of Intangibles in Business* by Douglas Hubbard^[4].

The research literature is collected together in the peer reviewed *The Journal of Prediction Markets*, edited by Leighton Vaughan Williams and published by the University of Buckingham Press. The journal was first published in 2007, and is available online and in print.^[5]

In John Brunner's 1975 science fiction story *The Shockwave Rider* there is a description of a prediction market that he called the Delphi Pool.

In Marc Stiegler's 1998 science fiction story *Earthweb* (ISBN 0-671-57809-X) prediction markets are a central plot device.

In October 2007 companies from the United States, Ireland, Austria, Germany, and Denmark formed the Prediction Market Industry Association,^[6] tasked with promoting awareness, education, and validation for prediction markets.

Accuracy

Some academic research has focused on potential flaws with the prediction market concept. In particular, Dr. Charles F. Manski of Northwestern University published "Interpreting the Predictions of Prediction Markets"^[7], which attempts to show mathematically that under a wide range of assumptions the "predictions" of such markets do not closely correspond to the actual probability beliefs of the market participants unless the market probability is near either 0 or 1. Manski suggests that directly asking a group of participants to estimate probabilities may lead to better results.

However, Steven Gjerstad (University of Arizona) in his paper "Risk Aversion, Beliefs, and Prediction

Market Equilibrium," [8] has shown that prediction market prices are very close to the mean belief of market participants if the agents are risk averse and the distribution of beliefs is spread out (as with a normal distribution, for example). Justin Wolfers (Wharton) and Eric Zitzewitz (Dartmouth) have obtained similar results, and also include some analysis of prediction market data, in their paper "Interpreting Prediction Market Prices as Probabilities." [9] In practice, the prices of binary prediction markets have proven to be closely related to actual frequencies of events in the real world. [10][11]

Douglas Hubbard has also conducted a sample of over 400 retired claims which showed that the probability of an event is close to its market price but, more importantly, significantly closer than the average single subjective estimate [12]. However, he also shows that this benefit is partly offset if individuals first undergo calibrated probability assessment training so that they are good at assessing odds subjectively. The key benefit of the market, Hubbard claims, is that it mostly adjusts for uncalibrated estimates and, at the same time, incentivizes market participants to seek further information.

A common belief among economists and the financial community in general is that prediction markets based on play money cannot possibly generate credible predictions. However, the data collected so far disagrees [10]. Analyzed data from the Hollywood Stock Exchange and the Foresight Exchange concluded that market prices predicted actual outcomes and/or outcome frequencies in the real world. Comparing an entire season's worth of NFL predictions from NewsFutures' play-money exchange to those of Tradesports, an equivalent real-money exchange based in Ireland, both exchanges performed equally well. In this case, using real money did not lead to better predictions. [11]

Sources of inaccuracy

Prediction markets suffer from the same types of inaccuracy as other kinds of market, i.e. liquidity or other factors not intended to be measured are taken into account as risk factors by the market participants, distorting the market probabilities. Prediction markets may also be subject to speculative bubbles. For example, in the year 2000 IEM presidential futures markets, a flood of new traders in the final week of the election caused the market to gyrate wildly, making its "predictions" useless. [citation needed]

There can also be direct attempts to manipulate such markets. In the Tradesports 2004 presidential markets there was an apparent manipulation effort. An anonymous trader sold short so many Bush 2004 presidential futures contracts that the price was driven to zero, implying a zero percent chance that Bush would win. The trade may have been an attempt to manipulate the market in a strategy called a "bear raid". If this was a deliberate manipulation effort it failed, however, as the price of the contract rebounded rapidly to its previous level. As more press attention is paid to prediction markets, it is likely that more groups will be motivated to manipulate them. However, in practice, such attempts at manipulation have always proven to be very short lived. In their paper entitled "Information Aggregation and Manipulation in an Experimental Market" (2005), [13] Hanson, Oprea and Porter (Chapman University), show how attempts at market manipulation in fact end up increasing the accuracy of the market because they provide that much more profit incentive to bet against the manipulator.

Using real-money prediction market contracts as a form of insurance can also affect the price of the contract. For example, if the election of a leader is perceived as negatively impacting the economy, traders may buy shares of that leader being elected, as a form of insurance. [14]

Other issues

Legality

Because online gambling is outlawed in the United States through federal laws and many state laws as well, most prediction markets that target U.S. users operate with "play money" rather than "real money": they are free to play (no purchase necessary) and usually offer prizes to the best traders as incentives to participate. Notable exceptions are Intrade/TradeSports, which escapes U.S. legal restrictions by operating from Dublin, Ireland, where gambling is legal and regulated,^[citation needed] and the Iowa Electronic Markets, which operates from the University of Iowa under the cover of a no-action letter from the Commodity Futures Trading Commission and allows bets up to \$500.

Controversial incentives

Some kinds of prediction markets may create controversial incentives. For example, a market predicting the death of a world leader might be quite useful for those whose activities are strongly related to this leader's policies, but it also might turn into an assassination market.

See also

- Election Stock Market
- Policy Analysis Market
- Prediction games
- Futarchy - a form of government which would use conditional prediction markets to evaluate public policy
- Futures market

References

[15]

1. ^ <http://freakonomics.blogs.nytimes.com/2008/01/14/prediction-markets-at-google-a-guest-post/>
2. ^ <http://bits.blogs.nytimes.com/2009/06/25/start-ups-software-crowdsources-company-forecasts/>
3. ^ BettingPaper Historical Prediction Markets: Wagering on Presidential Elections (http://www.unc.edu/%7Ecigar/papers/BettingPaper_10Nov2003_long2.pdf) - by Paul W. Rhode and Koleman S. Strumpf - PDF file - 2003-11-10
4. ^ Douglas W. Hubbard, *How to Measure Anything: Finding the Value of Intangibles in Business", John Wiley & Sons, July 2007
5. ^ predictionmarketjournal.com
6. ^ <http://www.pmindustry.org>
7. ^ "Interpreting the Predictions of Prediction Markets" (http://www.aeaweb.org/annual_mtg_papers/2006/0106_1015_0703.pdf) Northwestern University, Dr. Charles F. Manski (Revised: 2005)
8. ^ "Risk Aversion, Beliefs, and Prediction Market Equilibrium" (http://econ.arizona.edu/downloads/working_papers/Econ-WP-04-17.pdf) Steven Gjerstad
9. ^ "Interpreting Prediction Market Prices as Probabilities" (<http://bpp.wharton.upenn.edu/jwolfers/Papers/InterpretingPredictionMarketPrices.pdf>) Justin Wolfers (Wharton) and Eric Zitzewitz (Stanford)
10. ^ ^{a b} David M. Pennock, Steve Lawrence, C. Lee Giles & Finn Årup Nielsen (February 2001). "The real power of artificial markets" (<http://artificialmarkets.com/am/pennock-2001-science.pdf>) (PDF). *Science* **291**

- (5506): 987–988. doi:10.1126/science.291.5506.987 (<http://dx.doi.org/10.1126%2Fscience.291.5506.987>) . PMID 11232583 (<http://www.ncbi.nlm.nih.gov/pubmed/11232583>) . <http://artificialmarkets.com/am/pennock-2001-science.pdf>.
11. ^ *a b* "Prediction Markets: Does Money Matter?" (http://www.newsfutures.com/pdf/Does_money_matter.pdf) Servan-Schreiber (Electronic Markets, 2004)
 12. ^ Douglas Hubbard "How to Measure Anything: Finding the Value of Intangibles in Business" John Wiley & Sons, 2007
 13. ^ manipulation2.dvi (<http://hanson.gmu.edu/biastest.pdf>)
 14. ^ David Schneider-Joseph - Ideas Futures Exchanges (http://www.davidsj.com/post.php?id=103_0_1_0_C5)
 15. ^ [1] (<http://www.stockmarket-predictions.com/>) Stock Market Strategies

Further reading

- Bell, Tom W. Prediction Markets For Promoting the Progress of Science and the Useful Arts (<http://www.law.gmu.edu/gmulawreview/issues/14-1/documents/BELL-FinalFormatted.pdf>) - PDF file - *George Mason Law Review* (14 Geo. Mason L. Rev 37) (2006)
- Berg, Joyce E., & Thomas A. Rietz. The Iowa Electronic Market: Lessons Learned and Answers Yearned (<http://www.biz.uiowa.edu/faculty/trietz/papers/AEI-Brookings.pdf>) - PDF file - 2005-01-00
- Erikson, Robert S., & Christopher Wlezien. "Are Political Markets Really Superior to Polls as Election Predictors?" *Public Opinion Quarterly* 72(2), Summer 2008, pp. 190–215.
- Gjerstad, Steven. "Risk Aversion, Beliefs, and Prediction Market Equilibrium," (http://econ.arizona.edu/downloads/working_papers/Econ-WP-04-17.pdf) University of Arizona Working Paper 04-17, 2005.
- "Gruca, Thomas S., Berg, Joyce E. & Cipriano, Michael (2005). Consensus and Differences of Opinion in Electronic Prediction Markets." (<http://www.informaworld.com/openurl?genre=article&issn=1019-6781&volume=15&issue=1&spage=13>) "Electronic Markets" (<http://www.electronicmarkets.org>) , 15 (1), 13-22. DOI: 10.1080/10196780500034939
- Hanson, Robin. The Informed Press Favored the Policy Analysis Market (<http://hanson.gmu.edu/PAMpress.pdf>) - PDF file - 2005-05-05
- Manski, Charles F. Interpreting the Predictions of Prediction Markets (http://www.aeaweb.org/annual_mtg_papers/2006/0106_1015_0703.pdf) - PDF file - Revised Aug 2005—Manski suggests that there needs to be a better theoretic basis for interpreting market prices as probability, and provides a simple model for this.
- "Rosenbloom, E. S. & Notz, William (2006). Statistical Tests of Real-Money versus Play-Money Prediction Markets." (<http://www.informaworld.com/openurl?genre=article&issn=1019-6781&volume=16&issue=1&spage=63>) "Electronic Markets" (<http://www.electronicmarkets.org>) , 16 (1), 63-69. DOI: 10.1080/10196780500491303
- "Servan-Schreiber, Emile, Wolfers, Justin, Pennock, David M. & Galebach, Brian (2004). Prediction Markets: Does Money Matter?" (<http://www.informaworld.com/openurl?genre=article&issn=1019-6781&volume=14&issue=3&spage=243>) "Electronic Markets" (<http://www.electronicmarkets.org>) , 14 (3), 243-251. DOI: 10.1080/1019678042000245254
- Spann, Martin & Skiera, Bernd. "Internet-Based Virtual Stock Markets for Business Forecasting" (http://www.ecommerce.wiwi.uni-frankfurt.de/typo3/uploads/tx_ecompuplications/Spann_Skiera_Inernet-based_virtual_stock_markets.pdf) - PDF file - Discusses theory, design options and presents empirical comparisons on forecasting accuracy of prediction markets
- Wolfers, Justin, & Eric Zitzewitz. Prediction Markets (<http://bpp.wharton.upenn.edu/jwolfers/Papers/Predictionmarkets.pdf>) - PDF file - 2004-05-00
- Wolfers, Justin, & Eric Zitzewitz. Interpreting Prediction Market Prices as Probabilities (<http://bpp.wharton.upenn.edu/jwolfers/Papers/InterpretingPredictionMarketPrices.pdf>) - PDF file - Draft version 2007-01-08 - Expands on the work of Manski, providing a more general model

wherein it is somewhat rational to interpret market prices as probabilities

- Watkins, Jennifer H. Prediction Markets as an Aggregation Mechanism for Collective Intelligence (<http://repositories.cdlib.org/hcs/WorkingPapers2/JHW2007>) - Proceedings of 2007 UCLA Lake Arrowhead Human Complex Systems Conference, Lake Arrowhead, CA, 25-29 April 2007.

External links

- IIF's SIG on Prediction Markets (<http://www.forecastingprinciples.com/marketsforforecasting/>)
- Group Blog On Prediction Markets (<http://www.midasoracle.org/>)
- The Journal Of Prediction Markets (<http://www.predictionmarketjournal.com/>)
- BetFair Predicts - Betfair's Prediction Market Blog (<http://predicts.betfair.com/>)

Retrieved from "http://en.wikipedia.org/wiki/Prediction_market"

Categories: [Prediction markets](#) | [Social information processing](#)

- This page was last modified on 6 April 2010 at 04:01.
- Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. See Terms of Use for details.
Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.