

Executive Summary

How can groups elicit and aggregate the information held by their individual members? There are three possibilities. Groups might use the statistical mean of individual judgments; they might encourage deliberation; or they might use information markets. In both private and public institutions, deliberation is the standard way of proceeding; but for two reasons, deliberating groups often fail to make good decisions. First, the statements and acts of some group members convey relevant information, and that information often leads other people not to disclose what they know. Second, social pressures, imposed by some group members, often lead other group members to silence themselves because of fear of disapproval and associated harms. Hence deliberation often produces a series of unfortunate results: the propagation of errors, hidden profiles, cascade effects, and group polarization. A variety of steps should be taken to ensure that deliberating groups obtain the information held by their members. Information markets have substantial advantages over group deliberation; such markets count among the most intriguing institutional innovations of the last quarter-century and should be used far more than they now are. These points bear on discussion of normative issues, in which deliberation might also fail to improve group thinking, and in which identifiable reforms could produce better outcomes.

“Increased accuracy is a common justification for using groups, rather than individuals, to make judgments. However, the empirical literature shows that groups excel as judges only under limited conditions. . . . [G]roups performing tasks that involve solutions that are not easily demonstrable tend to perform at the level of their average members.”⁷

“The presumption that Iraq had active WMD programs was so strong that formalized [Intelligence Community] mechanisms established to challenge assumptions and ‘group think,’ such as ‘red teams,’ ‘devil’s advocacy,’ and other types of alternative or competitive analysis, were not utilized.”⁸

“Sometimes important forecasts are made in traditional group meetings. This . . . should be avoided because it does not use information efficiently. A structured approach for combining independent forecasts is invariably more accurate.”⁹

⁷ See Daniel Gigerenzer and Reid Hastie, Proper Analysis of the Accuracy of Group Judgments, 121 *Psych. Bulletin* 149 (1997).

⁸ Select Committee on Intelligence, United States Senate, Report of the U.S. Intelligence Community’s Prewar Intelligence Assessments on Iraq, Conclusions, at 7.

⁹ J. Scott Armstrong, Combining Forecasts, in *Principle of Forecasting* 417, 433 (J. Scott Armstrong ed. 2001).

Self-silencing is partly a product of social norms – of a sense that people will be punished, rather than rewarded, for disclosing information that departs from the group’s inclination. It should be easy to see that groups can aggravate or eliminate this effect. If consensus is prized, and known to be prized, then self-silencing will be more likely. If the group is known to welcome new and competing information, then the reward structure will be fundamentally different. Evidence for this claim comes from experiments that “primed” people by asking them to engage in a prior task that involved either “getting along” or “critical thinking.” Primed by a task that called for critical thinking, people were far more likely to disclose what they know, and there was a quite substantial effect on hidden profiles.¹⁸³ The general lesson is that if norms favor disclosure of privately held information, then self-silencing will be significantly reduced; deliberation is likely to benefit as a result.

5. Information Markets

Deliberation is one way to aggregate the information held by group members; another way is to rely on the price signal, which has a similar aggregative function.¹⁸⁴ And if an emphasis is placed on the information-aggregating properties of markets, it would seem plain that if we are attempting to improve on the answer produced by statistical means and deliberating groups, we might consider an increasingly popular possibility: *Create a market*.¹⁸⁵ Information markets have proved remarkably success at forecasting future events; they seem to do far better, in many domains, than deliberating groups.

A central advantage of information markets is that they impose the right incentives for people to disclose the information that they hold. Because investments are generally not disclosed to the public, investors need not fear reputational sanctions if, for example, they have

¹⁸³ Stasser and Titus, *supra* note, at 143.

¹⁸⁴ See F.A. Hayek, *The Use of Knowledge in Society*, 35 *Am Econ Rev* 519 (1945). For discussion of information markets (sometimes called prediction markets), see Joyce Berg et al., *Results from a Dozen Years of Election Futures Markets Research*, in *Handbook of Experimental Economic Results* (Charles Plott and Vernon Smith eds 2003); R. Forsythe et al., *Anatomy of an Experimental Political Stock Market*, 82 *Am Econ Rev* 1142 (1992); Joyce Berg et al., *What Makes Markets Predict Well? Evidence from the Iowa Electronic Markets*, in *Understanding Strategic Interaction* (W. Albers et al. eds. 1997); R. Forsythe et al., *Wishes, Expectations, and Actions: Price Formation in Election Stock Markets*, 39 *J Econ Behavior and Org* 83 (1999).

¹⁸⁵ For valuable overviews, see Justin Wolfers and Eric Zitzewitz, *Prediction Markets*, 18 *J Econ Persp* 107 (2004); Michael Abramowicz, *Information Markets, Administrative Decisionmaking, and Predictive Cost-Benefit Analysis*, 71 *U Chi L Rev* 933 (2004); Saul Levmore, *Simply Efficient Markets and the Role of Regulation*, 28 *J Corp Law* 589 (2003).

predicted that a company's sales will be low or that a certain candidate will be elected president. And because people stand to gain or lose from their investments, they have a strong incentive to use (and in that sense to disclose) whatever private information they hold. The use of that information will be reflected in the price signal. Of course investors, like everyone else, are subject to the informational pressure imposed by the views of others. But a market creates strong incentives for revelation of whatever information people actually hold. For small groups, of course, information markets are likely to be too "thin" to be useful: a certain number of investors is required to get a market off the ground.¹⁸⁶ In many contexts, however, private and public organizations might use markets as a complement to or even a substitute for deliberation.

Practice and Evidence

An abandoned initiative

In many imaginable markets, people might make claims about facts, or predictions about the future, and they might stand to gain or lose from their predictions. In the summer of 2003, analysts at the Department of Defense built directly on this idea.¹⁸⁷ To predict important events in the world, including terrorist attacks, they sought to create a kind of market in which ordinary people could actually place bets. The proposed Policy Analysis Market would have allowed people to invest in their predictions about such matters as the growth of the Egyptian economy, the death of Yasser Arafat, the military withdrawal of the United States from specified nations, and the likelihood of terrorist attacks in the United States. Investors would have won or lost money on the basis of the accuracy of their predictions.

Predictably, the Policy Analysis Market produced a storm of criticism. Ridiculed as "offensive" and "useless," the proposal was abandoned. Senator Tom Daschle called the market "a plan to trade in death" and boldly claimed that the plan was "the most irresponsible, outrageous and poorly thought-out of anything that I have heard the administration propose to date."¹⁸⁸ Senator Byron Dorgan argued that "it is morally bankrupt for a government agency to make a profitable game out of the deaths of American troops, heads of state, and nuclear missile

¹⁸⁶ But see Levmore, *supra* note (showing considerable success even within quite thin markets).

¹⁸⁷ See Justin Wolfers and Eric Zitzewitz, Prediction Markets, 18 *J Econ Persp* 107 (2004).

¹⁸⁸ R. Bailey, Betting on Terror, *Reason Online*, <http://www.reason.com/rb/rb073003.shtml>

attacks.”¹⁸⁹ A private Policy Analysis Market, specializing in the Middle East, was promised in 2003, but it did not go forward.¹⁹⁰

Amid the war on terrorism, why was the Defense Department so interested in the Policy Analysis Market? The answer is simple: it wanted to have some help in predicting geopolitical events, including those that would endanger American interests, and it believed that a market would provide that help. It speculated that if a large number of people could be given an incentive to aggregate their private information, in the way that the Policy Analysis Market would do, government officials would learn a great deal. Apparently it believed that such a market would provide an important supplement to deliberative processes within government and without.¹⁹¹

Iowa Electronic Markets

Does this idea seem fanciful? Since 1988, the University of Iowa has run the Iowa Electronic Markets (IEM), which allow people to bet on the outcome of presidential elections. Originally the IEM allowed people to trade only in the expected fraction of the popular vote to be obtained by presidential candidates.¹⁹² Securities were offered that would pay \$2.50 multiplied by the specified candidate’s share of the vote. If, for example, George H.W. Bush received 50% of the vote, then the shareholder would receive \$1.25. Shares could be bought and sold until the day before the election. Since their opening, the IEM have expanded from these modest roots. In the recent past, traders have been able to bet on the market capitalization that Google will achieve in its initial public offering, the price of Microsoft stock at a future date, and Federal Reserve monetary policy, in addition to betting on American elections.¹⁹³

For presidential elections—still the most popular markets that IEM operates—traders can now choose from two types of markets.¹⁹⁴ In a “winner-take-all” market, traders win \$1 for each future in the winning candidate that they own and nothing for shares of the losing candidate. In a “vote-share” market, traders in “candidate futures” win \$1 multiplied by the proportion of the

¹⁸⁹ B. Dorgan, *The Pentagon’s Ill-Conceived Market*, *Wash. Post*, Aug. 7, 2003 at A20.

¹⁹⁰ For a replicate of the site, see <http://www.ratical.org/ratville/CAH/linkscopy/PAM/>

¹⁹¹ See Wolfers and Zizewitz, *supra* note.

¹⁹² See Joyce Berg et al., *Accuracy and Forecast Standard Error of Prediction Markets* (July 2003 working paper).

¹⁹³ See <http://www.biz.uiowa.edu/iem/markets/>

¹⁹⁴ See *id.*

to make foolish investments in any market, including prediction markets.²³³

In particular contexts, the problems are worse still. Consider the problem of “terrorism futures.” It would be extremely valuable to aggregate privately held information about the risk and location of any attack. But do likely investors actually provide helpful information? Thomas Rietz, a director of the Iowa Electronic Markets, argued that terrorism and world events were fundamentally different from other contexts in which markets have successfully predicted future events.²³⁴ When betting on presidential elections, people can use their network of friends, family, and co-workers to form an opinion; but for most investors, there are no such sources of information for terrorist activity. Another skeptic worried that the market would allow the wealthy to “hedge” against the possibility of terrorist activity, while ordinary Americans would remain vulnerable to this threat.²³⁵ In this view, “terrorism futures” could operate as an insurance market that would not serve its purpose of providing information. In any event government use of the resulting information could be self-defeating, at least if the information were made public. Terrorists would know the anticipated time and location of attacks, and also know that the government was aware of this – which would make it most unlikely that the prediction would turn out to be accurate. Where the event’s occurrence is endogenous to the outcome of the information market, there is reason for skepticism about its likely performance, certainly if relevant actors have much to lose if the market turns out to be correct.²³⁶

But many policy issues, including those potentially involved in the now-defunct Policy Analysis Market, did not have this feature. Consider, for example, the question whether the Egyptian economy is likely to grow in the next year, or whether Yasser Arafat will lead the Palestinian Authority by the end of 2005. Perhaps many investors will lack a great deal of information on such questions, but it is most unlikely that the market prediction will turn out to be self-defeating. The Policy Analysis Market itself raises many questions and doubts. The broader point is that in many domains, information markets are extremely promising, and likely to outperform both statistical means and the products of group deliberation. At a minimum, such markets should be used, where feasible, as an adjunct to deliberative processes.

²³³ See Robert Schiller, *Irrational Exuberance* (2001).

²³⁴ C. Biever and D. Carrington, Pentagon cancels futures market on terror, *New Scientist Online*, <http://www.newscientist.com/news/news.jsp?id=ns99994007>

²³⁵ J. Stiglitz, Terrorism: There’s No Futures in It, *L.A. Times*, July 31, 2003 at ??; available at <http://www.commondreams.org/views03/0731-08.htm>

²³⁶ See Richard Posner, *Catastrophe: Risk and Response* (forthcoming 2004).