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Government Prediction Markets: Why, Who, and How

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Abstract

This paper describes how prediction markets can make governments smarter, cheaper, and more responsive to changing

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conditions. A prediction market resembles a stock exchange where traders buy and sell not shares of companies, but claims about various future events. Academic and commercial use of prediction markets indicates that they offer a useful tool for encouraging, collecting, and quantifying widely scattered expertise. Government administrators have begun experimenting with prediction markets, too. Many questions remain, however, about the proper way to implement government prediction markets. This paper opens with a brief survey of the costs and benefits of government prediction markets. It then turns to ironing out the statutory and regulatory wrinkles occasioned by government prediction markets in general, and by federal executive prediction markets in particular. The paper begins by asking who should run government prediction markets and who should trade on them. The short answers: Government agencies should outsource the provision of prediction markets and let employees and outside contractors trade on them. The paper then turns to mitigating the legal risks raised by government prediction markets—especially those offering cash or other valuable consideration—and advocates such prophylactics as hosting spot transactions in negotiable conditional notes, offering traders seed funding, and contractually mandating a minimum level of trading. The paper concludes by describing a three-step plan for putting prediction markets to work for the United States government and, through it, the People.

INTRODUCTION: TOWARD SMARTER GOVERNMENT

Good government requires good information. However, the United States government too often relies on expensive and ineffectual forecasting mechanisms. Consider the revolution that recently erupted in Egypt: Despite having poured over $125 million into a computer model designed to warn of political unrest, American military and intelligence agencies evidently got caught flat-footed.[1] Our government can do better. Prediction markets, because they collect and quantify relatively accurate estimates about the likelihood of future events, offer a promising solution to the problem of government ignorance. This paper explains why prediction markets deserve a try, who should build, manage, and trade on them, and how the U.S. federal government's executive branch could constitutionally implement them.

1. Noah Shachtman, *Pentagon's Prediction Software Didn't Spot Egypt Unrest*, WIRED (February 11, 2011), http://www.wired.com/dangerroom/2011/02/pentagon-predict-egypt-unrest/.

What are prediction markets? Not markets *for* predictions but rather markets that *make* predictions. First, a very brief description of prediction markets. In prediction markets, traders buy and sell notes payable at $1/each if a specified claim about the future comes true.[2] As with the instruments traded on securities or commodities futures markets, the price of a claim on a prediction market tracks the consensus, among traders with strong incentives to make accurate estimates, about present value.[3] If a claim traded at close to its face value of $1/note, therefore, the market would reveal a consensus among traders about the claim's truth.[4]

Private enterprises have already put prediction markets to work in forecasting printer sales, software development, and other applications.[5] Field research of such uses suggests that, while hardly a magic crystal ball, a well-designed prediction market can efficiently generate up-to-date, unbiased numbers about the likelihood of future events.[6] The public sector, no less than the private one, could benefit from such a tool.

Indeed, government agencies have already begun experimenting with prediction markets. In 2001, the Department of Defense's blue-sky research agency, DARPA, planned to sponsor prediction markets on questions of military interest, but scuttled the program for political reasons before its launch.[7] In 2009, the National Science Foundation issued a grant to Wilson Center to set up prediction markets pertaining to synthetic biology.[8] Most recently, and most relevant to this paper's focus, the Office of the Director of National Intelligence launched a program to explore how prediction markets can serve the federal

2. Other units or denominations would work too, of course; I use $1 by convention and for simplicity.

3. For descriptions of prediction markets, see JAMES SUROWIECKI, THE WISDOM OF CROWDS 17-22 (2004); Justin Wolfers & Eric Zitzewitz, *Prediction Markets*, J. ECON. PERSP., Spring 2004 at 107 (2004).

4. ROBIN HANSON, IMPLEMENTING COLLABORATIVE FORECASTING IN GOVERNMENT (Science & Technology Policy Institute 2011) (forthcoming).

5. Robert W. Hahn & Paul C. Tetlock, *A New Approach for Regulating Information Markets*, 29 J. REG. ECON. 265, 266 (2006).

6. CASS R. SUNSTEIN, INFOTOPIA: HOW MANY MINDS PRODUCE KNOWLEDGE 103-145 (Oxford Univ. Press 2006).

7. For more about the Policy Analysis Markets, *see infra* § 3.1.

8. *Synthetic Biology Project Receives Two National Science Foundation Grants*, SYNTHETIC BIOLOGY PROJECT (Sept. 22, 2009), http://www.synbioproject.org/news/project/6379/. This project has not yet evidently generated any results. National Science Foundation, *Award Abstract #0960533: Prediction Markets—An Experimental Application to Synthetic Biology* (Aug. 17, 2009), http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0960533&version=noscript (last visited Aug. 30, 2010). It is not yet clear whether it will use play or real money.

government.[9] Plainly, we can expect interesting days ahead for government prediction markets.

Prediction markets offer administrators just one more among many bureaucratic tools, one not fundamentally different from filing cabinets, interoffice memos, or employee identification badges. As such, prediction markets might find use in any branch of federal or state government. Judging from former and present experiments, however, as well as for sound legal reasons, it looks most likely that we will see government prediction markets used in the federal executive branch.[10]

A quick example can help to illustrate how a government agency might put prediction markets to work. At present, the Department of Defense (the "DoD") struggles to predict the cost of weapons procurement programs. This proves especially unfortunate when, as happens far too often, a program runs so far over budget that it triggers a breach of the Nunn-McCurdy Amendment to the 1982 Defense Procurement Act, an outcome that entails considerable administrative burdens and that may even lead to the program's cancellation.[11] Although the Nunn-McCurdy Amendment responds to a breach by mandating updated and presumably more accurate estimates, that hardly solves the problem of how to generate accurate estimates in the first place. On that count, prediction markets might help.

The DoD might, for instance, set up a prediction market for the claim, "The VXX Presidential Helicopter Program will trigger a Nunn-McCurdy breach." The DoD would allow—or better yet require—that government and contract employees working on the program trade on the VXX breach claim.[12] The employees would then use their first-hand knowledge of the program to buy or sell virtual conditional notes worth $1, or some play-money equivalent, if the claim were to come true.

Judging from the VH-71 Presidential Helicopter Program, the failed predecessor to the VXX program now proposed, another Nunn-McCurdy

9. *See Aggregative Contingent Estimation Program Broad Agency Announcement*, OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE (May 19, 2010), http://www.iarpa.gov/solicitations_ace.html. For a description of how they plan to use prediction markets to meet ACE's goals, see Good Judgment Team, *The Good Judgment Team Invites You to a 2011 Prediction Tournament*, http://surveys.crowdcast.com/s3/ACERegistration (last visited March 9, 2011). Effectively, the Good Judgment Team does not plan offer valuable consideration to reward good trades.

10. The president's obligations as Commander in Chief of the military, in particular, make it both prudent and constitutional for the executive branch to employ prediction markets. *See* U.S. CONST., Art. II, § 2, cl. 1.

11. 10 U.S.C.A. § 2433 (West 2011).

12. For more about why the DoD should *require* trading, see *infra* §§ 3.1, 4.2.

breach looks all too likely.[13] Suppose, then, that the VXX breach claim traded at 82¢ per note. That price would reflect the current consensus, among people most likely to know, about the probability that the VXX program would suffer a Nunn-McCurdy breach. In particular, a price of 82¢ per note would equate to a forecast of an 82% chance of a breach—alerting the program's managers and (not inconsequentially) their superiors to a looming problem. Why? Because that would reveal traders willing to pay 82¢ for a chance of winning $1 in the event of a VXX breach. A drop in price would show that traders think breach less likely, making the investment less valuable. A rise in price would signal the opposite opinion, of course.

Even though many details remain unfilled in that quick sketch, it reveals why a government agency might benefit from trying prediction markets. By directly tapping the expertise of the sort of people, such as engineers, production managers, or line workers, who have first-hand knowledge of when a weapons procurement program faces a potential cost overrun, a prediction market could give the DoD and other executive branch agencies faster, cheaper, and more accurate estimates than current methods. Program managers at the Department of Defense could spend less time forecasting performance and more time actually performing. Higher-ups could quickly drill down through layers of management to get an update on the status of any particular weapon procurement program; computers throughout the Executive Branch could host desktop widgets that track going prices on a wide variety of government prediction markets. This automated mechanism for generating forecasts would lower program-monitoring costs and encourage more efficient governance. The President could track progress on the VH-71/VXX with a single number from a trusted aide, for instance, or even with a quick glance at the executive smartphone.

This paper discusses how to implement prediction markets in government. Other papers address the costs and benefits of prediction markets in general.[14] Here, the focus falls on ironing out the administrative and legal wrinkles of government prediction markets. Because the federal government has only just begun experiments in the field, many nuts-and-bolts questions remain unresolved. Section 1 asks who should run government prediction markets and offers three options,

13. JEREMIAH GERTLER, CONG. RESEARCH SERV., RS 22103, VH-71/VXX PRESIDENTIAL HELICOPTER PROGRAM: BACKGROUND AND ISSUES FOR CONGRESS 6-7 (2009), *available at* http://www.fas.org/sgp/crs/weapons/RS22103.pdf.

14. HANSON, *supra* note 4; SUNSTEIN, *supra* note 6; Hahn & Tetlock, *supra* note 5; Emile Servan-Schreiber et al., *Prediction Markets: Does Money Matter?* 14 ELECTRONIC MARKETS 243 (2004), *available at* http://bpp.wharton.upenn.edu/jwolfers/Papers/DoesMoneyMatter.pdf.

describing the distinctive costs and benefits of each. Section 2 turns to another question about government prediction markets: Who should trade on them? Again, the answer comes in three flavors: government employees, pre-approved experts, or the public at-large. Section 3 discusses the legal issues raised by prediction markets—especially those offering cash or valuable prizes to winners—and surveys some potential legal remedies. Section 4 describes a three-step plan for putting prediction markets to work for the United States government and, through it, the People.

Who Trades? / Who Runs?	**Government Employees**	**Approved Experts**	**The Public**
Private Sector	Security risks + under-informed trading/cheap.	Policing costs/cheap + somewhat informed trading.	Less government control/cheap + many and diverse traders.
Outsource	Contracting costs + under-informed trading/low legal risk.	Contracting costs/low legal risk + informed traders.	Contracting costs + notable legal risk/many and diverse traders.
In-House	Costly provision + under-informed trading/low legal risk.	Costly provision + moderate legal risk/informed traders.	Costly provision + notable legal risk/many and diverse traders.

Table 1: Relative Cost/Benefit Ratios of Various Types of Real-Money Government Prediction Markets

Table 1, above, summarizes these results by showing the ratios of relative cost to relative benefits for various versions of real-money government prediction markets. As a quick guide to the best options, the table uses darker shading to designate higher (and thus worse)

cost/benefit ratios and lighter shades to designate lower, better ones. The three white cells running from the table's center left side, through the table's center, ending in the upper right-hand corner mark the optimal path for putting real-market prediction markets into government service: starting with prediction markets run by outside contractors and traded on only by government employees, opening such markets to approved experts from outside the government, and concluding in a world where the private sector offers a variety of prediction markets, covering claims of particular interest to the government as well as other claims, open to anyone willing to take a shot at forecasting the future.

Because prediction markets seem likely to improve the efficiency of government processes and do not seem likely to impose net costs on the public, they merit at least a trial run. Cass Sunstein (then a law professor, now Administrator of the Office of Information and Regulatory Affairs) put the case for prediction markets this way:

> [I]n many cases, private or public institutions might create markets to provide information on crucial questions; and public institutions might take that information into account in making judgments about policy. . . . Prediction markets need not be a substitute for deliberation. But if deliberators choose to ignore what they say, they ought to have a good reason for doing so.[15]

Prediction markets do not offer a crystal ball to the future, of course, and nothing guarantees that their costs will outweigh their benefits.[16] In particular, government prediction markets raise thorny administrative and legal questions. This paper answers such questions, showing that well designed prediction markets offer a cost-effective and legal way to improve public deliberation.

1. WHO SHOULD PROVIDE GOVERNMENT PREDICTION MARKETS?

Those who set up and run government prediction markets will face a number of design choices, some of which raise legal ramifications. Who will define the claims traded on a government prediction market? Can such a market legally reward successful traders with cash payments or other valuable prizes? For answers to those questions, see Sections 2 and 3, respectively, below. This Section addresses a preliminary question: Who should set up and run government prediction markets?

Even if they offer a more cost-effective way to generate forecasts than such alternatives as face-to-face meetings or committee reports,

15. SUNSTEIN, *supra* note 6, at 120.

16. Sharad Goel et al., *Prediction Without Markets*, YAHOO! RESEARCH (2010), http://www.research.yahoo.com/files/goel-ec-2010-prediction-without-markets.pdf (last visited August 5, 2010).

prediction markets cannot run themselves. Somebody has to set them up, choose which claims will be traded, and so forth. Though computer automation helps to lighten some of these burdens, it also creates problems that call for specialized technical solutions. Where should government administrators turn when they want to implement prediction markets? Three options look most plausible:

- Authorize government employees to set up and operate in-house prediction markets;
- Contract with private parties to create prediction markets in or for government; or

- Open public trading in claims of particular interest to the government by clarifying their legality (and perhaps subsidizing them).

The choice between the first two options largely boils down to simple expediency—who can do the job most efficiently—subject to some generally applicable administrative limits on government contracting, discussed below. Under the third option, where private parties do all of the work, the government would simply clear the way for others—designated experts or members of the public at-large—to offer and trade on certain pre-approved claims. To win the benefits of such markets, the government would generally need to do little more than stand back and monitor prices, though it might also sponsor claims so that they address specific questions and attract high trading volumes. That approach offers the virtue of administrative efficiency, but real-money markets designed along such lines would also raise some legal issues.[17]

1.1. In-House Prediction Markets

Just as government agencies sometimes rely on in-house services, such as computer support, photocopying, or internal mail systems, so too might they set up and run their own prediction markets. Should they? Here, as usual, a number of factors decide the question of whether a government agency should give its employees the risks and burdens of operating prediction markets, including:

- The costs of in-house government prediction markets compared to private alternatives (higher, most likely);

17. *See infra* § 4.

- The benefits of maintaining tight control over the operation of government prediction markets (important, if at all, only for claims that implicate national security); and

- The laws or policies that encourage or require contracting out nonessential government services (which will vary across government institutions and administrations).

Deciding whether government agencies should set up and run their own prediction markets thus depends on several questions of fact. Answers to those questions would prove elusive in any event, requiring careful research into the minutiae of bureaucratic finances and careful comparison of many different private prediction market providers. Each agency will have its own experts in such matters. Furthermore, nailing down the numbers on such questions will not help for long; the prediction market industry continues to grow and develop, presenting government administrators with a moving target (albeit one that fairly dependably trends, thanks to competition and experience, towards greater efficiency over time).

Given those uncertainties, we must turn to generalities. Government agencies may have many virtues, but speed and economy do not generally number among them. In this particular case, moreover, the government's own rules against conditionally transferring money across agency lines would rule out setting up a single, centralized prediction market that all federal agencies could tap, thwarting economies of scale.[18] If each agency has to fund its own prediction market, it seems likely that keeping the operation of government prediction markets entirely in-house would waste resources; rather than each creating its own prediction market from scratch, agencies would do better to contract out the work. Private parties have already figured out how to set up and run prediction markets and have won ample experience in helping private companies and their employees learn how to use them.[19] Outsourcing, discussed in the next Section, thus probably offers the most efficient way to set up and run government prediction markets.

18. Robin Hanson, *Decision Markets for Policy Advice*, *in* PROMOTING THE GENERAL WELFARE: NEW PERSPECTIVES ON GOVERNMENT PERFORMANCE 151 (Alan S. Gerber and Eric M. Patashnik, eds., Brookings 2006), *available at* http://hanson.gmu.edu/impolite.pdf (last visited March 13, 2011).

19. *See, e.g.*, *Crowd Predictions*, CROWDCLARITY, http://www.slideshare.net/havara/crowd-clarity (last visited Oct. 18, 2011).

1.2. Outsourced

Several private, for-profit companies have offered prediction market services, typically to large commercial entities such as Hewlett Packard[20] or General Motors.[21] Given that government agencies often contract out the provision of services, especially those that private parties in competitive environments already supply, it probably makes sense for the government to also outsource its prediction market needs. Even given economies of scale, it is not likely that government workers could set up and run a prediction market more efficiently than an experienced private consultant.

To say that the government should contract with private parties for prediction market services is not to say how it should do so. Even when the government outsources, some red tape remains. In particular, any federal agency buying prediction market services under contract should take care to satisfy the federal Acquisition of Information Technology regulations.[22] Those regulations, in brief, would require that the government comply with certain circulars from the Office of Management and Budget, manage risk prudently, use modular contracting, provide privacy protections, and satisfy disabled access design parameters. Other rules, perhaps unique to particular government agencies or departments, might also apply. State governments doubtless have their own red tape. Only bureaucrats deep within each particular institution, and well-versed in its particular ways, would likely know how to wend among the administrative pitfalls—a point which in itself suggests much about the efficacy, relative to the in-house option, of hiring private parties to provide the government with prediction market services.

1.3. Privately Produced

Privately produced prediction markets can come from any source other than the government, such as a private university, a public-spirited philanthropist, or a profit-seeking commercial enterprise. Nevertheless, the government can use such markets to help determine answers to such policy-related questions as the future of global warming or welfare caseload trends. So long as the right questions get asked, and the proper procedures are implemented, it doesn't matter who does the asking. The

20. Charles Plott & Kay-Yut Chen, *Information Aggregation Mechanisms: Concept, Design and Field Implementation for a Sales Forecasting Problem* (Cal. Inst. Tech., Paper No. 1131, 2002), *available at* http://www.hss.caltech.edu/SSPapers/wp1131.pdf (describing use of prediction markets at Hewlett-Packard to forecast printer sales).

21. CROWDCLARITY, *supra* note 19.

22. 48 C.F.R. pt. 39 (2011).

privately produced option thus offers the government the prospect of winning all the benefits of prediction markets at minimal public cost. At present, however, state and federal laws and regulations discourage non-government parties from providing real-money prediction markets (a catch-all that here means markets offering valuable consideration to winning traders).[23] The federal government can fix that problem by clarifying the legality of such markets under U.S. law, whether by executive pronouncement, legislation, or judicial opinion.

To some degree, privately produced prediction markets already exist, and already tackle questions important to governance. The Foresight Exchange Prediction Market, for instance, has for many years offered play-money trading on questions such as the effects of global climate change and the likelihood of a cure for cancer.[24] As Foresight's example demonstrates, the First Amendment protects our freedom to opine on important issues of the day through open-access play-money trading on public policy claims.[25] Nevertheless, play-money prediction markets have hardly become objects of widespread interest or ordinary tools of government in the U.S. Perhaps a concerted public relations effort or more intuitive interfaces would make play-money markets more popular and useful. It seems more likely, though, that play-money prediction markets provide inadequate incentives to attract many, diverse, and informed traders on claims about issues important to shaping public policy. Traders evidently prefer real money.

All else being equal, the government should also prefer real-money prediction markets. Although research suggests that play-money markets may suffice to reveal *extant* information in some circumstances, real-money markets do a better job of encouraging the discovery of *new* information.[26] That should surprise nobody, given that only real-money trading can offer the prospect of offsetting research costs with market winnings. At all events, mere play-money looks unlikely to generate sufficient excitement to attract ample public participation. Real-money prediction markets thus appear likely to do better than play-money markets at generating widely informed and well-researched answers to hard questions.

23. *See generally*, Tom W. Bell, *Private Prediction Markets and the Law*, 3 J. PREDICTION MARKETS 89 (2009), *available at* http://tomwbell.com/writings/PrivatePMs&theLaw.pdf; Tom W. Bell, *Prediction Markets for Promoting the Progress of Science and the Useful Arts*, 14 GEO. MASON L. REV. 37 (2006); Tom W. Bell, *Gambling for the Good, Trading for the Future: The Legality of Markets in Science Claims*, 5 CHAP. L. REV. 159 (2002).

24. THE FORESIGHT EXCHANGE PREDICTION MARKET, http://www.ideosphere.com/ (last visited March 14, 2011).

25. U.S. CONST., amend I.

26. Servan-Schreiber, *supra* note 14.

Real-money prediction markets cannot rely on the First Amendment to bar legal and political interference, however, and a panoply of state and federal laws and regulations threaten such enterprises.[27] The sole real-money prediction market in the U.S. offers small-stakes trading on political and economic events under cover of a no-action letter from the Commodities Futures Trading Commission.[28] Nobody in the U.S. offers prediction markets with thick trading for material stakes. Instead, domestic traders use the Internet to access a real-money prediction market based in Ireland, which thanks to its overseas location enjoys a respite from the uncertainties imposed by U.S. law.[29] Sound arguments suggest that properly designed real-money prediction markets should escape prosecution.[30] Proof of that claim, however, might come only after long and costly litigation—a prospect that has discouraged privately produced real-money prediction markets in the U.S.

The federal government could help to dissipate the pall of legal uncertainty by designating (via legislation, regulation, or executive order) certain types of trading in certain types of claims as legal under federal commodities futures and securities regulations, and as exempt from state gambling, insurance, and bucket-shop laws. The Appendix offers a model statute that would have just that effect. Clearing away those legal uncertainties would encourage entrepreneurs to launch and run prediction markets at no government cost. (Such entrepreneurs might suffer personal costs, of course, but all in the hope of greater personal gain.) Yet, the prices generated from such markets would prove just as predictive—perhaps, thanks to the power of prospective gains to encourage traders to research, even *more* predictive—than markets run by or under contract with the government.

Suppose that private parties in the U.S. come to provide real-money prediction markets in claims relating to public policy. The government would then face the happy prospect of getting all of the benefits of in-house and outsourced prediction markets at no cost to taxpayers. Does that sound too good to be true? Indeed, two caveats apply. The first goes to economics; the second to politics.

27. *Infra* § 4.

28. IOWA ELECTRONIC MARKETS, http://www.biz.uiowa.edu/iem/about/index.html (last visited August 3, 2010).

29. INTRADE, http://www.intrade.com (last visited Mar. 13, 2011).

30. *See* Bell, *Prediction Markets for Promoting the Progress of Science and the Useful Arts*, *supra* note 23.

1.3.1. The Economic Caveat

To simply open up trading on a claim of interest to the government—say, that an earthquake measuring at least 3.0 on the Richter scale will strike the New Madrid fault in the next year—does not guarantee that the public will take enough interest in the claim to generate trading thick enough to provide useful information. It may even turn out that no market wants to host trading on the claim. Perhaps nobody cares much about relatively small earthquakes in the Missouri boot heel region, for instance, or perhaps nobody thinks they know enough about the actual odds to beat conventional wisdom. In those sorts of cases, the government may find it necessary to give would-be traders a greater prospect of gain by subsidizing the market, such as by making random trades on the claim, thereby stimulating trading.[31]

While subsidizing private markets would entail some public costs, privately produced prediction markets would still probably cost the government less than in-house or outsourced prediction markets. So we can regard the first caveat, the economic one, as no more than a qualification: Even privately-produced prediction markets may entail government expenditures. That observation merely limits the policy gains of relying on private sources for the government's prediction market services, however; it does not mean that privately-produced prediction markets would cost taxpayers more than in-house or outsourced ones.

1.3.2. The Political Caveat

Even if they are not comparatively expensive, however, government subsidies of prediction markets might create a political complication: The government might not want to be associated with trading in certain claims, such as those relating to political unrest in other countries. At the same time, however, government agents working in diplomatic relations, intelligence, defense, and other departments might sorely want to encourage thick and informed trading on such claims. Curing caveat one, by subsidizing certain claims, might thus give rise to caveat two, embarrassing the government by association. Indeed, just those sorts of political problems derailed the federal government's first foray into prediction markets.[32]

The problem might never arise, granted, given that the very nature of politically sensitive claims might ensure sufficiently thick trading to

31. Michael Abramowicz, *Information Markets, Administrative Decisionmaking, and Predictive Cost-Benefit Analysis*, 71 U. CHI. L. REV. 933, 960-62 (2004).

32. Hanson, *supra* note 18.

render any government subsidy unnecessary.[33] And, at any rate, cures would lie ready at hand. The government could subsidize worrisome claims through private intermediaries, for instance, creating a sort of public relations firewall by taking a hands-off approach to the specific content of claims and cutting off funding to projects that veer into public relations problems. Alternatively, the government could keep trading in certain claims completely in-house, limiting participation and information about prices to employees and other trusted parties. That runs the risk of cutting off the very outsiders most likely to know the facts on the ground, of course, but even a half-blind prediction market might see more clearly than no market at all.

In the extreme, the government might try to ban all public trading in these sorts of claims, such as those pertaining to the assassination of political figures or to sensitive diplomatic negotiations, that threaten to reveal inconvenient truths. But to define inherently suspect claims in advance might prove tricky, and outlawing them might deny the government crucial information. As demonstrated by the ready access that U.S. residents already enjoy to overseas prediction markets, moreover, banning claims that truly attract a great deal of trading would probably prove ineffectual. It does not look likely that even the most outrageous claims would reward evil, given that extant markets already offer ample opportunity to profit from assassinations, terrorism, and other financially significant acts. The vagueness and futility of attempting to forbid public trading in politically sensitive predictions only strengthens the First Amendment case against such content-based restrictions.[34] Prohibition thus looks like no option at all.

2. WHO SHOULD TRADE ON GOVERNMENT PREDICTION MARKETS?

Who should trade on government prediction markets? This Section considers three answers:

- Open such markets solely to government employees;
- Open them to outside experts; or

33. Indeed, to return to the example that opened this paper, it turns out that the unrest in Egypt generated enough interest to encourage Ireland-based Intrade to set up real-money trading, though the exchange bobbled the claim and had to unwind trading. *See* Chris F. Masse, *InTrade CEO John Delaney apologizes for the 'Mubarak Departure' prediction market scandal*, MIDASORACLE (February 8, 2011), http://www.midasoracle.org/2011/02/08/intrade-ceo-apologizes-mubarak-departure-prediction-market-scandal-mubarak-market-unwound/.

34. For a summary—and critique—of the strict scrutiny test generally applicable to content-based restrictions on speech, see Eugene Volokh, Essay, *Freedom of Speech, Permissible Tailoring and Transcending Strict Scrutiny*, 144 U. PA. L. REV. 2417 (1996).

- Open them to everyone.

Each of those options has pluses and minuses. The comparisons made here demonstrate that, generally speaking, widening the pool of people allowed to trade on a prediction market increases both the market's accuracy and the legal risks of hosting or trading on it.

A market open to only a select few high-ranking government officials would not likely suffer *prosecution* (though it might suffer criticism on other fronts). Who would dare call such a tightly controlled, in-house, management tool a gambling enterprise or unregistered commodities futures trading? So tightly controlled a market also runs little risk, however, of accurately reflecting the facts on the ground, far away from government offices. At the other extreme, a market open to anyone and everyone, though optimized to reveal otherwise hidden facts, would generate certain risks. Especially if it allowed real-money trading, an open-access government prediction market would face scrutiny under anti-gambling and commodities futures trading rules. Such legal scrutiny might even generate legal claims.

Fortunately, we need not settle once and for all the question of who should trade on government prediction markets. Regardless of how far the door to trading on such markets ought to open, it will probably open in careful increments. Agencies will probably start with markets open only to government employees—the safest legal option. If that experiment generates promising results, the door to trading will probably widen to admit qualified experts. Later still, trading might open to the public at large, as prediction markets mature into a useful and trusted method of governance.[35]

3. LEGAL ISSUES RAISED BY GOVERNMENT PREDICTION MARKETS, AND POTENTIAL REMEDIES

So long as it offers no prizes, cash, or other consideration to traders, a prediction market will not likely offend any law. To the contrary, a non-commercial means of reporting on opinions about questions of public policy would likely win the protections of the First Amendment.[36] A government prediction market that rewarded successful traders with no more than bragging rights would thus raise few legal issues. It might raise *political* issues, granted; for instance, the government would want to avoid endorsing certain controversial claims (such as those pertaining

35. *See infra* § 4 (offering further observations about the optimal development path for government prediction markets).

36. U.S. CONST., amend. I.

to assassinations or secret programs).[37] But so long as the government—or a private party under government contract—gives nothing more to winning traders than words of thanks, freedom of expression should prevail.

Perhaps, then, the government should proceed directly with setting up or encouraging pure-talk prediction markets in claims likely to inform good public policy. Some good citizens might happily trade on a U.S. Federal Policy Forum, offering what insight they could to important questions of the day and jockeying with like folk for the pride of having best served the common good. This forum, however, might not suffice to attract an adequate volume of trade or sufficiently well informed traders. Regardless of whether talk is cheap, talkers respond to incentives. Offering prizes, cash, or other valuable consideration to traders encourages them to incur the costs of discovering useful information—information that might otherwise remain hidden. Government prediction markets should thus aspire to offer traders the prospect of genuine material gain.

This Section focuses on the legal issues raised by real-money government prediction markets, a term that encompasses all such markets where traders stand to gain or lose valuable consideration for their forecasts. The legal status of real-money prediction markets remains unclear under U.S. law. Such markets resemble, but do not equate to, gambling, commodities futures, or securities markets. Government prediction markets can best avoid the scope of those ill-fitting laws by adopting these features:

- Contract with traders, whether employees or outside experts, to require that they engage in some minimum level of trading in order to receive payment;
- Pay traders by giving them a stake in the market and make overall compensation contingent upon the accuracy of their trades;
- Make absolutely clear, by public notice and agreements with traders, that the market does not fall under gambling, commodities futures, or securities laws or regulations; and
- Make all trades spot transactions in negotiable conditional notes.

37. *See supra* § 1.3.2 for a discussion of the political issues raised by federal prediction markets.

Any government prediction market would do well to adopt these policies. It looks most likely, however, that the executive branch of the federal government will continue its pioneering role in implementing prediction markets.[38] To the above list of precautions, therefore, the Office of the President can and should add this one:

- Assert federal preemption against interference by state officials and branch privilege against interference by federal independent commissions or non-executive officials.

The following subsections discuss how various bodies of law—those pertaining to gambling, commodities futures, securities, and inducement to illegal activity—relate to real-money prediction markets. In some cases, those old laws plainly do not reach this new institution. In other cases, real-money prediction markets would do well to adopt certain prophylactics, outlined above and described more fully below, to safeguard against legal risks.

3.1. Gambling

Although real-money prediction markets in claims pertaining to matters of public policy run some risk of drawing prosecutorial accusations of illegal gambling, it looks very unlikely that any court would agree. Proper market design—most notably, treating traders as consultants paid on contingency for generating accurate predictions—could help mitigate legal risks that remain. Furthermore, prediction markets sponsored by the federal government would enjoy immunity from state anti-gambling laws (and thus also the federal anti-gambling laws triggered by state law violations).[39]

Gambling comprises three elements in U.S. law: prize, chance, and consideration. Play-money prediction markets successfully dodge the first element, thus protecting them from prosecution on state and federal anti-gambling laws. In contrast, real-money prediction markets (or more generally any prediction market that rewards accurate forecasts with something of value) satisfy the "prize" element, taking them one-third of the way towards gambling. No prediction market should satisfy the "chance" element, however, because under the prevailing American rule, "chance" obtains only if skill offers no edge in determining who comes

38. For a review of the federal executive branch's forays into prediction markets, *see supra* § 1.

39. Bell, *Prediction Markets for Promoting the Progress of Science and the Useful Arts*, *supra* note 23, at 5-67.

out ahead in an exchange.[40] Lotteries, if run properly, show pure chance at work. A government prediction market would not emphasize chance; it would instead focus on questions where skill determines winners.

That should end the inquiry, because gambling cannot arise if the element of chance is not present. The best mechanisms for controlling legal risk employ redundancy, however, so it also merits exploring how government prediction markets could dodge gambling's "consideration" element. It should suffice to contractually mandate participation by employees or outside contractors and to ensure that nobody stakes his or her own money to play. To merely allow or encourage people to play the market would, in contrast, invite the claim that traders offered consideration in the form of time or effort. Anyone who stakes his or her own money puts up valuable consideration, too, of course. To defeat the consideration element of gambling, therefore, government prediction markets should require its employees or agents to play the market, whether as part of the overall employment agreement or by special contract, and should front payment in the form of seed capital.

This sort of prediction market architecture would help any party, government or private, avoid anti-gambling laws. The federal government enjoys yet another defense, though: preemption. For example, if the Department of Defense decided that a real-money prediction market, run under contract by outside consultants and open to designated traders, would help it to achieve its lawful objectives, state anti-gambling laws would fall by the wayside as unconstitutional impediments to federal authority.[41]

3.2. Commodities Futures Trading

Prediction markets have been likened to commodities futures markets, an analogy that would, if courts took it seriously, pose a choice between stifling regulations or fatal prosecution. Thus far, however, it remains unclear whether and to what extent the jurisdiction of the Commodities Futures Trading Commission ("CFTC") would reach prediction markets offering trading in claims pertaining to public policy issues. Although the sole real-money prediction market operating in the U.S., the Iowa Electronic Markets, counts on a CFTC no-action letter to protect it from state prosecutors, the letter by no means amounts to a

40. Anthony N. Cabot & Louis V. Csoka, Symposium: Cross Border Issues in Gaming: *The Games People Play: Is It Time for a New Legal Approach to Prize Games?* 4 NEV. L.J. 197, 223 (2003) ("Most states and the federal government have adopted this test to assess the existence of the gambling element of chance.").

41. Those who set up the Policy Analysis Markets under contract with the DoD's Defense Advanced Research Projects Agency relied on the same argument to alleviate any concern about interference by state authorities. Hanson, *supra* note 18.

jurisdictional claim.[42] Some scholars assert that the CFTC does or should have such jurisdiction, as they welcome the preemptive effect that federal regulation would have on state laws.[43] That approach arguably underestimates the transaction costs of navigating CFTC regulations, however, and at any rate would have little to offer any government prediction market sponsored by the federal government, which thanks to the Supremacy Clause would not need CFTC jurisdiction as shelter from hostile state laws.[44] The prospect of intra-federal interference, as might arise if the CFTC asserted jurisdiction over a prediction market run by another part of the U.S. government, raises different and less easily resolved questions. Fortunately, though, a prediction market offering only spot transactions (rather than futures) in negotiable conditional notes (rather than contracts) should escape CFTC jurisdiction.[45]

The CFTC's recent approval of certain contracts pertaining to motion picture box office revenues gives some indication of how broadly the CFTC has interpreted its jurisdiction. Three of the five commissioners joined in a statement asserting that the CFTC's authority reaches even a commodity, such as the movie revenues in question, that "is a non-price-based measure of an economic activity, commercial activity or environmental event . . . that can be used for a hedging purpose when incorporated into a futures or options contract."[46] The Commission added that the existence of a cash market in the commodity is not necessary in such cases, and that contracts within the CFTC's jurisdiction may be based on an event or activity with economic consequences.[47] Those criteria, which the CFTC judged fit the box office revenues under its consideration, might also fit many of the questions that the government might want to submit to trading on

42. Letter from Andrea M. Corcoran, Director, Division of Trading and Markets, CFTC, to Prof. George R. Neumann, Professor Economics, University of Iowa (Feb. 5, 1992) (on filed with the CFTC), *available at* http://www.cftc.gov/files/foia/repfoia/foirf0503b002.pdf [hereinafter 1992 CFTC Letter]; Letter from Andrea M. Corcoran, Director, Division of Trading and Markets, CFTC, to Prof. George R. Neumann, Professor Economics, University of Iowa (June 18 1993) (on file with the CFTC), *available at* http://www.cftc.gov/files/foia/repfoia/foirf0503b004.pdf [hereinafter 1993 CFTC Letter].

43. Hahn & Tetlock, *supra* note 5, at 272-73.

44. U.S. CONST. art. VI, cl. 2 ("This Constitution, and the Laws of the United States which shall be made in Pursuance thereof . . . shall be the supreme Law of the Land . . . any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.").

45. Bell, *Prediction Markets for Promoting the Progress of Science and the Useful Arts*, *supra* note 23, at 54-55, 67-77; Bell, *Gambling for the Good, Trading for the Future*, *supra* note 5, at 169-72.

46. U.S. Commodity Futures Trading Commission, *Statement of the Commission, In Re MDEX* 3 (June 14, 2010), *available at* http://www.cftc.gov/ucm/groups/public/@otherif/documents/ifdocs/mdexcommissionstatement061410.pdf.

47. *Id.* at 3-4.

prediction markets. A claim about whether the VH-71/VXX Presidential Helicopter Program will trigger a Nunn-McCurdy breach, for instance, could provide a non-price-based measure of an economic or commercial activity that could, when incorporated into a futures or options contract, be used to hedge against the risk that the claim might come true.

Does that mean government prediction markets would fall under the exclusive jurisdiction of the CFTC? Not necessarily. First, note that in the CFTC's recent deliberations over box office contracts, as in its earlier deliberations over contracts relating to such things as weather futures and unemployment claims, private parties had *requested* CFTC jurisdiction (doubtless both to enjoy preemption from state laws and to win reassurance that the CFTC would not itself prosecute).[48] That the CFTC responded favorably to such requests by adopting a broad interpretation of its jurisdiction does not necessarily imply that the CFTC would likewise extend its jurisdiction into areas where it was not wanted. Second, note that the Commission decided it had jurisdiction over box office contracts only by the barest of margins, in a 3-2 vote, and over two strongly worded dissents.[49] Commissioner Sommers objected that the majority's expansive interpretation of CFTC's jurisdiction "crosses a line that should not be crossed," adding of the box office revenue contracts, "it is unclear to me how they fit into our current regulatory structure."[50]

At any rate, that CFTC foray into regulating something at least facially resembling prediction markets ultimately proved futile. Studio heads evidently did not welcome the prospect of accurate public forecasts of motion picture box office revenues, and federal lawmakers quickly stepped in to shut down the very markets the CFTC had embraced.[51] This episode thus teaches not only what the CFTC thinks it *can* do, but also what Congress thinks it *should not* do.

48. *Id.* at 3.

49. *See* Dissent of Commissioner Bart Chilton from Approval of Media Derivatives Exchange's Opening Weekend Motion Picture Revenue Futures and Binary Option Contracts (June 14, 2010), http://www.cftc.gov/ucm/groups/public/@otherif/documents/ifdocs/mdexdissentingchilton061410.pdf; Dissent of Commissioner Jill E. Sommers from Approval of Media Derivatives Exchange's Opening Weekend Motion Picture Revenue Futures and Binary Option Contracts (June 14, 2010), http://www.cftc.gov/ucm/groups/public/@otherif/documents/ifdocs/mdexdissentingsommers061410.pdf [hereinafter Sommers Dissent].

50. *See* Sommers Dissent, *supra* note 49, at 2.

51. Ben Fritz, *Cantor Fitzgerald abandoning box-office futures despite regulatory approval*, L.A. TIMES (June 28, 2010, 3:11 PM), http://latimesblogs.latimes.com/entertainmentnewsbuzz/2010/06/cantor-fitzgerald-abandoning-box-office-futures-despite-regulatory-approval.html.

3.3. Securities Regulations

History and policy strongly suggest that the Securities and Exchange Commission (the "SEC") should have no authority over real-money prediction markets trading claims about public policy questions. Securities markets amass capital for productive investment, whereas prediction markets pit traders against one another in contest to claim their pooled funds. Consideration of the statutes that define the authority of the SEC leads to the same conclusion. Although those statutes speak broadly, they do not appear to reach the sort of negotiable conditional notes that would be traded on well-designed government prediction markets.[52] As an added safeguard against SEC interference, anyone who runs a real money prediction market should put traders on notice that they trade outside the authority of the SEC.[53]

3.4. Inducement to Illegal Activity

The U.S. federal government's first venture into prediction markets ended in a hasty retreat. In 2001, the Department of Defense's blue-sky research agency, DARPA, contracted with private parties to set up and run publicly-accessible real-money prediction markets on questions of military and political instability. Early tests looked promising, and the Policy Analysis Market ("PAM") prepared to go live. Controversy broke out in 2003, however, after the PAM website offered colorful examples of miscellaneous claims that *might* be traded, including: the possibility that Yassir Arafat might be assassinated; that North Korea would launch a missile attack; and that the king of Jordan would be overthrown.[54] Responding to criticisms that PAM threatened to make terrorism profitable—as well as for other reasons (including simple bad luck)—the DoD cancelled the program.[55]

That case study demonstrates only that government prediction markets have good political reasons to avoid claims pegged to specific illegal activities, however, it does not speak to the law. Legally speaking, a claim like, "Yassir Arafat will be assassinated," even if it offered to pay hard cash, would not rise to the level of criminal or tortious inducement. Courts require that proof of evil intent accompany allegations of inducement to illegal activity.[56] No such intent would

52. *See infra* § 4.2.

53. Bell, *Prediction Markets for Promoting the Progress of Science and the Useful Arts*, *supra* note 23, at 77-82.

54. Hanson, *supra* note 18.

55. *Id.*

56. *See, e.g.*, Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd., 545 U.S. 913, 930-935 (2005).

likely be present in the case of prediction markets. After all, nobody who wants to induce illegal activity would choose highly public prediction markets as the vehicle. Neither, of course, would anyone ready to commit illegal acts for money depend on a prediction market to win compensation. Prediction markets offer such ineffective mechanisms for encouraging torts or crimes that it is hard to see how anybody could reasonably intend to put them to such nefarious uses. Political factors counsel against a prediction market hosting claims tied to specific illegal acts, however, the law stands as no bar.

3.5. Clarifying the Legality of Government Prediction Markets

As described above, real-money prediction markets face a number of legal risks. Even if none of those risks ripens into an adverse judgment, the uncertain status of real-money prediction markets under state and federal law discourages their development in the United States. The Iowa Electronic Markets—the sole exception to that rule—enjoys the unique protection of two no-action letters from the Commodities Futures Trading Commission.[57] Most U.S.-based traders on real-money prediction markets thus rely on easy Internet access to markets, such as Intrade, based overseas, beyond the reach of U.S. law.[58] Establishing the legality of real-money prediction markets under U.S. law would have a number of salutatory effects:

- Encouraging growth in the U.S. prediction market industry;
- Curbing inefficient regulatory overreach; and
- Providing the government with cost-free and reliable public policy forecasts.

How can the federal government establish the legality of real-money prediction markets under U.S. law? It could accomplish a great deal simply by structuring its markets to avoid legal challenges, following guidelines discussed elsewhere in this paper. Mere familiarity will eventually help, too. Once real-money prediction markets have been operating for some years and become accepted tools of good governance, they will less likely excite the attention of any over-eager prosecutor. At some point, though, establishing the legality of real-money prediction

57. 1992 CFTC Letter, *supra* note 42; 1993 CFTC Letter, *supra* note 42.
58. INTRADE, http://www.intrade.com (visited March 13, 2011).

markets might call for stronger measures—stronger, but still well within the recognized authority of the U.S. federal government.

Because the Constitution establishes that it and the laws made pursuant to its authority "shall be the supreme Law of the Land,"[59] the federal government has the power to preempt countervailing state law in a variety of circumstances. We can already thank preemption of a sort, generated by the First and Fourteenth Amendments, for protecting play-money prediction markets from state interference. Trading on the Foresight Exchange Prediction Market, for instance, qualifies more as free expression than as free enterprise.[60] Real-money prediction markets do not win the same solicitude, however; they risk falling prey to anti-gambling, bucket shop, and other state laws.[61] Because the First and Fourteenth Amendments do not preempt these state laws, prediction markets would have to turn to federal regulations or statutes for shelter.

Federal regulations have just as much power to preempt as federal statutes do.[62] The Supreme Court has established a lenient standard of review for regulations that preempt state law, holding that the regulation will stand unless it appears from the statute or its legislative history that Congress would not have permitted such preemption.[63] As long as an agency acts within the authority granted to it by federal lawmakers, therefore, it should not suffer state interference with its prediction markets or claims. Though a federal statute specifically preempting state interference would offer welcome clarity on the question, any federal agency would have a strong claim to possessing the power to preempt state laws or regulations that interfere with the use of management tools, such as prediction markets, that help the agency pursue its authorized aims.

4. GOVERNING WITH PREDICTION MARKETS

How can the government best put prediction markets to work in the public interest? This Section offers some answers. Subsection 4.1 addresses who should run and trade on government prediction markets. It explains that the government should begin with the low risk, low return option: an outsourced prediction market accessible only to specified federal employees. From there, the government should

59. U.S. Const. art.VI, cl. 2.

60. *See* THE FORESIGHT EXCHANGE PREDICTION MARKET, http://www.ideosphere.com/ (last visited March 14, 2011).

61. *See* Bell 2006, *supra* note 23, at 65-67, 69.

62. Fidelity Fed. Savings & Loan Assn. v. De la Cuesta, 458 U.S. 141, 153 (1982) ("Federal regulations have no less pre-emptive effect than federal statutes.").

63. New York v. Fed. Energy Reg. Comm., 535 U.S. 1, 18 (2002); Capital Cities Cable, Inc. v. Crisp, 467 U.S. 691, 699 (1984).

endeavor to open trading up, allowing many and diverse traders to join in forecasting the future.

Under present laws, alas, the types of markets most likely to generate the best predictions also pose the largest legal risks. Subsection 4.2 explains how the right sort of architecture can protect prediction markets against such hazards. Section 4.3 details the authority of the Office of the President to oversee the development of government prediction markets. Section 4.4 offers a plan for putting prediction markets to work for the public good.

4.1. The Three Stages of Government Prediction Markets

To tap the power of prediction markets, the government should take three steps:

- First, contract-out the creation of real-money prediction markets open only to government employees;
- Second, open government prediction markets to designated experts;
- Third, clarify the legality of real-money, publicly-accessible prediction markets, encouraging non-government parties to create and trade on them.

In effect, these three steps mark the optimal path through the cost-benefit matrix presented in Table 1, above—a path that starts in the center-left box, moves to the center one, and ends with a jump up and to the right. Table 2, below, illustrates.

Who Trades? / Who Runs?	Government Employees	Approved Experts	The Public
Private Sector			Step 3: Privately produced, open access markets.
Outsource	Step 1: Outsourced markets open to government employees, only.	**Step 2:** Outsourced markets open to approved experts.	
In-House			

Table 2: Three-Step Program for Governing with Real-Money Prediction Markets

By developing prediction markets in those three steps, the government will maintain an optimal cost/benefit ratio. Each step will also result in better predictions—hence the reason why the government should not rest at step one or two, but rather should keep moving toward the goal of privately produced real-money markets open to the general public. Granted, each step toward that goal also increases the legal risks associated with running or trading the prediction market in question. Those risks will decrease with time, however, and with experience in running real-money prediction markets. At some point, therefore, step two will offer a plainly more cost-effective option than step one. A similar evolutionary process will likewise tend to drive down the legal risks associated with step three. Step three offers the government an additional cost savings, moreover: The legal risks of privately produced, real-money prediction markets will fall on *non*-government parties. Indeed, those risks will, if they arise at all, come largely from the

government itself. Over time and in the main, therefore, the government would do best to move from contracting for prediction markets to counting on the private sector to run them, and from letting only government employees trade on closed markets to letting anyone trade on open ones.

4.2. Legal Architecture for Government Prediction Markets

The prior subsection's three-step development plan, while demonstrating why government prediction markets should grow less insular and more public over time, leaves out a great many details. Practical experience and on-the-spot fixes will determine many of the particulars of government prediction markets, of course. Even at this remove, though, we can picture the sort of legal architecture that will best shelter government prediction markets, at each of the three stages of their development, from running afoul of commodities futures, securities, or gambling statutes and regulations.

- **Step 1: Out-sourced markets open to government employees, only.** Structure the market to host spot transactions in negotiable conditional notes payable in the event associated predictions come true—not in futures contracts or securities. Give employees money to play the market and mandate trading, removing the stigma of gambling. Reward the best predictions with cash or cash equivalents. Avoid conditional transfers of money across agency lines.

- **Step 2: Out-sourced markets open to approved experts.** Expand government prediction markets by contracting with select outside traders. Compensate them with seeded accounts, and require a minimum number of trades. Those who predict the best earn the most.

- **Step 3: Privately produced, open access markets.** Clarify the legality of privately produced, real-money, publicly accessible prediction markets by way of example, persuasion, litigation, regulation, or legislation.

The legal architecture of government prediction markets should thus develop as those markets do, in stages. In every case, basing trading in negotiable conditional notes, payable in the event some associated prediction comes true, would help to ward off jurisdictional assertions by commodities futures or securities regulators. The defense against

gambling—fronting trading funds and contractually mandating trading—would work best in stages one and two. In stage three, when private markets and public traders provide the government with needed predictions, other institutional frameworks would develop.

Markets that let traders risk their own funds run a heightened risk of exposure to anti-gambling laws. In a better world, the fact that skill can predominate over chance in determining winnings on a prediction market would suffice to protect such markets from unwarranted prosecution. In this, our imperfect world, entrepreneurs might hesitate to launch a real-money prediction market without some sort of legal shield against anti-gambling laws—a legal shield that might be won through litigation, regulation, or legislation.

4.3. Authorization for Government Prediction Markets

There can be little doubt that federal officials have adequate authority to put prediction markets to work in pursuit of the public good. After all, government employees already make conference calls, generate forecasts, and hire outside experts. Prediction markets merely add to that collection of administrative tools. Any federal body that has sufficient authority to adopt new and useful management tools would presumably also have authority to implement government prediction markets. Perhaps the Library of Congress might find prediction markets a useful adjunct to its research mission, for instance. So far, though, and for understandable reasons, the Office of the President has taken the lead in exploring how prediction markets can serve the public good.[64] Thus, this Section focuses on defining the federal executive branch's authority to implement government prediction markets.

Although the Office of the President of course has ultimate responsibility over whether and how the executive branch puts prediction markets to work, some subordinate office would doubtless in practice handle the details. More likely than not, the President would order the Office of Management and Budget (the "OMB") to initiate, monitor, and manage any program to implement government prediction markets. The OMB offers a likely home for any such program because it includes both the Office of Science and Technology Policy (the "OSTP") and the Office of Information and Regulatory Affairs (the "OIRA").

OSTP has authority to implement government prediction markets under its organic statute, which calls on the Office to: "evaluate the scale, quality, and effectiveness of the Federal effort in science and

64. For a survey of those forays into the field—first via the Policy Analysis Market, then via the Synthetic Biology market, and most recently via the Office of the Director of National Intelligence's ACE program, *see supra* § 1.

technology"[65] and "assist the President in providing general leadership and coordination of the research and development programs of the Federal Government."[66] To fulfill those legislated functions, the OSTP might assist the President in supervising tests of government prediction markets, advising the President on whether and how to employ such markets more generally throughout the Executive Branch and helping other offices put them to good use.

The OIRA also has authority to encourage the use of prediction markets by federal agencies.[67] Federal lawmakers gave the OIRA broad authority to direct the use of information technology by government agencies. The OIRA Administrator has the duty to

> (A) develop, coordinate and oversee the implementation of Federal information resources management policies, principles, standards, and guidelines; and
>
> (B) provide direction and oversee—
>
> > (i) the review and approval of the collection of information and the reduction of the information collection burden;
> >
> > (ii) agency dissemination of and public access to information; [and]
> >
> > (iii) statistical activities. . . .[68]

Furthermore, in statutory provisions seemingly written with predction markets in mind, lawmakers specifically commanded the Administrator to:

- "foster greater sharing, dissemination, and access to public information";
- "reduce information collection burdens on the public";
- "maximize the practical utility of and public benefit from information collected by or for the Federal Government";
- "promote public access to public information"; and

65. 42 U.S.C.A. § 6613(b)(2) (West 2002) (describing authority and functions of the Director of the OSTP).

66. *Id.* at § 6613(b)(4).

67. Bell (2010), *supra* note 23, at 69-71.

68. 44 U.S.C.A.§ 3504(a)(1) (West 2002) (describing authority and functions of the Director of the OMB).

- take a wide variety of measures to improve the efficiency, integrity, and utility of federal policies for collecting and disseminating statistical information.[69]

The OIRA can very plausibly argue that prediction markets offer an excellent means for fulfilling those, its legislated aims.

The OIRA can cite the commands of the President as further justification for encouraging the development of federal prediction markets. The White House has, by Executive Order, directed federal agencies to base regulatory actions on the best "scientific, technical, economic, and other information" available and designated OIRA as the repository of expertise in such matters.[70] All told, that gives OIRA considerable leeway in getting federal agencies to implement prediction markets.

4.4. Ninety Days and Beyond

The prior subsections have discussed the stages through which government prediction markets should develop, the major legal features that those markets should embody at each such stage, and the authority of the Executive Office to encourage and guide the development of government prediction markets. This subsection offers specifics about what steps the President might order the OMB to take, immediately and in the near future, to help government prediction markets flourish.

Experimental Use of Government Prediction Markets

In the next 90 days, the OMB directs the OSTP and OIRA, in coordination with outside researchers, to initiate and monitor several experiments in government prediction markets. Academics have already come close to creating prediction markets to inform government action,[71] and the executive branch has already launched experiments in play-money markets.[72] It remains only for the OSTP and OIRA to oversee trial runs of real-money markets set up for government employees or specified consultants. Relying on outside contractors to set up and run the markets will generate the fastest results. Given the salient problem of predicting the expenses of weapons procurement programs, and the

69. *Id*. at § 3504(b)(2)-(e).

70. Exec. Order No. 12,866, 58 Fed. Reg. 51,735-44 §§ 1(b)(7), 2(b) (Oct. 4, 1993), *amended by* Exec. Order No. 13,258, 67 Fed. Reg. 9385-86 (Feb. 28, 2002); Exec. Order No. 13,422,72 Fed. Reg. 2763 (Jan. 23, 2007).

71. *See, e.g.*, *Predicting a Pandemic*, IOWA ELECTRONIC HEALTH MARKETS, (July 16, 2010), http://iehm.uiowa.edu/iehm/imgs/Predicting_Pandemic_Brief_final.pdf.

72. *See supra* § 1.

Department of Defense's demonstrated willingness to try prediction markets, it might work best to start with a market designed to forecast Nunn-McCurdy breaches.

Government Prediction Markets Conference

In the next six months, the OIRA calls together public servants, private consultants, and academics to discuss early experimental results and plan how prediction markets might improve the governing process. As authority, the OIRA can cite the President's command to "convene, from time to time, conferences with representatives of businesses, nongovernmental organizations, and the public to discuss regulatory issues of common concern."[73] Partnering with an outside university or think tank could help to spread the burdens of hosting such a gathering and widen the net of participants. At least part of the conference would address the results of the short-term experiments described in step one. Among other benefits, a conference on government prediction markets could help the OMB generate guidelines that, as discussed under the next heading, the OMB could then promulgate via executive memorandum.

OMB Memorandum on Government Prediction Markets

Drawing on the work of OSTP and OIRA, the OMB issues a memorandum to executive departments and agencies explaining the hows and whys of government prediction markets. For the most part, such a memorandum would serve to educate its recipients, though it should also offer some exhortations. Ideally, the memorandum would cite successful test cases, such as a real-money market, open only to government employees and select consultants, designed to predict Nunn-McCurdy breaches.

If mere example does not suffice to rouse wider use of government prediction markets, OMB could promulgate guidelines concerning the probity of factual evidence submitted in support of proposed regulations. Such guidelines would make clear, for instance, that claims backed by independent and peer-reviewed research merit greater credence than claims backed only by in-house researchers. More to the point, such an epistemic scorecard could establish that numbers backed by prediction markets would carry great weight in OMB reviews of agency regulations. That would give executive departments and agencies an additional incentive to implement government prediction markets.

73. Exec. Order No. 12,866, 58 Fed. Reg. 51,735-44 (amended Oct. 4, 1993).

Beyond OMB and the First Year

The authority of the OMB and its sub-offices should suffice in the first year or so of implementing government prediction markets. If that effort triggers the widespread use of real-money prediction markets, both in government and, eventually, among the public at large, no more need be done. In that, perhaps too ideal world, prediction markets would already have succeeded or failed on their own terms, and not by dint of ignorance, inertia, or illegality. In this, the real world, prediction markets might need more help. Here are two more steps, requiring authority beyond that possessed by OMB, that the government might take in later years:

- **Next two years:** If actions by the OMB do not suffice, the President could order the use of prediction markets by executive departments and agencies for specified fact-finding purposes.

- **Next five years:** If growing use by government and private parties and persuasive reasoning does not suffice to quell doubts about the legality of real-money prediction markets (especially those open to the public), litigation, federal regulation, or legislation might become necessary.

In all likelihood, prediction markets will develop organically and peacefully, and the sort of legal battles specified in the last step will never come to pass. Especially once the federal government begins using prediction markets, they will take their place among such administrative innovations as record keeping, command hierarchies, and (to cite a more recent example) wikis.[74] It will become commonplace, rather than suspiciously novel, for public deliberations to refer to prediction markets and, far from prosecuting them as gamblers, we will learn to praise those who grow rich trading on prediction markets as having earned just rewards for their foresight.

CONCLUSION

Only recently have prediction markets become tools of government administration. We should expect that trend to continue—and we should hope that it does. Good government requires good information, after all,

74. *See Wiki*, WIKIPEDIA, http://en.wikipedia.org/wiki/Wiki (last visited February 21, 2011) (defining "wiki" as "a website that allows the creation and editing of any number of interlinked web pages . . . typically powered by wiki software and . . . often used to create collaborative works.").

and prediction markets can help fill that need. If anyone asks, "Why should governments use prediction markets?" we might well reply, "Why not?" We expect civil servants to use phones, organizational charts, and other cost-effective tools. Given their potential utility, prediction markets deserve at least a try.

Bureaucrats recoil from legal uncertainty, however, so this paper has focused on describing and curing the various statutory and regulatory risks raised by government prediction markets. In sum, this paper suggested that government agencies should start by contracting out the administration of prediction markets and by paying employees and select experts to trade on them. This paper also described the benefits of structuring a prediction market to host transactions in negotiable conditional notes, offering traders seed funding, and contractually mandating a minimum level of trading. This paper concluded with observations and plans specially suited to the federal executive branch, the government body most likely to continue developing the implementation of prediction markets.

APPENDIX

The Prediction Exchange Protection Act (Annotated)[75]

Section 101. Short Title

This Act may be cited as "The Prediction Exchange Protection Act."[76]

Section 102. Federal Prediction Exchange Policy

It is the policy of the United States Government to:

(a) Promote the general welfare[77] through the necessary and proper[78] regulation of interstate commerce;[79]

(b) Promote the progress of the sciences and useful arts;[80]

(c) Encourage the development of private institutions for resolving questions of science, technology, and public policy;

(d) Clarify the legality of qualifying prediction exchanges;

(e) Employ prediction exchanges to improve the efficiency of government services.

Section 103. Definitions

(a) A "federally protected prediction exchange" is a forum using instrumentalities of interstate commerce[81] to facilitate the buying and selling of prediction notes.

75. For the template for this Act, see "The Scientific Prediction Exchange Act" proposed at Bell (2006), *supra* note 23, at 86-87.

76. The term here used to describe the subject markets, "prediction exchange," distinguishes the type of prediction market at issue from other types.

77. This phrase borrows language from the Constitution's preamble. U.S. CONST. pmbl.

78. This phrase confirms that the present Act satisfies the limitations imposed by the Necessary and Proper Clause, U.S. CONST. art. I, § 8, cl. 18.

79. This phrase invokes the sole federal power that would appear to justify the Prediction Exchange Protection Act (PEPA): the Interstate Commerce Clause. U.S. CONST. art. I, § 8, cl. 3.

80. This language harkens back to that of U.S. CONST. art. I, § 8, cl. 8.

81. That clause establishes the constitutionality of exercising federal legislative power in this area: as part of the power to regulate interstate commerce. U.S. CONST. art I, § 8, cl.3.

(b) A "prediction note" is a document promising to pay its bearer a specified amount of money on condition that a designated prediction judge rules on the document's prediction claim or claims.

(c) A "prediction claim" is an answer to an unresolved question of science, technology, or public policy that can be resolved primarily by the application of skill. A prediction claim is not an answer to an unresolved question about the outcome of a sporting event or contest,[82] or the future value of an instrument currently regulated by the Securities and Exchange Commission,[83] or the future price of an instrument currently regulated by the Commodity Futures Trading Commission.[84]

(d) A "prediction judge" is a person, persons, organization, or entity designated by a prediction note and authorized, subject to any limits or requirements specified on that note, to rule on the truth of the note's prediction.

Section 104. Preemption

(a) No Federal agency, State, political subdivision of a State, or political authority of two or more States may enact or enforce any law, regulation, or other provision that has the force or effect of law and that relates to any prediction exchange under this title except as otherwise provided in this Section.[85]

(b) No provision of this chapter shall in any way abridge or alter rights and remedies now existing at common law.[86]

82. That exception assures that no transactions currently outlawed under the Federal Wire Act or related state laws will win legality under the guise of the Act.

83. That exception assures that the Act does not affect the established authority of the SEC.

84. That exception assures that the Act does not affect the established authority of the CFTC.

85. This language largely follows that of the preemption provision in the Federal Aviation Administration Act of 1994 Pub. L. 103-305 § 601(c), 108 Stat. 1605 (codified as amended at 49 U.S.C. § 11501).

86. This savings clause clarifies the scope of the preemption defined in PEPA § 104(a) by dint of an *expression unius* argument: "[W]hen Congress meant to vest additional regulatory authority in the States it did so explicitly." Transcontinental Gas Pipe Line Corp. v. State Oil & Gas Bd., 474 U.S. 409, 422 (1986) (concluding thereby that Mississippi lacked authority to re-regulate gas pipeline transactions deregulated under federal law).