Preface for the Japanese readers

We are delighted and honored by the appearance of this abridgement in Japanese of our 2001 book, "Probability and Finance." We are grateful to Kei Takeuchi for initiating the translation, to him and Masayuki Kumon for completing it, and to the Iwanami Shoten Publishers for bringing it to the Japanese public. Japan has strong traditions of scholarship in all the fields that can use the book's new framework, including mathematical probability, mathematical statistics, mathematical finance, and machine learning. This translation will encourage and help Japanese scholars in all these fields master and exploit the new framework.

The new framework is game-theoretic: it uses game theory in place of measure theory. Elements of the framework can be traced back to the work of Jean Ville, Andrei Kolmogorov, and other twentieth-century mathematicians, but we are just now beginning to see the framework's full potential. The book explains how the framework handles classical limit theorems and how it might be used to lessen the role of stochastic assumptions in option pricing. Since the book's appearance, we have learned much more. For example, we now have game-theoretic methods for making probability forecasts, forecasts that we call "defensive" because they play against strategies that enforce probabilistic properties such as calibration and resolution. We also know that properties of market prices that have been derived from stochastic assumptions, such as the properties implied by the well-known capital asset pricing model, can be derived without stochastic assumptions within the new framework. These and other new results are available in articles and working papers that can be downloaded from `www.probabilityandfinance.com`.

There is already a Japanese school that is heavily involved in these developments. Akimichi Takemura played a key role in the discovery of defensive forecasting, and he and our translators are taking a lead in exploring the implications of game-theoretic probability in a variety of fields. The recent tutorial workshop on game-theoretic probability and related fields, held in Tokyo, showcased this work. This meeting was the first international research colloquium to emphasize game-theoretic probability.

We greet our new Japanese readers with our warmest regards, and we look forward to their contributions to this exciting new field.

June 2006   Glenn Shafer   Vladimir Vovk