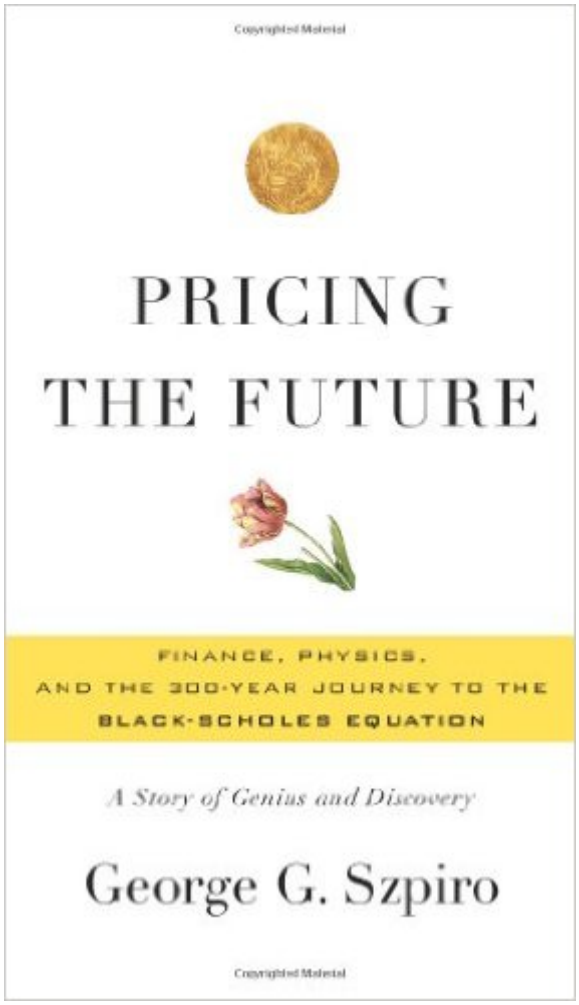
Pricing The Future: Finance, Physics, And The 300-year Journey To The Black-Scholes Equation



Synopsis

Options have been traded for hundreds of years, but investment decisions were based on gut feelings until the Nobel Prize–winning discovery of the Black-Scholes options pricing model in 1973 ushered in the era of the “quants.â • Wall Street would never be the same. In Pricing the Future, financial economist George G. Szpiro tells the fascinating stories of the pioneers of mathematical finance who conducted the search for the elusive options pricing formula. From the brokerâ ™s assistant who published the first mathematical explanation of financial markets to Albert Einstein and other scientists who looked for a way to explain the movement of atoms and molecules, Pricing the Future retraces the historical and intellectual developments that ultimately led to the widespread use of mathematical models to drive investment strategies on Wall Street.

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Customer Reviews

The author has an encyclopedic knowledge about the subject. But, he does not convey the material in a user friendly way. Additionally, his attempt at explaining the basics of the Black Scholes (BS) formula within the Appendix is truly obfuscating. Within this section after 12 laborious algebraic steps, he ends up with a different trigonometric formula that does not look like the BS equation. Thus, don’t buy this book to acquire a clear understanding of this formidable formula.As a historian, the author has done superb research. He does a good job at connecting the dots of the various luminaries across time that established the theoretical preceding foundation that allowed for a team of three contemporary geniuses to put it all together in 1973 (Black, Scholes, Merton).Yet, the author lingers on certain topics way too long for the sake of his book’s rhythm. At the beginning, his

studies of investment manias (tulip bubble, the Mississippi and the East Indies bubble) goes on for too long. Then, his exploration of the Brownian movement whereby particles move by the square root of time (which applies to stock price movement too) is so lengthy it dominates the entire book. He narrates how numerous scientists from many different disciplines uncovered this perplexing principle independently. By the third time that such a scientist had rediscovered that principle, I began to get cross eyed. Actually, this book is more about Brownian motion than the BS formula.The last quarter of the book is the better one. All of a sudden the author realized he had much ground to cover and got moving. His description of the three main protagonists (Black, Scholes, Merton) is good.

The title is overly pretentious. This is a fine history of the transition from the mathematics related to Brownian motion to Black-Scholes option pricing equations. The book starts with the pretentious statement that B-S is as important as Newton’s laws of motion. The technical portion of the book suffers from excessively bad editing: surface for circumference, banker for baker (hedger), receives for pays and there is an instance where option buyer and writer are reversed. It’s a well researched and informative history of development of statistical applications to science and finance. It’s especially informative on the contributions of under appreciated scientists like Louis Bachelier and relative unknowns like Jules Regnault and Paul Levy.There’s interesting coverage of Norbert Weiner and the development of cybernetics, as related to finance. Szpiro does a good job relating how Harry Markowitz and others modernized the work of Bachelier, leading to Nobel prizes for Markowitz, Merton and Scholes. The book examines minutely the entrance of "quants" into the field of derivative finance. There’s a very good history of LTCM, with its founders, methods and failure. It might be the best available, although the reason for potential bank losses provoking federal intervention is not made clear.Except for the LTCM case and an attempt in the last chapter, limitations and failures of statistical applications are not covered. The attempt in the last chapter is based solely on statistical considerations. Brownian motion is significant only in a closed environment. In a stream or an ocean it’s a small component of particle motion. A financial market is more like an ocean than like a petri dish.

300 years of precursors to the Black-Scholes option pricing formula are traced via accounts of the lives and works of a dozen or so major characters and another dozen minor characters. This is nowadays a common format for popular science writing (used e.g. for Bayes rule in The Theory That Would Not Die), and here it is executed well -- the writing style and content is engaging and

appropriately non-technical. The choice of topic is intrinsically cross-disciplinary (mathematics theory, economics theory, practical market speculation) and by incorporating also the author's own physics background, a book emerges that is pleasingly different from other popular science accounts of these topics and characters (typically written from the viewpoint of one particular academic discipline, or none in the case of journalistic authors).Here is a precis of the relevant standard history, from a mathematician's viewpoint. For various reasons [mathematicians couldn't make it fit with the rest of math, and physicists perceived the world in terms of deterministic laws], in 1900 mathematical probability had not yet become a coherent discipline. In particular there is a fundamental mathematical "square root law" providing a rough description of the cumulative effect of purely random fluctuations. Before 1900 this had been observed and explained in various contexts but not appreciated as a widely-applicable fact.

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