

HARRY M. MARKOWITZ

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1. EDUCATION:

<u>Degree</u>	<u>Institution</u>	<u>Field</u>	<u>Dates</u>
Ph.D.	Univ. of Chicago	Economics	1954
M.A.	Univ. of Chicago	Economics	1950
Ph.B.	Univ. of Chicago	Liberal Arts	1947

2. WORK EXPERIENCE:

Adjunct Professor, Rady School of Management, 2007-Present
President, Harry Markowitz Company, 1984-Present
Director of Research, Daiwa Securities Trust Company, 1990-2000
Marvin Speiser Distinguished Professor of Finance and Economics,
Baruch College, 1982-93, (currently, Distinguished Professor, Emeritus)
Visiting Professor, London Business School, 1991 Semester
Visiting Professor, London School of Economics, 1991 Semester
Visiting Professor, University of Tokyo, 1990-1 Semester
Research Staff Member, IBM, 1974-83
Professor, Rutgers University, 1980-82
Visiting Professor, Hebrew University, 1975 Semester
Consultant, 1972-74
Professor, Wharton, 1972-74
President, Arbitrage Management Co., 1969-72
Professor, UCLA, 1968-69
Chairman of the Board and Technical Director, Consolidated Analysis
Centers, Inc., 1963-68
Research Associate, The RAND Corp., 1951-60; 1961-63
Consultant, General Electric, 1960-61

3. PUBLICATIONS:

A. Books:

Risk-Return Analysis: The Theory and Practice of Rational Investing
Volume I, McGraw-Hill 2013.

The Theory & Practice of Investment Management with Frank J. Fabozzi, editors,
John Wiley & Sons, Inc., 2002.

Portfolio Selection: Efficient Diversification of Investments, John Wiley and
Sons, 1959, Yale University Press, 1970, Basil Blackwell, 1991.

Mean-Variance Analysis in Portfolio Choice and Capital Markets, Basil
Blackwell, New York, 1987, 1989, 1990 paperback.

Mean-Variance Analysis in Portfolio Choice and Capital Markets. With Chapter 13 by G. Peter Todd (2000). First published in 1987 by Basil Blackwell. Revised reissue by Frank Fabozzi and Associates, New Hope, PA (2000).

Adverse Deviation by J. Woody with A. Goldstein, B. Markowitz and H. Markowitz, Society of Actuaries, 1981.

The EAS-E Programming Language with A.H. Malhotra & D.P. Pazel, IBM Thomas J. Watson Research Center, Yorktown Heights, N.Y., 1981.

The Simscript II Programming Language, with P. Kiviat & R. Villanueva, Prentice Hall, 1969.

Studies in Process Analysis: Economy-wide Production Capabilities, with A.S. Manne, et al, John Wiley and Sons, 1963, published in Russian, 1967.

SIMSCRIPT: A Simulation Programming Language, with B. Hausner & H. Karr, Prentice Hall, 1963.

B. Chapters in Books:

"Variations in Economic Analysis: Essays in Honor of Eli Schwartz," (2010) *A Taxonomy of Utility Functions* Benjamin J. Gillen and Harry M. Markowitz. pp.61-69.

Markowitz (2006), *Samuelson and Investment for the Long Run*, "Samuelsonian Economics and the Twenty-First Century, Oxford Press 2006 Chapter 17, pp. 252-261.

"Risk Return Analysis", *Handbook of Asset and Liability Management Volume 1: Theory and Methodology*, Elsevier, Amsterdam. (2006)

"Foreword", *The Fundamental Index : A Better Way to Invest* by Robert D. Arnott, Jason C. Hsu & John M. West, Wiley, (2008)

"Foreword", *Equity Management, Quantitative Analysis for Stock Selection*, by Bruce Jacobs and Kenneth Levy, McGraw-Hill, 2000

"Foreword", *Investments*, by Edwin J. Elton and Martin J. Gruber, Volumes 1 and 2, The MIT Press, 1999.

"Foreword", *Capital Ideas and Market Realities* by Bruce Jacobs, Blackwell Publishers, 1999.

"Foreword", *Insight.xla Business Analysis Software for Microsoft Excel* by Sam L. Savage, Duxbury Press, Brooks/Cole Publishing Company, 1998.

"On Socks, Ties and Extended Outcomes", *Economic and Environmental Risk and Uncertainty: New Models and Methods*, Kluwer Academic Publishers, 1997, pp. 219-226.

"Foreword", *Optimal Consumption and Investment with Bankruptcy* by Suresh P. Sethi, Kluwer Academic Publishers, 1996.

"New 'Financial Market Equilibrium' Results: Implications for Practical Financial Optimization" in *Financial Optimization*, Stavros A. Zenios, editor, Cambridge

University Press, Cambridge, England, 1993.

"Mean-Variance Analysis", The New Palgrave: A Dictionary of Economic Theory and Doctrine, The Macmillan Press Ltd., London, 1987.

"Simulator Design and Programming", Computer Performance Modeling Handbook. Steven S. Lavenberg, editor, Academic Press, 1983.

"The ER and EAS Formalisms for System Modeling, and the EAS-E Language", with A. Malhotra and D. Pazel in Entity-Relationship Approach to Information Modeling and Analysis, Peter C. Chen, editor, Elsevier Science Publishers, 1983.

"Sparsity and Piecewise Linearity in Large Portfolio Optimization Problems", with A. Perold, Sparse Matrices and Their Uses, Iain S. Duff, editor, Academic Press, 1981.

"SIMSCRIPT: Past, Present and Some Thoughts About the Future", in Current Issues in Computer Simulation, Nabil R. Adam & Ali Dogramaci, editors, Academic Press, 1979.

"SIMSCRIPT", Encyclopedia of Computer Science and Technology, Vol. 13, J. Belzer, A.G. Holzman, A. Kent, editors, Marcel Dekker, Inc., 1979.

"An Algorithm for Finding Undominated Portfolios", Financial Decision Making Under Uncertainty, H. Levy & M. Sarnat, editors, Academic Press, 1977.

"Industry-wide, Multi-industry and Economy-wide Process Analysis", The Structural Interdependence of the Economy, T. Barna, editor, John Wiley and Sons, New York. 1954 Chapter 5, pp. 119-150

C. Papers in Professional Journals:

"Portfolio Selection", The Journal of Finance, March 1952.

"The Utility of Wealth", Journal of Political Economy, April 1952.

"Concepts and Computing Procedures for Certain X_{ij} Programming Problems", Proceedings of the Second Symposium in Linear Programming, Vol. 2, National Bureau of Standards, 1955.

"The Optimization of a Quadratic Function Subject to Linear Constraints", Naval Research Logistics Quarterly, Vol. III, 1956.

"On the Solution of Discrete Programming Problems", with A.S. Manne, Econometrica, 1957.

"The Elimination Form of the Inverse and Its Application to Linear Programming", Management Science, 1957.

"The Simscript Language", with B. Dimsdale, IBM Systems Journal, Vol. 3,

No. 1, 1964.

"Simulating with Simscript", Management Science, June 1966.

"The Distribution System Simulator", with M.M. Conners, C. Coray, C.J. Cuccaro, W.K. Green, D.W. Low, Management Science, April 1972.

"Markowitz Revisited", Financial Analysts Journal, Sept./Oct. 1976.

"Investment for the Long Run: New Evidence for an Old Rule", The Journal of Finance, December 1976.

"Approximating Expected Utility by a Function of Mean and Variance", with H. Levy, American Economic Review, June 1979.

"Portfolio Analysis with Factors and Scenarios", with A. Perold, The Journal of Finance, Vol. 36, No. 14, September 1981.

"Barriers to the Practical Use of Simulation Analysis" 1981 Winter Simulation Conference Proceedings Vol. 1 pp. 3-9

"The System Architecture of EAS-E: An Integrated Programming and Data Base Language", with D.P. Pazel & A.H. Malhotra, IBM Systems Journal, Vol. 22, No. 3, 1983.

Nonnegative or Not Nonnegative: A Question About CAPMs", Journal of Finance, Vol. 38, No. 2, May 1983.

"EAS-E: An Integrated Approach to Application Development", with A. Malhotra, D.P. Pazel, ACM Transactions on Database Systems, Vol. 8, No. 4, December 1983.

"Mean-Variance Versus Direct Utility Maximization", with H. Levy and Y. Kroll, Journal of finance, Vol. 39, No. 1, March 1984.

"The EAS-E Application Development System: Principles and Language Summary", with A.H. Malhotra, D.P. Pazel, Communications of the ACM, Vol. 27, No. 8, August 1984.

"The Two-Beta Trap", The Journal of Portfolio Management, Vol. 11, No. 1, Fall 1984.

"Investment Rules, Margin and Market Volatility", with G. Kim, The Journal of Portfolio Management, 16(1), 45-52, Fall, 1989.

An Entity-Relationship Programming Language", with A.H. Malhotra, Y. Tsalalikhin, D.P. Pazel and L.M. Burns, IEEE Transactions on Software Engineering, Vol. 15, No. 9, September 1989.

"Risk Adjustment", Journal of Accounting, Auditing and Finance, Conference on Productivity, Vol. 5, Nos. 1/2 (New Series), Winter/Spring 1990.

"Normative Portfolio Analysis: Past, Present and Future", Journal of Economics and Business, Special Issue on Portfolio Theory, 42 (2), May 1990, pp 99-103.

"Foundations of Portfolio Theory", Journal of Finance, Vol. 46, No. 2, June 1991, pp 469-477 (Nobel Lecture).

"Individual Versus Institutional Investing", Financial Services Review, 1(1), 1991, pp 1-8.

"Markets and Morality: Or Arbitrageurs Get No Respect". The Journal of Portfolio Management Vol.18, No. 2, pp. 84-93. Winter (1992).

"Fast Computation of Mean-Variance Efficient Sets Using Historical Covariances", with Peter Todd, Ganlin Xu, Yuji Yamane, Journal of Financial Engineering, 1(2), 1992.

"A Theory of Practice", This Week's Citation Classic, Current Contents, 24(36), Social and Behavioral Sciences, September 7, 1992 also Current Contents, 14(19), Arts and Humanities, September 14, 1992.

"An Algorithm for Portfolio Selection in a Lognormal Market" with Siegfried Schaible and William T. Ziemba, International Review of Financial Analysis, 1(2), 1992, 109-113.

"L'Histoire de la Finance Moderne", Journal de la Societe de Statistique de Paris, 133(4), 1992, 13-33. Translated by G. Gallais-Hamonno.

"Trains of Thought", The American Economist, (Journal of the International Honor Society in Economics), 37(1), Spring, 1993, 3-9.

"Computation of Mean-Semivariance Efficient Sets by the Critical Line Algorithm", with P. Todd, G. Xu, Y. Yamane, Annals of Operations Research, Vol. 45(1993), pp 307-317.

"A Comparison of Some Aspects of the U.S. and Japanese Equity Markets", with M. Bloch, J. Guerard, P. Todd, G. Xu, Japan and the World Economy, Vol. 5 (1993), pp. 3-27.

"Analysis and Intuitive Decision Making Models in Business: A Foreword", Mid-Atlantic Journal of Business, Vol. 30, No. 1, March 1994.

"Data Mining Corrections", with Gan Lin Xu, The Journal of Portfolio Management, Vol. 21, No. 1, Fall 1994, pp. 60-69.

"The General Mean-Variance Portfolio Selection Problem", Phil. Trans. R. Soc. Lond. A, Vol. 347, 1994, The Royal Society, pp. 543-549.

"The Value of a Blank Check", with D. Reid and B. Tew, The Journal of Portfolio Management, Vol. 20, No. 4, Summer 1994, pp. 82-91.

"The Likelihood of Various Stock Market Return Distributions; Part 1: Principles of Inference", with Nilufer Usmen, Journal of Risk and Uncertainty, Vol. 13 (1996), pp. 207-219. Kluwer Academic Publishers.

"The Likelihood of Various Stock Market Return Distributions; Part 2: Empirical Results", with Nilufer Usmen, Journal of Risk and Uncertainty, Vol. 13 (1996), pp. 221-247. Kluwer Academic Publishers.

"Deflating Research Expectations", with Gan Lin Xu and Bluford Putnam, Global Investor, September 1996.

"DPOS: The Daiwa Portfolio Optimization System", VBA Journaal, Dertiende jaargang nr. 3, September 1997, pp. 4-7.

- "A More Efficient Frontier", with Felix Schirripa and Nan D. Tecotzky, The Journal of Portfolio Management, May 1999, pp. 99-108.
- "The Early History of Portfolio Theory: 1600-1960", Financial Analysts Journal, July/August 1999, Vol. 55, No. 4, pp. 5-16.
- "Efficient Portfolios, Sparse Matrices, and Entities: A Retrospective" Operations Research January/February 2002, Vol 50, No.1, pp. 154-160.
- "The Legacy of Modern Portfolio Theory", with Frank Fabozzi and Francis Gupta, The Journal of Investing Fall 2002, pp. 7-22.
- "Single-Period Mean-Variance Analysis in a Changing World" with Erik L. van Dijk Financial Analysts Journal, March/ April 2003, Vol 59, No.2, pp. 30-44.
- "Resampled Frontiers versus Diffuse Bayes: An Experiment" Journal of Investment Management 2003, Vol. 1, No. 4, pp. 9-25.
- "Financial Market Simulation" with Bruce Jacobs and Kenneth Levy, The Journal of Portfolio Management 30TH Anniversary Issue September 2004, pp.142-152.
- "Portfolio Optimization with Factors, Scenarios, and Realistic Short Positions" with Bruce Jacobs and Kenneth Levy, Operations Research Vol. 53, No. r, July-August 2005, pp. 586-599.
- "Market Efficiency: A Theoretical Distinction and So What?" Financial Analysts Journal, 2005 Vol. 61, No. 5, pp. 17-30.
- "A Note on Semivariance" with Hanqing Jin and Xun Yu Zhou, Mathematical Finance, Vol. 16, No. 1, pp. 53-62. January 2006.
- "Trimability and Fast Optimization of Long-Short Portfolios" with Bruce Jacobs and Kenneth Levy, Financial Analysts Journal Vol. 62, No 2 pp. 36-46. March/April 2006
- "CAPM Investors Do Not Get Paid for Bearing Risk: A Linear Relation Does Not Imply Payment for Risk", The Journal of Portfolio Management pp. 91-94 Winter (2008)
- "Proposals Concerning the Current Financial Crisis" Financial Analysts Journal Vol. 65, No. 1, pp. 25-28. (2009) January/February.
- "Portfolio Theory under Pressure" The Journal of The New York Society of Security Analysts, The Investment Professional, Vol. 2, No. 2 pp. 55-57. (2009) Spring.
- "Ideas and Innovation across Multiple Disciplines: A Discussion with Nobel Laureate Harry M. Markowitz, PhD." Journal of Investment Consulting Vol. 10, No.1, pp.6-16. (2009). Summer.
- "Modern Portfolio Theory, Financial Engineering, and Their Roles in Financial Crises" CFA Institute: Conference Proceedings Quarterly Vol. 26, No. 4 pp.1-6. December. (2009)

“Simulating Security Markets in Dynamic and Equilibrium Modes” with Bruce Jacobs and Kenneth Levy Financial Analysts Journal Vol. 66, No. 5, pp. 42-53. (2010).

“Portfolio Theory: As I Still See It,” Annual Review of Financial Economics Vol. 2 (2010) pp. 1-23. (2010)

“Portfolio Optimization with Mental Accounts” with Sanjiv Das, Jonathan Scheid, and Meir Statman, Journal of Financial and Quantitative Analysis Vol. 45, No. 2 pp. 1-24. (2010).

“Employee Stock Ownership and Diversification” with J. Blasi and Douglas Kruse, Annals of Operations Research: Vol. 176, No. 1, pp. 95-107. (2010)

“Risk and Lack of Diversification under Employee Ownership and Shared Capitalism.” with Joseph Blasi and Douglas Kruse. In “Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options.” National Bureau of Economic Research. pp. 105-136. (2010).

“The Supply and Demand of Alpha,” with Robert Snigaroff and David Wroblewski. Journal of Investment Management, Vol. 9, No. 1, pp.4-16. (2011)

Markowitz, H.M. (2012a) “*Mean-Variance Approximations to the Geometric Mean*” Annals of Financial Economics Vol. 7, NO. 1 (April 2012) pp. 1-30

Markowitz, H.M. (2012b) “*The ‘Great Confusion’ concerning MPT*” International Journal of Finance No. 4, pp. 8-27. June

Markowitz, H.M. (2012c) “Which risk Measure Best Represents Return Distributions with Large Deviations?” International Journal Portfolio Analysis and Management, Vol. 1, No. 2, pp. 93-111. September

Markowitz, H.M. (2013) with J. B. Guerard Jr. and Ganlin Xu. Global Stock Selection Modeling and Efficient Portfolio Construction and Management, The Journal of Investing pp. 1 – 8. Winter.

D. RAND RESEARCH MEMORANDOMS

“Programming by Questionnaire” with Allen S. Ginsberg and Paula M. Oldfather, The Rand Corporation, Memorandum RM-4460-PR, April 1965.

“Programming by Questionnaire: How to Construct a Program Generator” with Paula M. Oldfather and Allen S. Ginsberg, The Rand Corporation, Memorandum RM-5129-PR, November 1966.

Programming by Questionnaire: The Job Shop Simulation Program Generator with Paula M. Oldfather, Allen S. Ginsberg and Patricia L. Love

The Rand Corporation, Memorandum RM-5162-PR, July 1967.

4. PROFESSIONAL HONORS, PRIZES:

Fellow, Econometric Society
Fellow, American Academy of Arts and Sciences, May 1987
ORSA/TIMS Von Neumann Theory Prize, May 1989
1990 Nobel Prize in Economic Sciences, December 1990
Honorary Doctorate from Universite D'Orleans, February 1992
Honorary Doctorate from University of Athens, February 1992
Named "Man of the Century" by editors of *Pensions and Investments*,
December 1999
Founders Award from the Mathematical Programming Society, August 2000
Honorary Doctorate from Aristotle University of Thessaloniki May 2003
Honorary Doctorate from the American International University in association with
Royal College of Physicians & Surgeons of the United States 2003

5. OFFICES HELD IN PROFESSIONAL SOCIETIES:

Member, Board of Directors, American Finance Association
Director, the Institute of Management Sciences (TIMS)
Former President, American Finance Association
Advisory Board for Financial Mathematics, Courant Institute, NYU
Member, Board of Directors, San Diego Symphony (2010)