Policy Brief

Pricing Political Risks with Prediction Markets

Justin Wolfers

In mid-2003, press reports began to surface of a project within the Defense Advanced Research Projects Agency (DARPA) to establish a Policy Analysis Market. The DARPA proposal was a natural application of an emerging body of economic research suggesting that markets aggregate information efficiently, and that the profit motive provides powerful incentives for traders to discover new sources of information. The implication — if markets assess risk efficiently — is that market prices provide useful indicators of the likelihood of specific events. And beyond usual financial markets, perhaps these prediction markets can be used to assess the likelihood of a wide range of risks, including geopolitical events.

Sensationalist headlines dubbed the proposed DARPA markets "Terrorism Futures," and the resulting furor forced the administration to abandon the project and led to pressure for the resignation of DARPA department head John Poindexter.

Ironically, the aftermath of this episode provided a vivid illustration of the power of markets to provide information about probabilities of future events. An offshore betting exchange, TradeSports.com, listed a new security that paid $100 if Poindexter were ousted by the end of August 2003. Early trading suggested a likelihood of resignation by the end of August of 40 percent, and price fluctuations reflected ongoing news developments. Around lunchtime on July 31, reports started citing credible Pentagon insiders who claimed knowledge of an impending resignation. Within minutes of this news first surfacing (and hours before it became widely known), the price spiked to around $80. These initial reports left the date of Poindexter's proposed departure uncertain, which explains the remaining risk. As August dragged on, the price slowly fell back toward $50. On August 12, Poindexter issued a letter of resignation suggesting that he would resign on August 29. On the 12th, the market rose sharply, closing at a price of $96.

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This anecdote describes a new — and emerging — form of financial markets called "prediction markets." These markets are similar to existing financial markets in that participants trade in contracts whose payoffs depend on future events, but they differ in that there are likely very few traders with an obvious desire to use these markets to transfer their risk exposure (in the case above, few beyond the Poindexter family). Indeed, the main purpose of these securities is that the price — usually a by-product of financial trading — reveals market expectations of the likelihood of an event occurring.

Much of the enthusiasm for prediction markets derives from the efficient markets hypothesis. In a truly efficient prediction market, the market price will be the best predictor of likelihood of an event occurring, and no combination of available information can be used to improve on the market-generated forecasts. While this hypothesis has typically been applied to standard financial contracts, our research suggests that it (roughly) applies to prediction markets focusing on outcomes from the box office success of specific movies, to the probability of war in Iraq, to the possibility that the Red Sox will (eventually!) win the World Series, to the forthcoming presidential election.

Empirically, these markets have been just as much of a success as theory predicts. Want to figure out the likely winning margin on the next Stanford game? Research on sports betting suggests that the Vegas line is the place to look. Want to predict next month's non-farm payrolls numbers? Forget the analysts-take a look at the latest trading at www.economicderivatives.com. What about the future federal funds rate? Try the CBOE. Or the opening box office take of Spider-Man 2? You can bet that the latest prices on the Hollywood Stock Exchange (www.hsx.com) will be a useful guide. Or for predicting a range of events from the Kobe Bryant trial to the next retirement from the Supreme Court, try www.intrade.com. New firms, including www.newsfutures.com, are even setting up trading markets within firms, so that management can have access to the widely dispersed information that may exist within their companies about future sales, regulatory actions or likely product success.

Some of the best developed evidence on the power of prediction markets comes from political markets set up by the University of Iowa. These markets have been running since 1988 and have maintained a record of prediction accuracy much better than that of the Gallup polls. In some sense, this shouldn't be surprising — traders in political markets have access to published Gallup polls.
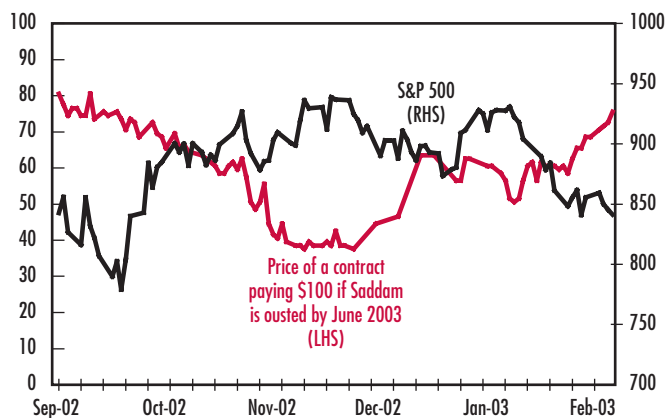
Interestingly, recent research by Koleman Strumpf and Paul Rhode suggests that the idea of using markets to price political risk is not that new after all. Indeed, election betting predates polling. Press reports of elections around the turn of the century focused on informal betting markets on Wall Street to take the pulse of presidential campaigns. And historical research confirms the predictive accuracy of these Wall Street betting markets. Indeed, as early as 1924, the New York Times, citing the "old axiom in the financial district that Wall Street betting odds are 'never wrong,'" understood that the efficient markets hypothesis was equally as powerful in the political domain.

Of course, before relying on these market prices, it is worth thinking about the possibility for manipulation. While this is surely an issue, Strumpf and Rhode report that attempts by the big party bosses to manipulate these betting markets usually failed and resulted simply in party bosses losing money. More controlled experiments in the Iowa political markets also have suggested that attempts to manipulate political markets have — at best — fleeting effects. Of course, this is not to say that such markets are manipulation proof, and indeed, we might think that as they become more important, the returns to market manipulation may rise.

While prediction is useful, the more important question is whether these markets can be used to guide decisions. I am willing to bet they are.

Figure 1 shows a salient example relating stock market responses to ongoing equivocation about whether to invade Iraq through late 2002 and early 2003. Through this period I tracked the price of a security on a prediction market that paid $100 if Saddam Hussein were ousted by June 2003. The chart shows quite clearly that as the likelihood of war rose in December/January, the S&P 500 fell, suggesting that traders perceived the war as likely to be a substantial drag on the economy. Surely these market reactions should have given President Bush some pause before he eventually decided to invade.

Figure 1. Saddam Security and the S&P 500

So what do these markets have to say about Election 2004? My own favorite markets are run by www.intrade.com (also known as TradeSports), where so far over $3 million has changed hands. According to the latest estimates (early June 2004), this election looks like an extremely close race, with the punters betting that Bush has only a 57 percent chance to hang on — an extremely low assessment for an incumbent president. Intrade also has established novel markets on the Electoral College, state-by-state. These markets suggest that Florida, Iowa, Missouri, Nevada, New Hampshire, New Mexico, Ohio, Oregon, Pennsylvania and Wisconsin are the key battleground states in Election 2004.

We also have been working with Intrade to create a novel set of contingent securities, which may have more direct implications for policymakers. For instance, we were interested in the extent to which market participants perceive President Bush's re-election prospects to being contingent on succeeding in the hunt for Osama Bin Laden. In early trading, a contract that pays $100 if Bush is re-elected and Osama captured by November was priced at around $20.80. Separate (unconditional) markets on the fate of Bin Laden suggested a 27 percent chance that Osama would be captured before the election. Combining these two facts suggests that if Osama is captured, the market believes Bush to have a 77 percent chance to win the election. Combining this finding with the fact that Bush is rated a 57 percent chance to win (overall), implies that if Osama remains at large, President Bush's chances of re-election fall to 50 percent. While this example is rather speculative, at the very least it is suggestive of new ways in which we might learn about market expectations of the likely effects of actions-even actions that are yet to occur.

The power of prediction markets derives from three simple forces. First, by forcing you to "put your money where your mouth is," they yield truthful revelation of beliefs. Second, markets provide profit opportunities for those willing to gather new information that helps predict the future. And third, markets aggregate information dispersed across many traders.

Political risk is an important issue for economists, policymakers in Washington, D.C., and business executives. Prediction markets provide a simple, clear and accurate way to assess these risks, and we expect to see their use continue to grow over the next decade. Perhaps it won't be occurring within the Defense Department, but I bet that it will occur.

About the Author

Justin Wolfers is an Assistant Professor of Economics at Stanford GSB, a faculty research fellow at the National Bureau of Economic Research, and a visiting scholar at the Federal Reserve Bank of San Francisco. He earned his PhD from Harvard in 2001. Wolfers is active in research in labor, macro, political economy and prediction markets, and a frequent contributor to the public debate. In 2004, he will be at the Wharton School.

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