Preface

I consider myself fortunate that World Scientific Publishing Co. is putting out my selected works in a single volume. This volume will make it easier for researchers and students to find these essays and read them as an integrated collection. Throughout my career, I have published many papers in the subfields of finance - corporate finance, financial institutions (banking), asset pricing, and derivatives - mostly theory, but sometimes empirical papers as well. In my writings, three themes can be identified. The first theme is that I am constantly striving to better understand the robustness of financial models. That is, do the results in a particular model extend when the assumptions are modified, and if not, how do the results change? The second theme is that I am concerned with "real" world problems - unsolved questions relevant to current industry practice. After all, finance is an applied economic science. The third theme relates to my approach to research. To solve financial problems, I rely on the rigorous use of mathematics and economics. In fact, it is fair to say that my research is really mathematical economics, or a more recent offshoot, mathematical finance.

For this collection of readings, I have selected a subset of my papers related to financial derivatives and risk management. This topic is of heightened current interest in academics and industry due to the recent subprime generated financial crisis of 2007. The subprime crisis involved significant losses in credit derivatives, including subprime mortgage asset-backed securities (ABS), credit default swaps (CDS) on subprime ABS, and collateralized default obligations (CDOs) on subprime ABS. Both the inadequate pricing and hedging of these interest-rate and credit-risk-sensitive subprime-backed derivatives is alleged to have contributed to the financial crisis.

I have eagerly pursued research in financial derivatives, alternatively called - option pricing and hedging - since my graduate student days at the Massachusetts Institute of Technology (M.I.T). Indeed, my Ph.D. studies took place in the early years of option pricing theory (1976 - 1979). These studies gave me my first rigorous exposure to risk management by the masters themselves, Robert Merton and Fischer Black. Many of my research ideas were germinated in those early years through long conversations with fellow Ph.D. students, taking courses, or attending seminars.

Finally, I owe a special thanks to my own students and colleagues, whom I have had the privilege of working with over these many years. Many of them have coauthored the papers that follow.

The collection of my papers included in this volume is separated into three topics. Part I consists of papers corresponding to "option pricing theory and its foundations." These papers are related to the famous Black-Scholes-Merton option pricing model. Part II are papers related to "stochastic interest rates." This is a topic that I started studying in earnest with my Ph.D. thesis at M.I.T. completed in 1979. Part III is entitled "credit risk." Credit risk involves pricing financial derivatives considering both stochastic interest rates and the likelihood of default. All three topics are still hotly researched and of considerable importance to both industry and academics.