



**Robert C. Merton**  
 The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 1997

**Autobiography**






I was born in New York, New York, on July 31, 1944, the middle child between two sisters, Stephanie and Vanessa. I grew up in Hastings-on-Hudson, a village of about 8000 outside the city, in a house that Vanessa and her family live in today. My father, born in Philadelphia the son of immigrant parents, was a professor of sociology at Columbia University. He is now University Professor Emeritus at Columbia, having meanwhile been awarded the National Medal of Science for founding the sociology of science and for his contributions to sociological knowledge such as the self-fulfilling prophecy and the focus group. My mother, from a multigenerational southern New Jersey Methodist/Quaker family, stayed at home. She died in 1992. My mother's mother and many (at one time 25) cats completed the household that shared my childhood.



Hastings was a mixed middle-class and blue-collar town with local employment dominated by a wire and cable company and a chemical plant. Despite this composition and the town's small size, the local public school provided a fine education opportunity. In a graduating class of only some 90, I nevertheless was able to take mathematics through the calculus and five years of science (two in physics including a MIT-designed course). I was a good student but not at the top of my class. I played varsity football and ran track, neither with great distinction. Among my classmates were the sons of the Columbia physicists and Nobel laureates, [James Rainwater](#) and [Jack Steinberger](#). Other long-time Hastings residents were the laureate in medicine, [Max Theiler](#), and the laureate in economics, [William Vickrey](#), as well as the sculptor Jacques Lipchitz.

School work and intellectual interests such as music and the arts were not especially important to me while I was growing up, although mathematics, my favorite subject, was fun. Baseball was my first passion: I played sand lot and Little League, and rooted for the Brooklyn Dodgers. Around age 11, that passion began to turn toward cars. On my bedroom wall, I put a large sheet of paper with 1800-plus numbers: one to be crossed out each day until I would be old enough for my driver's license. As I had known all the batting averages and pitching records of big league baseball players, so I came to know the horsepower, cubic inches of engines size, and other detailed specifications of just about every automobile in the post-war era. Going to auto shows and stock car races and handing tools to older, amateur buffs working on their cars were outlets for my passion until, at age 15, I bought and rebuilt my first car. After getting my driver's license, I built street hot rods which I raced at drag strips in upstate New York and Long Island. I thought that I would become an automobile engineer when I grew up. Indeed, while in college, I spent two summers working for Ford in its headquarters in Dearborn, Michigan: one as an engineer in advanced vehicle design and the other in the Lincoln-Mercury division trying to figure out optimal importing patterns for the English Ford. Other than working in a local cemetery after school and in the summer during high school and a summer spent in information technology at IBM, these automotive jobs were the only full-time, non-academic ones I have had.

Both of my parents played important roles in my early life of learning. My father introduced me to baseball, poker, magic, and the stock market (only magic didn't take root). And books of every kind were everywhere. He said nothing directly about expected academic performance. There was no need to. Simply by self-exemplification, he set the standards for work effort and for clarity of thought and expression. I had the normal father-son tensions as a teenager, but we subsequently became very close: for more than 30 years, we have talked to each other, at least once, nearly every day. My mother taught me caring and sensitivity towards the feelings of others, animals as well as humans. She gave me much good, practical advice for getting through life. One such counsel in particular I have applied often and in varied arenas: "First show them that you can do it their way, so that you earn the right to do it your way."

One week before my 17th birthday, I had a blind date with June Rose, a television actress on network soap operas, a model, and a regular on the popular Dick Clark's Saturday night American Bandstand show from New York. We were married five years later, one week after my graduation from Columbia. We devoted much energy to and derived

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 Presentation Speech


- Robert C. Merton
- Autobiography
- Prize Lecture
- Interview
- Diploma
- Photo Gallery
- Banquet Speech
- Other Resources

- Myron S. Scholes
- Autobiography
- Prize Lecture
- Interview
- Diploma
- Photo Gallery
- Other Resources

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enormous pleasure in raising three wonderful and talented children, Samantha J., Robert F., and Paul J. June and I separated in 1996.

My arrival at college marked the beginning of serious focus on academic matters. Just one day after entering Columbia College I switched to the Engineering School. With its small and flexible program and fine faculty, it was a great place for an undergraduate to explore mathematics and its uses. I took several undergraduate and graduate mathematics courses, both applied and pure: my tastes were however clear, preferring partial differential equations to real analysis and the calculus of variations to functions of a complex variable. Along with a number of engineering courses including drawing, I also took Columbia's famous Contemporary Civilization course, humanities, one introductory course in economics (using Samuelson's *Economics*), a graduate course in mathematical sociology, and two general studies night courses in accounting and stock market investments. The C- or D received in my English literature course in my sophomore year did not help my grade point average. The paper on *Gulliver's Travels* written for that course, however, became my first published article (in the *Journal of the History of Ideas*).

After Columbia, I went west to pursue a Ph.D. in applied mathematics at the California Institute of Technology. My time at Cal Tech (1966-67), brief as it was, added significantly to my stock of mathematics. Even more valuable to me was its creed of placing students from the outset in a research framework, "playing" with their subject instead of merely passively learning the material. Sometime during the year, I decided to leave Cal Tech (and mathematics) to study economics. Although he thought it was a bizarre idea, Gerald Whitham (the department head) provided generous help. I applied to half a dozen good departments, but only one, M.I.T., accepted me, and it gave me a full fellowship.

My decision to leave applied mathematics for economics was in part tied to the widely-held popular belief in the 1960s that macroeconomics had made fundamental inroads into controlling business cycles and stopping dysfunctional unemployment and inflation. Thus, I felt that working in economics could "really matter" and that potentially one could affect millions of people. I also believed that my mathematics and engineering training might give me some advantage in analyzing complex situations. Most important in my decision was the sense that I had a much better intuition and "feel" into economic matters than physical ones. Nowhere was that more apparent to me than in the stock market.

As early as 8 or 9 years of age, I developed an interest in money and finance, even at play. I created fictitious banks such as the RCM Savings of Dollars and Cents Company. I gladly balanced my mother's check book. As already noted, my father introduced me to the stock market. At 10 or 11, I drew up an "A" list of stocks, and bought my first one, General Motors. In college, I spent time doing some trading, learning tape watching, and hearing the lore of the market from retail traders in brokerage houses. In late 1963, I had my first experience in what is now known as "risk arbitrage". The trade surrounding the merger of Friden Company and Singer Company involved buying Friden shares and shorting Singer shares in a ratio of 1.75-to-1. The current difference in value between the two would become a "sure-thing" profit, provided the merger went through. Fortunately for me, it did. At Cal Tech, many mornings I would get to a local brokerage house at 6:30 am (9:30 am in New York) for the opening of the stock market, spend a couple of hours watching the tape and trading, and then go to my classes. In addition to stocks, I traded warrants, convertible bonds, and over-the-counter options. Although I did apply mathematical skills, my valuation approaches were essentially *ad hoc*. Nevertheless, I learned much from those varied transactional experiences about markets and institutions which proved useful in my later research. For instance, in discovering specialized banks that would legally finance my convertible bond positions at 85 percent of their value (leveraging terms considerably superior to the 50 percent financing offered by standard margin accounts), I learned early on that the "institutional rigidities," often postulated as inviolate in academic financial-market modeling, can be more flexible and permeable in their real-world counterparts.

When I arrived at MIT in the fall of 1967, I discovered why they had admitted me when no other institution had: Harold Freeman, statistician and member of the economics department from pre-Samuelson days. Harold had recognized some of the mathematicians who had written my letters of recommendation and convinced the department to take a flyer. Now in the role of first-year advisor, he saw my proposed, "traditional" course plan and told me "...you follow that and you'll leave here by the end of the term out of boredom ... go take [Paul Samuelson's](#) mathematical economics course." I did. Not only did I get to interact with Paul Samuelson, but I met the then second-year students, Stanley Fischer and Michael Rothschild. I learned economics from Paul's *Foundations* and wrote a term paper on an optimal growth model with endogenous population changes which was later published in 1969. As a result of our meeting in his course, Paul hired me as his research assistant that spring. Quite a yield from a single course!

In the course of my work for Paul, we discovered shared interests and some common knowledge about the stock market, warrants and convertible securities. I found out that my "after/before-hours" interest in such things could also be a legitimate part of my day-hours devoted to research. In the summer of 1968, we began a joint effort to advance Paul's 1965 theory of warrant pricing, which was subsequently published in 1969. Later in October, I would have my first experience presenting in a formal seminar. My co-author decided that I, the second-year grad student, and not he, the Institute Professor, would give our paper at the *inaugural* session of the MIT-Harvard Mathematical Economics seminar. With a full audience of Harvard economics faculty including [Kenneth Arrow](#), [Wassily Leontief](#), and Hendrik Houthakker, it was surely a memorable baptism.

The research with Paul on warrant pricing introduced me to the expected utility maxim and

its application to optimal portfolio selection in a continuous-time framework. As a consequence of that effort, I began to think about combining the static theory of portfolio selection with the intertemporal optimization of lifetime consumption under certainty found in the growth-model literature. Ignorant of the important work underway by Nils Hakansson and Hayne Leland, then graduate students elsewhere, I attacked the problem of dynamic portfolio theory in a continuous-time framework without having the benefit of their discrete-time formulations. Despite all the mathematics courses that I had taken, I had seen neither stochastic dynamic programming nor the Ito calculus, both of which turned out to be key mathematical tools needed for this research. Instead, driven by "need," I found them and learned them on my own. Presented first at a Harvard-MIT graduate student seminar in November 1968, my paper on lifetime consumption and portfolio selection under uncertainty was published the following August as a companion paper to one by Paul investigating the effect of age on portfolio risk tolerance.

Despite having Paul Samuelson, [Franco Modigliani](#), [Robert Solow](#), Frank Fisher, Robert Bishop, Evsey Domar, Peter Diamond, Peter Temin, and Ed Kuh as teachers, I must confess that my focus was more on research than classes from the beginning (and my course grades reflected that). However, no one could have had a better introduction to economics than I did, with these great teachers and the opportunity to live in Paul Samuelson's office as his assistant for two and a half years. Three of the five chapters of my thesis were published before the thesis was submitted. A fourth, "Optimum Consumption and Portfolio Rules in a Continuous-Time Model," was presented at the Second World Congress of the Econometric Society in August 1970 and was published in 1971. During those most productive days of graduate study, I also developed much of my 1970 working paper on equilibrium asset pricing and the pricing of the capital structure of the firm which formed the core of my later papers on the intertemporal capital asset pricing model, the rational theory of option pricing, and the pricing of corporate debt.

Paul nominated me to be a Junior Fellow at Harvard. After being rejected, however, I had no choice but to get a job. I spent the fall and winter of 1969 interviewing only with departments of economics, but I ended up taking an appointment to teach finance at M.I.T.'s Sloan School of Management. It was Franco Modigliani, with a foot in both the department and Sloan, who made the invitation and who convinced me that I could teach there even though I had no formal training in finance. I had been a student of Franco's and my research on optimal lifetime consumption and portfolio selection supported his Life-Cycle Hypothesis. Our relationship, however, became even stronger in the years after I joined Sloan. I was especially honored and greatly touched when he invited me to be the speaker at the traditional American Economics Association luncheon honoring him for receiving the 1985 Nobel Prize. That occasion (the remarks later published in *Economic Perspectives*) provided the opportunity to express, albeit inadequately, the deep respect and affection I hold for Franco. Some years later, he made a physically very demanding trip to Rome specifically to be the speaker at the National Academy of Lincei on the occasion celebrating my receiving the International INA-Accademia Nazionale dei Lincei Prize.

It was in the process of interviewing for the job at Sloan that I met Myron Scholes, a recent arrival to the faculty from the University of Chicago. As I note in the accompanying lecture, the story of my meeting Myron Scholes and Fischer Black and our subsequent interactions and collaborations are well described in Myron's Nobel Lecture, in our joint tribute in memory of Fischer Black, in Fischer's own writings, and in the book by Peter Bernstein. Thus, even with its obvious central importance to my professional life, both its academic and practitioner parts, there is no need to repeat it here.

When I joined the finance group at M.I.T., the faculty consisted of assistant professors Myron Scholes, Stewart Myers, and Gerry Pogue and senior professors Daniel Holland and Franco Modigliani. Dan specialized in tax matters and Franco was involved in many things everywhere. As a consequence, *de facto*, the junior faculty "ran" everything in the group with respect to both teaching and research. It was a wonderful environment of benign neglect in which all of us could grow. I enjoyed teaching from the start. My first experience was in 1969 as one of four graduate students (Karen Johnson, David Scheffman, and Jeremy Siegel were the others) who team-taught the second monetary course usually taught by Paul Samuelson. I began, however, full-time teaching at Sloan in the fall of 1970 with two regular courses in the Master's degree program in management: general finance and advanced capital markets. In the basic course involving both capital markets and corporate finance, I taught [Markowitz-Tobin](#) portfolio theory, the [Sharpe\(-Lintner-Mossin\)](#) Capital Asset Pricing Model, and the [Modigliani-Miller](#) theorems, learning much of the material barely before I presented it to the students. For my own sense of security and to provide some evidence of preparation to the students, I gave them detailed (handwritten) teaching notes for each class. Lecturing from them saved me from having to write everything down on the blackboard and saved the students from having to copy what I would have otherwise written. This in turn left more time for in-class discussion. These notes became so popular that I prepared similar ones for every course I taught at Sloan, long after I had learned the subject matter. In the capital markets course that first year, I introduced intertemporal portfolio selection, Black-Scholes type option pricing and hedging and its application to the pricing of corporate liabilities. I did so not as an "outlet" for presenting my research interests but because I thought that the training would be quite useful in practice. I believed that teaching this material, even before it was published, was more important for the M.S. students than for the Ph.D. students since non-academic jobs were not likely to provide the same opportunity as academics to keep up with the research literature after graduation. At Sloan in those days, M.S. and Ph.D. students in finance took the same courses, and so both groups were exposed to this research long before its publication.

Throughout the 18 years I spent at the Sloan School, it was a stimulating and happy place

to do research. I shall always owe a great debt to my brilliant colleagues there: Myron Scholes and Fischer Black, Franco Modigliani, Stewart Myers, John Cox, Chi-fu Huang, Terry Marsh, Richard Ruback, Douglas Breeden (unfortunately, only as a visitor), and from the Economics Department, Stanley Fischer and Paul Samuelson. The tenure and the tenor of the finance area varied considerably and it was small, rarely having more than a half dozen members at a time. But the quality of mind, diversity of thought, devotion to the subject of finance, and genuine affection for one another were reliable constants throughout those years.

I see my research interests as fitting into three regimes of roughly equal lengths across time: 1968 to 1977, 1977 to 1987, and 1988 to the present, with a reflective year 1987-1988. The first period was my most productive one for basic research, in terms of both the number of papers produced and the originality and significance of contribution. The central modeling theme was continuous-time stochastic processes with continuous-decision-making by agents. Locating this modeling approach within mathematical economics, I see my models falling in the middle range between simple models (e.g., one or two-periods with a representative agent) designed to give insights (associated by some with the "M.I.T. School") and full general equilibrium models on a grand scale involving an arbitrary number of agents with general preferences and production technologies (often associated with the "Berkeley School"). Compared with discrete-time dynamic formulations, the continuous-time models are mathematically more complex. But by explicitly setting the trading interval and modeling the evolution of the system as diffusion processes, the derived results of the continuous-time models were often more precise and easier to interpret than their discrete-time counterparts. As a consequence, these theoretical models combined enough richness and tractability to be applied normatively for decisions in practice and positively in empirical tests. Of course, all models involve abstractions from complex reality. I see the relative importance of my contribution to be more in selecting "good" abstractions than in introducing and applying mathematical power.

My first decade's research focus on developing dynamic models of optimal lifetime consumption and portfolio selection, equilibrium asset pricing, and contingent-claim pricing shifted in the 1978-1987 period to applications of those models. A series of papers examined the various risk-bearing roles of pay-as-you-go and funded social security and defined-benefit, defined-contribution, and integrated private-sector pension plans. I also applied option-pricing theory to the valuation of deposit insurance, market-timing information, corporate investment decisions, and implicit labor contracts. I worked on models for estimating expected returns on the market portfolio, for fitting dividend and earnings behavior, and for testing of investor market-timing skills. A number of papers including my Presidential address to the American Finance Association examined the rationality of capital-market prices and the effects of market imperfections on equilibrium asset prices. With Stanley Fischer, I also wrote on issues common to macroeconomics and finance. Others whom I was fortunate to publish with during this period were Zvi Bodie, Mathew Gladstein, Roy Henriksson, Alan Marcus, Terry Marsh, Scott Mason and, for the first time, Myron Scholes. In contrast, during the prior decade, I had had only two co-authors: (three papers with) Paul Samuelson and (one with) Marti Subrahmanyam.

In 1987, I took my first-ever sabbatical year to write a book based on my work in continuous-time finance. Peter Dougherty, then an editor at Basil Blackwell, had suggested a book nearly a year before that would use my previously published papers as the core. As it happened, I had been thinking about putting my ideas on the subject together and Peter's expressed interest served as a catalyst. M.I.T. graciously provided my full salary for the year and the Harvard Business School kindly offered an office in which to work. It was a most enjoyable and productive time. With no other commitments, I wrote nearly every day with no limit on length and no set deadline for either any piece or the whole. Earlier writings were corrected and, in some cases, significantly expanded. Five new chapters were created incorporating my cumulative thoughts in the fields of optimal portfolio selection, option pricing, financial intermediation, and general equilibrium theory. I even took pleasure in developing my own extensive index and bibliography.

This reflective year was a watershed, both for my research and for where it would take place. In effect, *Continuous-Time Finance* was the crowning synthesis of my earlier work. Its Chapter 14 on intermediation and institutions, however, represented a bridge to a new direction of my research. From that time until the present, I have focused on understanding the financial system with special emphasis on the dynamics of institutional change. In particular, I am studying the role of financial technology and innovation in driving changes in financial institution and market design, the management of financial-service firms, and the regulatory and the accounting systems. There is, however, continuity of this line of inquiry with the past: Fischer's, Myron's and my derivative-security research provided much of the foundation for the contracting and security-design technology that is central to the extraordinary wave of real-world financial innovation of the past two decades.

My decision to move from M.I.T. to the Harvard Business School in 1988 was significantly influenced by this turn in my research interests. Although it was a difficult decision to make, I have never since doubted that it was the right one. Both the institution and my colleagues have treated me in extraordinary fashion. A prime exemplifying case: shortly after my joining the HBS faculty, then-Dean John McArthur resigned from the George Fisher Baker professorship in order to give it to me. Giving the name chair of the founding-sponsor of the School-known as the "Dean's Chair" since the beginning--to a newly arrived professor of mathematical finance who had not yet taught a single HBS student, was a towering symbol and statement of confidence and support. That recognition meant all the more to me because it was given after I had happily accepted the School's offer and this timing made it altogether clear that it was not part of any negotiation. Now, a decade later, I am especially pleased to become the first John and Natty McArthur

For nearly a decade, I have enjoyed developing the new work on the financial system: to begin with, on my own, but then quite soon after, in a delightful, productive and multi-faceted collaboration with Zvi Bodie, professor of finance at Boston University, whom I have known since the early 1970s when he was a student in the M.I.T. department of economics. Together we have developed the idea of using a "functional" perspective to analyze and to predict financial institutional change over time and to provide a better understanding of contemporaneous institutional differences across geopolitical borders. Zvi and I have refined and applied this idea in a series of working papers, published articles, and book chapters. In 1992, Zvi and my HBS colleague and my former MIT student, Carliss Baldwin, led the way to the creation of the Global Financial System project at the Harvard Business School. The project which involves several of my finance colleagues (and Zvi) working together with senior management from 15 major global financial-service firms has considerably expanded the research effort devoted to applying the functional approach to the financial system and to the management of financial institutions. Whether published as jointly or singly authored, my work with Zvi in this area has always been collaborative. Conceived at the outset as a parallel development to our research, but completed only now, is our textbook on basic finance that applies this perspective and presents the subject as a set of principles much like first-courses in economics and the physical sciences.

Throughout the last 30 years of academic research, I have been involved in finance practice. The vast bulk of my research has been in mathematical finance theory, but I believe that my involvement in practice has shaped that research and in turn has been shaped by it, this interplay to the benefit of both. A targeted instance can be found in the section of my 1973 rational option pricing paper on pricing and hedging the risk of the "down-and-out" call option. I became aware of such instruments in the early 1970s only as a consequence of a consulting assignment from a firm that was issuing them in Asia. In the decades since, the down-and-out option has become the prototype example of the exotic option, which is now a large, mainstream class of financial-product offerings.

My first consulting experience was in 1969 for a southern California bank on the pricing of warrants. Ironically, had the "equal-yield-for-equal-sigma-risk" model I developed *ad hoc* for them been taken to its continuous-trading limit, it would have led to the Black-Scholes pricing formula but of course without any of the rigorous foundation underlying that formula which includes the key hedging insight of Black and Scholes. Myron Scholes and I began working together on consulting projects shortly after I joined the Sloan faculty. In 1972, we were engaged by Mathew Gladstein of the options department of Donaldson, Lufkin, & Jenrette to develop option pricing and hedging models for the over-the-counter market and later for the new Chicago Board Options Exchange. In 1973, Leo Pomerance, head of the DLJ options department, became the first chairman of the CBOE. Myron and I learned much from our DLJ experience and indeed, our first publications together in 1978 and 1982 evolved directly from a mutual-fund project which DLJ helped us to underwrite.

As a consequence of the extraordinary decline in the stock market in 1973-74, Myron and I had an idea for a mutual-fund product that would provide significant downside protection to the investor while at the same time affording significant exposure to upside movements in the stock market. The strategy designed to do this was to purchase a diversified portfolio of call options with 10 percent of the assets and to invest the balance of the assets in short-term money-market instruments, with those proportions rebalanced every 6 months. Since the strategy involved option buying instead of option writing, many cautioned us that the SEC might see it as "too speculative" for the first option-based mutual fund in the United States and thus, would create serious roadblocks. They were wrong: the staff of the SEC apparently understood the fund's relatively conservative design and approved it with essentially no delays. The strategy was thus implemented with the creation of Money Market/Options Investment, Inc., an open-ended mutual fund, which went effective in February 1976. The portfolio's subsequent performance fit the simulations projected for it. Nevertheless, and despite being a direct predecessor to the portfolio-insurance products of the 1980s and the various successful "floor" products offered around the globe in the 1990s, MM/OI was not a commercial success. Still, it was for us a broadening experience about the multi-dimensional aspects of setting up a new financial entity. As Myron is fond of observing, "Sometimes the early bird gets the worm ... and sometimes, it gets frozen."

For the rest of the 1970s and much of 1980s, I kept my hand in practice, serving on a few mutual fund boards and being elected a trustee of College Retirement Equities Fund. During the early 1980s, several of my former students from M.I.T., most of them Ph.D.s, were attracted to Salomon Brothers, the global investment bank, by John Meriwether and under his leadership, they helped build an enormously successful proprietary trading group focused on arbitrage in the fixed-income markets. The core financial technology used in the group was based on the Black-Scholes-Merton derivative-security models, but it was highly refined to take account of much greater empirical detail and practical market experience. In 1988, one of those former students, Eric Rosenfeld, and Thomas Strauss, then President of Salomon, came to see me about becoming a special consultant to the Office of the Chairman. They made me an offer I couldn't refuse: unlike the simple model-building/product-design role of my past consultancies, this one also called for a role as trusted advisor (with technical skills) to the CEO on business matters of the firm and on the direction of institutional change in the global financial system. One could hardly imagine a better fit to inform, and to be informed by, my then-new direction of research on the functional perspective. Over the next four years, I learned much about the operations and management of a global intermediary, and trust that I contributed something as well. I definitely strengthened old friendships with former students and developed new friendships with their colleagues, and Myron and I got back together in

practice when he joined Salomon from Stanford.

In early 1993, John Meriwether who had left Salomon in 1991, Eric Rosenfeld who had recently left and James McEntee, former chairman and cofounder of Carroll-McEntee, the primary government-bond dealer, and John's long-time friend, had the idea of building a new firm to undertake fixed-income arbitrage on a global basis. The thought of working with John and Eric once again and having a hand in building a large-scale financial firm from scratch was exciting and I immediately volunteered to help out.

Over the ensuing months, one at a time, senior members of John's old group left Salomon and showed up ready to get involved in what became Long-Term Capital Management (LTCM): Victor Haghani arrived in the spring; Gregory Hawkins and Myron Scholes (bringing us back together in practice once again) in the summer; William Krasker in the fall; and Richard Leahy and Larry Hilibrand at year end. The last of the founders, David Mullins, who joined LTCM in late winter, never worked at Salomon. With a Ph.D. from M.I.T. and 15 years on the finance faculty at Harvard Business School before going into government service, he exemplifies the strong M.I.T. and HBS connections among the founders of LTCM: seven of the eleven founders (and nine of the current sixteen principals of the firm) were either graduates, or on their faculties, or both.

This small group of founding principals, together with a few key early employees, put together and tested the financial, telecommunication, and computer technologies, hired the strategists and operations people to run them, designed the organizational structure of the business, executed the complex contractual agreements with investors and counterparties, found and outfitted physical quarters in both the United States and London, and helped to raise over \$1 billion from investors. The design and development efforts along each of these dimensions attempted to marry the best of finance theory with the best of finance practice. It all came together in February 1994 when the firm began active business. Today, LTCM has 180 employees, a third office in Tokyo, and its capital has grown considerably.

It was deliciously intense and exciting to have been a part of creating LTCM. For making it possible, I will never be able to adequately express my indebtedness to my extraordinarily talented LTCM colleagues.

The distinctive LTCM experience from the beginning to the present characterizes the theme of the productive interaction of finance theory and finance practice. Indeed, in a twist on the more familiar version of that theme, the major investment magazine, *Institutional Investor* characterized the remarkable collection of people at LTCM as "The best finance faculty in the world. "

In long retrospect, unexpected roads happily traveled.

#### Personal

Born: July 31, 1944  
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#### Education

B.S., Columbia University (Engineering Mathematics), 1966  
M.S., California Institute of Technology (Applied Mathematics), 1967  
Ph.D., Massachusetts Institute of Technology (Economics), 1970

#### Honorary Degrees

Masters of Arts, Harvard University, 1989  
Doctor of Laws, University of Chicago, 1991  
Prof esseur Honoris Causa, Hautes Etudes Commerciales (Paris), 1995  
Doctoris Honoris Causa, University of Lausanne, 1996  
Doctoris Honoris Causa, University Paris-Dauphine, 1997  
Honorary Doctor, National Sun Yat-sen University, 1998

#### Academic Appointments

John and Natty McArthur University Professor, Graduate School of Business Administration, Harvard University, 1998-  
George Fisher Baker Professor of Business Administration, Graduate School of Business Administration, Harvard University, 1988-1998  
Invited Professor of Finance, Faculté des Sciences Economiques, Université de Nantes, June 1993  
Visiting Professor of Finance, Graduate School of Business Administration, Harvard University, 1987-1988  
J. C. Penney Professor of Management, A. P. Sloan School of Management, Massachusetts Institute of Technology, 1980-1988

Assistant Professor of Finance, 1970-73, Associate Professor, 1973-74;  
Professor 1974-80, A.P. Sloan School of Management, Massachusetts Institute of  
Technology  
Instructor, Department of Economics, Massachusetts Institute of Technology, 1969-1970  
Research Assistant to Paul Samuelson, Massachusetts Institute of Technology, 1968-1970

#### Other Professional Appointments

Principal, co-founder, Limited Partner, Long-Term Capital Management, L.P. (1993-)  
Research Associate, National Bureau of Economic Research, 1979-  
Trustee, College Retirement Equities Fund (1988-1996)  
Director, Travelers Investment Management Company (1987-1991)  
Director, ABT Investment Series (1983-1988)  
Director, ABT Utility Income Fund (1982-1988)  
Trustee, ABT Growth and Income Trust (1982-1988)  
Director, Nova Fund (1980-1988)

#### Elected Societies and Positions

Member, Tau Beta Pi, Columbia University, 1965  
Member, Sigma Xi, Massachusetts Institute of Technology, 1970  
Director, American Finance Association, 1982-84; 1987-88  
Fellow, Econometric Society, 1983  
Fellow, American Academy of Arts and Sciences, 1986  
President, American Finance Association, 1986  
Vice President, The Society for Financial Studies, 1993-96  
Member, National Academy of Sciences, 1993  
Senior Fellow, International Association of Financial Engineers, 1994  
Fellow, Institute for Quantitative Research in Finance ("Q Group"), 1997  
Honorary Member, the Bachelier Finance Society, 1997

#### Awards

1964 Faculty Scholar Award, Columbia University  
1971-72 Salgo-Noren Award for Excellence in Teaching, Massachusetts Institute of  
Technology  
1977-78 Graduate Student Council Teaching Award, Massachusetts Institute of  
Technology  
1983 Leo Melamed Prize, University of Chicago  
1985, First Prize, Roger Murray Prize Competition, Institute for Quantitative Research  
1986 in Finance  
1989 Distinguished Scholar Award, Eastern Finance Association  
1993 International INA - Accademia Nazionale dei Lincei Prize National Academy of  
Lincei, Rome  
1993 FORCE Award for Financial Innovation, Fuqua School of Business, Duke  
University  
1993 Financial Engineer of the Year Award, International Association of Financial  
Engineers  
1997 The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel  
1998 Inducted, Derivatives Hall of Fame, *Derivatives Strategy*

#### Selected Lectures

1975 Distinguished Speaker Lecture, Western Finance Association  
1985 Mortimer Hess Memorial Lecture, Association of the Bar of the City of New York  
1988 12th Annual Lecture, Geneva Association, Paris  
1992 Scholl Chair in Finance Distinguished Speaker Lecture, DePaul University  
1993 Lecture, Discussion Meeting on Mathematical Finance, The Royal Society,  
London  
1993 Keynote, 10th International Conference in Finance, Association Française de  
France  
1994 AEA/AFA Speaker, Allied Social Sciences Meetings  
1994 Speaker, International Monetary Conference, London  
1995 Lecture, Newton Institute Seminar, Isaac Newton Institute for Mathematical  
Sciences, Cambridge  
1995 Keynote, 12th International Conference in Finance, Association Française de  
France  
1995 Keynote, 25th Anniversary, Financial Management Association  
1996 Oxford University Press and Massachusetts Institute of Technology, Sloan  
School of Management Distinguished Lectures in Business, Massachusetts  
Institute of Technology, Cambridge  
1996 Donor's Lecture, London Business School, London  
1996 Inaugural, Dean's Research Seminar, Harvard Business School

- 1996 Faculty Inaugural Session, University of Lausanne
- 1996 Paolo Baffi Lecture on Money and Finance, Bank of Italy, Rome
- 1997 Edgar Lorch Memorial Lecture, Sigma Xi, Columbia University
- 1998 Lionel McKenzie Lecture, University of Rochester
- 1998 Martin H. Crego Lecture, Vassar College
- 1998 I.E. Block Community Lecture, Society for Industrial and Applied Mathematics

#### Advisory and Editorial Boards

##### *Current:*

- International Board of Scientific Advisers, Tinbergen Institute (1995-)
- Advisory Board, Brookings-Wharton (1997-)
- Advisory Board, *International Journal of Theoretical & Applied Finance* (1997-)
- Advisory Board, Center for Global Management and Research, George Washington University (1996-)
- Advisory Board, *European Finance Review* (1997-)
- Advisory Board, *Journal of Financial Education* (1995-)
- Advisory Board, *Review of Derivatives Research* (1993-)
- Advisory Board, *Japan Financial Economics Association* (1993-)
- Advisory Board, *Mathematical Finance* (1989-)
- Editorial Board, *Finance India* (1988-)
- Associate Editor, *Journal of Fixed Income* (1991-)
- Associate Editor, *Journal of Banking and Finance* (1977-1979, 1992-)

##### *Past:*

- Advisory Board, *The New Palgrave Dictionary of Money and Finance* (1989-1992)
- Selection Editor, *Papers and Proceedings, Journal of Finance*, July 1986
- Co-Editor, *Journal of Financial Economics* (1974-1977)
- Associate Editor, *Financial Review* (1992-1997)
- Associate Editor, *Geneva Papers on Risk and Insurance* (1989-1996)
- Associate Editor, *Journal of Financial Economics* (1977-1983)
- Associate Editor, *Journal of Money, Credit and Banking* (1974-1979)
- Associate Editor, *Journal of Finance* (1973-1977)
- Associate Editor, *International Economic Review* (1972-1977)
- Founding Committee, *Review of Financial Studies* (1986)

#### Publications, Cases and Unpublished Papers

##### *Books*

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- The Global Financial System: A Functional Perspective, with D. Crane, K. Froot, S. Mason, A. Perold, Z. Bodie, E. Sirri, and P. Tufano, Boston: Harvard Business School Press, 1995.
- Cases in Financial Engineering: Applied Studies of Financial Innovation, with S. Mason, A.F. Perold, and P. Tufano, Prentice-Hall, 1995.
- Continuous-Time Finance, Basil Blackwell, Inc. 1990; Revised Edition 1992.
- The Collected Scientific Papers of Paul A. Samuelson Volume III, editor, Cambridge, MIT Press 1972.

##### *Published Papers*

- "The Global Financial System Project," with P. Tufano, in T.K. McCraw, ed., Intellectual Venture Capital: Essays in Honor of Dean John H. McArthur, Boston: Harvard Business School Press, forthcoming 1998.
- "Applications of Option-Pricing Theory: Twenty-Five Years Later," *Les Prix Nobel 1997*, Stockholm: Nobel Foundation.
- "Foreword," *Mathematics of Derivative Securities*, M. A. H. Dempster and S. Pliska, eds., Cambridge University Press, 1997.
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- "Financial Innovation and the Management and Regulation of Financial Institutions," *Journal of Banking and Finance*, 19, July 1995.
- "Mark-to-Market Accounting for Banks and Thrifts: Lessons from the Danish Experience," with V. Bernard and K. Palepu, *Journal of Accounting Research*, 33, 1, Spring 1995.



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