
BOOK REVIEWS



Mark Kritzman, Senior Editor

THE WISDOM OF CROWDS

By James Surowiecki

(Reviewed by Craig W. French)

It is unusual to come across an idea presented so clearly that one modifies a prior belief into its antithetical posterior form. Occasionally, we find that our prior belief may have been relevant to a special, rather than a general case. Having cut my teeth on Mackay's *Extraordinary Popular Delusions* and LeBon's *The Crowd*, I approached James Surowiecki's *The Wisdom of Crowds* (Doubleday, 2004) with a healthy dose of skepticism. The value in Surowiecki's effort, with its seemingly oxymoronic title, is his presentation of what previously seemed to be evidence of group madness as special cases of a more general spectrum of collective decision-making.

One of the first examples in *The Wisdom of Crowds* is Jack

Treynor's 1987 *FAJ* article, *Market Efficiency and the Bean Jar Experiment*, a classic example of crowd wisdom. Surowiecki also refers to other finance literature, including Arrow's and Debreau's *Existence of an Equilibrium for a Competitive Economy*, Black's *Noise*, Schleifer's *Inefficient Markets*, Thaler's *The End of Behavioral Finance*, Kahneman's, Slovic's and Tversky's *Judgment Under Uncertainty*, Hayek's *The Use of Knowledge in Society*, MacKenzie's *Mathematizing Risk*, Lowenstein's *When Genius Failed*, Schiller's *Market Volatility*, Jensen's *Paying People to Lie*, Coase's *The Firm, the Market and the Law*, Sharfstein's and Stein's *Herd Behavior and Investment*, R.K. Merton's *The Matthew Effect*, and many others. These citations are woven into a wonderfully readable tale that makes a strong case for the consensus-based approach to equilibrium modeling in finance.

The scope of *The Wisdom of Crowds* is much broader than just finance and markets. A wonderful use of Thomas Bayes' theorem is recounted, in which the location of the lost submarine *Scorpion* was predicted in 1968 by group consensus to within 220 yards of the actual spot where the navy found it five months later. Other interesting examples include Google's now famous Page Rank Algorithm; Wharton Professor Scott Armstrong's work on the value (or lack thereof) of expertise; the efficiency of beehives, ant colonies, and Linux; Macaque monkeys learning by imitation; the ultimatum game as a demonstration of why the public (or at least Eliot Spitzer) is outraged by Dick Grasso's NYSE pay package; the rapid discovery of the SARS virus; why traffic jams occur; why democratic voting is effective as well as why markets such as the University

of Iowa's Iowa Electronic Markets are often better predictors of political contests than polls are. We also find offshore tax evasion techniques discussed as a classic example of a cooperation problem, and many other fascinating examples.

The first part of *The Wisdom of Crowds* explores three basic kinds of economic problems: cooperation—the tension between self-interest and group-interest, coordination—group members organizing their behavior, and cognition—problems with a definitive solution. Surowiecki posits three necessary conditions for crowd wisdom: diversity, independence, and decentralization. The title notwithstanding, Surowiecki does not believe that crowd choice is always superior, and he provides many examples of poor collective behavior as counterpoints to his main thesis. What is especially valuable here is the identification and discussion of the missing necessary conditions in such malignant cases. This framework of three types of problems coupled with three necessary conditions provides an elegant taxonomy by which the reader is free to evaluate the level of group wisdom (*a la* Surowiecki) or delusion (*a la* Mackay). So, despite its lopsided title, *The Wisdom of Crowds* provides

a framework for understanding crowd behavior whether the consensus is beneficial or perverse.

The second half of the book consists of a wonderful collection of case studies: coordination problems in pedestrian and automobile traffic; collaboration problems in science; cooperation problems faced by committees, teams, and juries; corporate organization and governance; market dynamics, structure, and asset pricing; and democratic political systems are each covered in an eminently readable way. The discussions of investor overconfidence, anchoring, and herding are especially good.

Surowiecki presents a 20-year horizon in his examples of asset pricing—“If Pfizer's stock price today makes it worth \$280 billion, then for the market to be right, Pfizer will have to generate \$280 billion in free cash over the next two decades.” His point, echoing Fischer Black's *Noise*, is that determining present value is “an absurdly difficult task”—but his conclusion that, “If twenty years from now we could look back at that number and say it was accurate, I think we'd count that as miraculous,” centers on all the unknowable interim factors exclusively ... I would add that an equally difficult task is determining the appropriate time horizon, which

for corporations is really perpetuity, not twenty years. Surowiecki concludes, “Twenty years from now, we'll know whether Pfizer's stock price on January 1, 2004, was accurate.” Now, since PFE listed in November 1972, we have plenty of 20-year observations to choose from, so perhaps Surowiecki could have told us on January 1, 2004 whether the market priced PFE accurately on January 1, 1984. Most assuredly, it was not; the problem here is that we cannot ever know, since Surowiecki's horizon (or any finite horizon) is not the market's horizon. It seems he has run afoul of yet another joint hypothesis problem in finance. This small nitpick aside, the discussion is excellent and well worth the read.

The Wisdom of Crowds is a well-argued contrarian counterpoint to the commonly received counsel that crowds are by their very nature delusional and mad. The quality of Surowiecki's argument is enhanced by the scope of his presentation, which neatly encompasses both the point and the counterpoint. There is an extensive notes section supporting the material, and with its many references, this book also deserves an index section. Perhaps Surowiecki will add an index to the publisher's website for the book, <http://www.wisdomofcrowds.com>, which

currently has a page where you can have fun making your own guess in a virtual replication of the famous bean jar experiment.

THE OXFORD GUIDE TO FINANCIAL MODELING

By Thomas S. Y. Ho

and Sang Bin Lee

(Reviewed by Mark Krizman)

Financial modeling has evolved along seemingly disparate paths to solve specific problems as they emerged chronologically, yet there is an underlying cohesion to these problems that has been obscured by their chronological separation. The 1970s witnessed perhaps the most influential modeling breakthrough with the Black–Scholes option pricing model. Interest rate models seemed to capture most of the attention during the 1980s. And more recently, financial economists have focused on models to control risk. Thomas S.Y. Ho and Sang Bin Lee present the essential components of these financial models from an integrated perspective that unites the key innovations of capital markets and corporate finance.

Ho and Lee go beyond the typical financial engineering mindset, which tends to focus narrowly on techniques and methodology,

by discussing the underlying principles of the models and relating them to the business context of their applications. Perhaps the most distinguishing feature of this book is the linkage Ho and Lee demonstrate between capital market and corporate finance applications. They structure the material along three broad groupings: options pricing, corporate liabilities, and corporate finance. This taxonomy promotes a perspective of the firm as a financial model, which facilitates discussion of corporate earnings as a contingent claim on business risk and exposes the relationship between financial leverage and operating leverage.

Although Part I deals primarily with valuation of derivatives, it begins at a significantly more elementary level with a discussion of discounted cash flow models, the Capital Asset Pricing Model, and bond math. Ho and Lee then move on to more challenging innovations including implied volatility and exotic options.

Part II addresses corporate liabilities, including investment grade bonds, high yield bonds, convertible bonds, and the less liquid liabilities of financial institutions.

The final section of the book integrates capital market

modeling with corporate finance. It begins with the idealized world of Modigliani and Miller and deftly shifts to real world financial decision-making and risk management. Perhaps one of the more obvious linkages between capital market modeling and corporate finance is the application of financial options valuation to real options valuation.

Each chapter begins with the presentation of a practical problem. Then, Ho and Lee describe the model they will use to solve the problem, and they show how to apply it. Moreover, they take care to sequence the material in a way that facilitates accessibility to the less technically inclined, by presenting the models as extensions of the preceding material. And along the way, they introduce many new models. This feature by itself should entice many readers, given the authors' seminal contribution of the first no-arbitrage interest rate model (Ho and Lee, 1986).

The less technically inclined will also appreciate Ho's and Lee's organization of the technical material. Each chapter includes a technical appendix in which the equations and mathematical derivations are presented. This segregation of text and math preserves the flow and thought process of each chapter.

I strongly recommend *The Oxford Guide to Financial Modeling* to research minded practitioners as well as to students of finance. Ho and Lee present the essential financial models, including many freshly

minted models, in a uniquely cohesive framework that exposes the fundamental link between capital markets and corporate finance. Moreover, it is a terrific reference source for both quants and dilequants.

References

- Ho, T.S.Y. and Lee, S.B. (1986). "Term Structure Movements and Pricing Interest Rate Contingent Claims." *Journal of Finance* 41, 1011–1029.