

The Design of Idea Markets: An Economist's Perspective¹

Marco Ottaviani

Kellogg School of Management

Northwestern University

m-ottaviani@northwestern.edu

GE is pioneering the development of market-based methods for allocating research budget to internal projects. To be effective, a market for ideas must provide appropriate incentives for the *creation* of valuable ideas and it must result in sufficiently accurate *evaluation* of ideas.

The main tenet behind GE's Idea Market is that improvements in the evaluation of research ideas should foster incentives for idea creation. Indeed, idea creation and idea evaluation are complementary activities. For an idea to be successful, it is not enough that the idea be good. It also helps if the idea is recognized as good by those who evaluate it. As the evaluation process becomes more accurate, good ideas are more likely to be funded. Thus, incentives for the creation of ideas are enhanced when ideas are evaluated more accurately.

Consider first the incentives for the creation of new ideas. A key obstacle to the creation of ideas is the limited "appropriability" of their benefits (see Arrow, 1962). The problem is that good ideas can be easily stolen. As a result, inventors might have little if any incentives to come up with good ideas. There are non-market solutions to this market failure. For example, (open) science gives up on attempts to appropriate privately the benefits of ideas by making the ideas publicly available through the publication process. Creators of scientific ideas are rewarded instead by the public recognition awarded through the baroque reputation system we academics know all too well! In the case of GE's idea market, proponents of the idea with the highest price obtain valuable funding, internal recognition, and kudos.

Second, when it comes to the evaluation of ideas, the main challenge is making sure that the evaluators themselves have appropriate incentives to collect information about the quality of the ideas. To complicate the problem, the most competent evaluators are not always the most impartial—either because they stand to gain or lose from approval of the idea, depending on whether they are tied with or compete against the idea's proponent. The non-market solution used in science is mostly based on the peer evaluation system, whereby more senior or successful researchers are asked to evaluate the ideas of their junior colleagues. The underlying presumption is that good researchers are also effective and unbiased evaluators.

At GE, ideas are initially screened by a committee of experts, and then evaluated according to market prices resulting from trading among a broad set of company employees, including the proponents of the

¹ This discussion is forthcoming in the Journal of Prediction Markets. I thank Renato Gomes for excellent comments.

ideas. The research budget is then allocated to the idea with the highest price, providing a highly visible reward to the idea's proposer. Incentives for accuracy in the evaluation process are given by allocating small prizes to top traders. Traders are rewarded based on the value of their portfolio when the market is closed.

GE's idea market departs from regular financial markets (as well as from more traditional prediction markets) in two important ways. The first distinctive feature of idea markets is that the payoff of traders is not based on any ex post information on the quality of the idea selected. Regular financial markets—where there is a fair amount of ex-post validation, in the form of profits and dividends—are known to be subject to painful pathologies such as bubbles, fads, and herd behavior. These problems should be even more severe in the case of GE's financial marketplace, where there is no ex post validation on the quality of different ideas. GE's financial market is a textbook example of a pure "beauty contest," a game known to be riddled with multiple equilibria. If traders expect the price of one idea to be high (maybe just because this idea is "cool"), the price for that idea will be high, even though other ideas are much better.

Second, proponents of ideas are also allowed to trade on their own ideas. Actually, traders attempt very actively to bump up the price of their idea and so increase the chance their idea is eventually funded. Insider trading—typically prohibited in regular financial markets—is instead allowed and rampant in this market! It is then natural to expect the final prices to reflect the biases of proposers who are able to communicate (or hype) more effectively the content of their idea and/or to manipulate the market. These biases then reduce the accuracy of evaluations, which in turn dampens the incentives to create good ideas in the first place.

To address these two concerns, it would be worth introducing a "grain of truth" into these markets. Ideally, the payoff should be linked to measures of ex post performance of the idea implemented—even if this is a noisy measure, it would provide discipline the market by anchoring expectations. Lacking any ex post measure of profitability, traders' payoffs in the financial market could be linked, at least partly, to a merit ranking of the ideas obtained through other independent means (for example from the experts from the review panel). Because of this linkage, the danger is that market participants might have an incentive to second guess which ideas the review panel might think are profitable, rather than guessing profitability directly. Alternatively, one could think of running a set of two separate markets on the same ideas and reward participants of one market on the basis of the value of their portfolio evaluated with the final prices in the other market. (We refer to the analysis of Miller, Resnick and Zeckhauser (2005) on how to design incentives for information reporting in these environments.)

To curb insider trading and manipulation, the best solution is to encourage the amount and quality of participation by traders. Participation can be increased through better prizes and monetary incentives—and traders will have better incentives to be engaged if prizes are allocated through a lottery system, according to which each trader is awarded a number of lottery tickets proportional to the value of the portfolio of this trader relative to the value of the portfolio of all traders. Also, it would be natural to prohibit founders from taking positions on their own ideas (or to disclose which trades are made by

founders).² Clearly, such regulations will not solve the problem completely because founders will still have an incentive to get their friends to help pushing up the price of their ideas. In addition, the potential drawback is that founders might be less engaged in the market—and might instead divert their effort to depress the price of competing ideas...

The design of idea markets is at its infancy. While we understand the role of many design parameters from our experience running other financial markets and institutions, idea markets can also provide economists with a fascinating laboratory for testing theories of incentives and behavior in organizations. Given the early stage of development in these markets, there is wide scope for conducting controlled field experiments. For example, it should be interesting to assess the effect of insider trading by running a parallel market in which idea proposers are not allowed to trade on the security corresponding to their own idea (or founders trades have to be disclosed), and then compare survey results in the two controls.

References

Arrow, Kenneth J., 1962, "Economic Welfare and the Allocation of Resources for Invention." In: *The Rate and Direction of Inventive Activity: Economic and Social Factors*, edited by Richard N. Nelson. Princeton University Press, pp.609-28.

Miller, Nolan, Paul Resnick, and Richard Zeckhauser, 2005, "Eliciting Informative Feedback: The Peer Prediction Method." *Management Science*, 51(9), 1359-1373.

² The design of Nosco's Idea Exchange market seems much less prone to manipulation. There, traders cannot buy their own ideas. In addition, rather than automatically allocating the budget to the idea with the highest price, serious (subjective) consideration is given to the top ten ideas.