Decision Analysis

Publication details, including instructions for authors and subscription information:
http://pubsonline.informs.org

From the Editors...

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To cite this article:
Robert T. Clemen, Don N. Kleinmuntz, (2005) From the Editors.... Decision Analysis 2(2):67-68. https://doi.org/10.1287/deca.1050.0049

DECISION ANALYSIS
Vol. 2, No. 2, June 2005, pp. 67–68
ISSN 1545-8490 | EISSN 1545-8504 | 05 | 0202 | 0067

informs

DOI 10.1287/deca.1050.0049

From the Editors . . .

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In this issue, Brandao, Dyer, and Hahn propose an approach for project valuation that implements real-options methods using standard decision analysis tools. Smith provides a critique of the Brandao, Dyer, and Hahn approach and suggests alternative analytical approaches. In a response, Brandao, Dyer and Hahn concede several of Smith's points, but argue that their approach may still prove useful for many problems, and that it provides a more accessible modeling framework than the alternatives. Another contribution addresses a method for using partial preference information to support the implementation of the even swaps method for making multiattribute value trade-offs.

Key words: decision analysis; editorial

Three of the articles in this issue focus on methods for modeling and analyzing the value of projects, particularly projects involving considerable uncertainty along with opportunities for managerial flexibility regarding the development of the project. These are known as "real options" because of the parallel between valuing projects involving the development, acquisition, or sale of "real" assets on the one hand and valuing market-traded options contracts on the other. In fact, this is an area that has received enormous attention from practitioners in a wide range of business settings, including many books and articles in the popular business press. However, an ongoing challenge in implementing this approach has been the mathematical complexity of analytical methods developed for pricing options contracts.

In the first paper of this issue, Brandao, Dyer, and Hahn (hereafter BDH) suggest that one of the foundational tools of decision analysis, decision trees, can provide a practical and intuitive alternative to methods that might be more opaque to less analytically sophisticated decision makers. They propose an approach that combines traditional discounted cash flow models with Monte Carlo simulation and decision trees. Their method is conceptually and analytically similar to the binomial lattice approaches covered in numerous textbook treatments of option pricing. BDH's approach differs by using a branching event tree structure rather than a recombining lattice, with options represented through decision nodes. The result is a decision tree representation that is recognizable and interpretable by anyone familiar with decision analysis. They demonstrate their method with a binomial approximation to Geometric Brownian Motion, but argue that the approach is generalizable to other discrete approximations and other stochastic processes.

The second article, by Smith, provides an interesting and helpful critique of the BDH approach. His critique raises some important questions about implementation, particularly with respect to the relative merits of lattices versus trees, and with respect to BDH's approach for estimating cash flow volatilities. Smith also discusses fundamental questions regarding the appropriate use of discounted cash flow and risk-neutral valuation methods. Finally, he takes issue with an important feature of the BDH approach, namely the use of the value of the entire project without options as the underlying uncertainty for the stochastic representation of project value, and argues for alternative techniques that directly model component uncertainties.

The third article is BDH's response to Smith. While they do concede several of Smith's critiques, they also

seek to clarify some other points. Both they and Smith note that there are many issues on which they agree, particularly, as Smith writes, the importance of modeling the dynamic resolution of uncertainty and the alternatives that may be exercised as that uncertainty is resolved. BDH also make the point that some of their apparent disagreements may be related to differences of opinion regarding the ease with which different modeling approaches can be implemented. Taken as a set, these three articles provide a very useful and informative dialogue that should help decision analysts to strengthen their analytical toolbox, and gain a greater understanding of the relevant considerations when building models that incorporate dynamic uncertainties.

The fourth and final contribution, by Mustajoki and Hämäläinen, introduces a novel approach for using the even swaps method for choosing among multiattribute alternatives. The authors propose the use of preference programming, a framework for modeling incomplete information within multiattribute value theory. The idea is to model evolving knowledge about the decision maker's preferences as revealed by initial steps of the even swaps process. This information is then used to guide subsequent steps of the process, with a goal of making even swaps easier to implement. The authors discuss the development and use of software to support the approach, and suggest that it will be particularly useful in decision problems with many alternatives and many attributes.