CURRICULUM VITAE

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Education:

Princeton University, A.B., Summa Cum Laude, Economics, 1974 Massachusetts Institute of Technology, Ph.D., Economics, 1978

Honors, Fellowships, Grants:

Distinguished Fellow, Macro Finance Society, May 2016 Wemba West Core Teaching Award, 2003 Geewax-Terker Prize in Investment Research, 2000 MBA Core Curriculum Cluster Award, 1996-1997 Fellow of the Econometric Society, 1991-Sloan Research Fellowship, 1986-1988 John Kenneth Galbraith Award for Excellence in Teaching, 1984 Grants from National Science Foundation, 1982-91, 1993-1996 Grant from U.S. Department of Energy, 1981-82 Research Fellowship, Federal Reserve Bank of Boston, 1977-78 National Science Foundation Graduate Fellowship, 1974-77 Phi Beta Kappa, 1974

Employment:

Ronald A. Rosenfeld Professor, Department of Finance, The Wharton School of the University of Pennsylvania, 2003 Professor of Economics, The University of Pennsylvania, 1987Robert Morris Professor of Banking, Department of Finance, The Wharton School of the University of Pennsylvania, 1989- 2003
Ronald O. Perelman Professor of Finance, The Wharton School of the University of Pennsylvania, 1988-1989
Amoco Foundation Term Professor of Finance, The Wharton School of the University of Pennsylvania, 1986-1988
John L. Loeb Associate Professor of the Social Sciences, Department of Economics, Harvard University, 1983-1986
Assistant Professor, Department of Economics, University of Chicago, 1978-1980

Visiting Positions:

Distinguished Visiting Scholar, Anderson School of Management, UCLA, October 2017 Visiting Scholar, ChicagoBooth, January – June 2016

Visiting Professor, Department of Economics, Tel-Aviv University, December 1986-January 1987

Visiting Professor, Department of Economics, The Hebrew University of Jerusalem, Spring 1985

Other Professional Activities:

Advisory Board of the Carnegie-Rochester Conference Series, 1990-Research Associate, National Bureau of Economic Research, 1983-Congressional Budget Office, Panel of Economic Advisers, 2001 – 2005 Associate Editor, Journal of Money, Credit, and Banking, 1993-2002 Congressional Budget Office, Long-Term Modeling Group, 2001 Technical Panel on Assumptions and Methods, Social Security Advisory Board, 1999 Visiting Scholar, Federal Reserve Bank of Philadelphia, 1989-1992, 1996 Member, Editorial Board, Journal of Monetary Economics, 1985 - 1995 Member, Editorial Board, Journal of Financial Intermediation, 1989-1995 National Science Foundation Economics Advisory Panel, September 1992- April 1994 Member, Editorial Board, Federal Reserve Bank of New York Economic Policy Review, 1994 Member, Editorial Board, Journal of Economic Dynamics and Control, 1987-1994 Member, Editorial Board, The Quarterly Journal of Economics, 1983-85 Faculty Research Fellow, National Bureau of Economic Research, 1979-83 Economic Consultant to Bank of Portugal, Summer 1976

Publications:

I. Books

- Investment and the Value of Capital, Garland Publishing, Inc., New York, New York, 1979; also appears as Federal Reserve Bank of Boston, Report 65, December 1978.
- <u>The Collected Papers of Franco Modigliani</u> (editor), M.I.T. Press, Cambridge, Massachusetts, 1980, Volumes I, II, and III.
- <u>Macroeconomics</u>, Addison-Wesley Publishing, Reading Massachusetts, with Ben S. Bernanke, and, beginning with the sixth edition, Dean Croushore, first edition 1992, also translated into Italian; second edition 1995, also translated into Japanese; third edition 1998; fourth edition, 2001, also translated into Greek; fifth edition 2005, also translated into Chinese; sixth edition 2008, also translated into Chinese, Portuguese and Korean; seventh edition 2011, also translated into Greek; eighth edition 2014; ninth edition, 2017; tenth edition 2020.
- Macroeconomics, Canadian Edition, Addison-Wesley Publishers Limited, Don Mills, Ontario, Canada, with Ben S. Bernanke, Gregor W. Smith, and, beginning with the fourth edition, Ronald D. Kneebone, first edition 1995; second edition 1999; third edition 2003, fourth edition 2006, fifth edition 2009, sixth edition 2012, seventh edition 2015, eighth edition, 2019.
- Macroeconomics, European Edition, Addison Wesley Longman Limited, Essex, England, with Ben S. Bernanke and Robert McNabb, 1998.

II. Articles, Notes and Comments

- "Precautionary Saving in a Financially Constrained Firm," <u>Review of Financial Studies</u>, forthcoming, with Stavros Panageas.
- "An Analytic Framework for Interpreting Investment Regressions in the Presence of Financial Constraints," <u>Review of Financial Studies</u>, 35, 9 (September 2022), 4055-4104, with Stavros Panageas. (previously circulated as "The Impact of Financial Constraints on Investment, Dividends, and q," and "Tobin's q and Optimal Dividends, Investment, and Liquidity in a Financially-Constrained Firm") https://doi.org/10.1093/rfs/hhab130
- "The Analytics of Investment, q, and Cash Flow in the Presence of Measurement Error," <u>Journal of Financial Economics</u>, 128, 2 (May 2018), 363 377. https://doi.org/10.1016/j.jfineco.2018.02.005
- "Optimal Debt and Profitability in the Tradeoff Theory," Journal of Finance, 73, 1 (February 2018), 95 143. DOI: 10.1111/jofi.12590.
- "Crowding Out in Ricardian Economies," Journal of Monetary Economics, 87 (May 2017), 52-66.
- "Optimal Inattention to the Stock Market with Information Costs and Transactions Costs," <u>Econometrica</u>, 81, 4 (July 2013), 1455-1481, with Janice C. Eberly and Stavros Panageas. (to be reprinted in Michael Haliossos (ed.) <u>Household Finance</u>, in The International Library of Critical Writings in Economics, Mark Blaug, Founding Editor, Edward Elgar Publishing Ltd, forthcoming)
- "Investment, Valuation, and Growth Options," <u>Quarterly Journal of Finance</u>, March 2012 (2,1), with Janice C. Eberly. [early versions of the paper circulated under the title "Q for the Long Run"]
- "How Q and Cash Flow Affect Investment without Frictions: An Analytic Explanation," <u>The</u> <u>Review of Economic Studies</u>, 78, 4 (October 2011), 1179-1200, with Janice C. Eberly.
- "Equity Premia with Benchmark Levels of Consumption: Closed-Form Results," Chapter 4 in Rajnish Mehra (ed.) <u>Handbook of the Equity Risk Premium</u>, Amsterdam: Elsevier, 2008. pp. 117 – 157.
- "Ricardian Equivalence Theorem," in Steven N. Durlauf and Lawrence E. Blume (eds.), <u>New</u> <u>Palgrave Dictionary of Economics</u>, 2nd edition, Palgrave Macmillan, 2008. [revision and update of "The Ricardian Equivalence Theorem," in John Eatwell, Murray Milgate and Peter Newman (eds.), <u>The New Palgrave: A Dictionary of Economic</u> <u>Theory and Doctrine</u>, Vol. 4, The Macmillan Press, Ltd., September 1987, 174-179.]
- "Optimal Inattention to the Stock Market," <u>American Economic Review, Papers and</u> <u>Proceedings</u>, May 2007, with Janice C. Eberly and Stavros Panageas.
- "Optimal Taxation When Consumers Have Endogenous Benchmark Levels of Consumption," <u>The Review of Economic Studies</u>, 72, 1 (January 2005), 21-42.

- Comment on Michael Hurd: "Bequests: By Accident or by Design?" in Alicia H. Munnell and Annika Sunden (eds.) <u>Death and Dollars: The Role of Gifts and Bequests in</u> <u>America</u>, Washington, D.C.: The Brookings Institution, 2003, pp. 118-126.
- "The Effects of a Baby Boom on Stock Prices and Capital Accumulation in the Presence of Social Security," <u>Econometrica</u>, 71, 2 (March 2003), 551-578.
- "On the Invariance of the Rate of Return to Convex Adjustment Costs," <u>Review of Economic</u> <u>Dynamics.</u> 5, 3 (July 2002), 586-601.
- "An Exploration of the Effects of Pessimism and Doubt on Asset Returns," <u>Journal of</u> <u>Economic Dynamics and Control</u>, 26, 7-8 (July 2002), 1075-1092.
- "Will Bequests Attenuate the Predicted Meltdown in Stock Prices When Baby Boomers Retire?" <u>Review of Economics and Statistics</u>, 83, 4 (November 2001), 589-595. [reprinted as Chapter 9 in Robin Brooks and Assaf Razin (eds.) <u>Social Security</u> <u>Reform: Financial and Political Issues in International Perspective</u>, New York, NY: Cambridge University Press, 2005, pp. 307-319.]
- "The Effects of Investing Social Security Funds in the Stock Market When Fixed Costs Prevent Some Households from Holding Stocks," <u>American Economic Review</u>, 91, 1 (March 2001), 128-148.
- "The Social Security Trust Fund, the Riskless Interest Rate, and Capital Accumulation," in John Campbell and Martin Feldstein (eds.) <u>Risk Aspects of Investment-Based Social</u> <u>Security Reform</u>," Chicago: The University of Chicago Press, 2001, Chapter 5, pp. 153 - 193.
- "Comment on Chapters 2, 3, and 4," in Martin Feldstein (ed.) <u>The Costs and Benefits of</u> Price Stability, Chicago: The University of Chicago Press, 1999, 180-191.
- "The Effects of Irreversibility and Uncertainty on Capital Accumulation," <u>Journal of</u> <u>Monetary Economics</u>, 44, 3 (December 1999), 339-377.
- "Risk Premia and Term Premia in General Equilibrium," <u>Journal of Monetary Economics</u>, 43, 1 (February 1999), 3-33.
- "The Mix and Scale of Factors with Irreversibility and Fixed Costs of Investment," in Bennett McCallum and Charles Plosser (eds.) <u>Carnegie-Rochester Conference Series</u> <u>on Public Policy</u>, 48 (June 1998), 101-135, with Janice C. Eberly.
- "An Exact Solution for the Investment and Market Value of a Firm Facing Uncertainty, Adjustment Costs, and Irreversibility," <u>Journal of Economic Dynamics and Control</u>, 21, 4-5 (May 1997), 831-852, with Janice C. Eberly.
- "Comment on 'The Costs and Benefits of Going from Low Inflation to Price Stability' by Martin Feldstein," in Christina D. Romer and David H. Romer (eds.) <u>Reducing</u> <u>Inflation: Motivation and Strategy</u>, Chicago: The University of Chicago Press, 1997, 156-166.
- "Optimal Investment with Costly Reversibility," <u>Review of Economic Studies</u>, 63, 4 (August 1996), 581-593, with Janice C. Eberly.

- "Options, the Value of Capital, and Investment," <u>Quarterly Journal of Economics</u>, 111,3 (August 1996), 753-777, with Avinash Dixit, Janice C. Eberly, and Robert S. Pindyck.
- "A Unified Model of Investment under Uncertainty," <u>American Economic Review</u>, 84, 1 (December 1994), 1369-1384, with Janice C. Eberly. (reprinted in Kevin D. Hoover (ed.) <u>The Economic Legacy of Robert Lucas</u>, Jr., Volume III, Northampton, MA: Edward Elgar Publishing Limited, 1999).
- "Exact Solutions for Expected Rates of Return Under Markov Regime Switching: Implications for the Equity Premium Puzzle," Journal of Money, Credit and Banking, 26, 3 (August 1994, Part 1), 345-361.
- "Financing Losers in Competitive Markets," <u>Journal of Financial Intermediation</u>, 3, 2 (March 1994), 139-165, with George J. Mailath.
- "Intergenerational Altruism and the Effectiveness of Fiscal Policy--New Tests Based on Cohort Data," in Toshiaki Tachibanaki (ed.) <u>Savings and Bequests</u>, Ann Arbor: University of Michigan Press, 1994, 167-196, with Laurence J. Kotlikoff.
- "Comments on J. Bradford DeLong and Lawrence H. Summers, 'Equipment Investment and Economic Growth: How Strong Is the Nexus?'," <u>Brookings Papers on Economic</u> <u>Activity</u>, 1992:2, 200-205.
- "Can the Government Roll Over Its Debt Forever?," <u>Business Review</u>, Federal Reserve Bank of Philadelphia, November/December 1992, 3-18. Reprinted in <u>Handbook of Debt</u> <u>Management</u>, Gerald J. Miller (ed.), (New York: Marcel Dekker, Inc.), 1996.
- "Fiscal Policy with Impure Intergenerational Altruism," <u>Econometrica</u>, 59, 6 (November 1991), 1687-1711, with B. Douglas Bernheim.
- "The Equity Premium Puzzle," <u>Business Review</u>, Federal Reserve Bank of Philadelphia, (September/October 1991), 3-14. (to be reprinted in <u>The Financial Institutions and</u> <u>Markets Reader</u>, second edition, edited by Robert W. Kolb, Kolb Publishing Co., Miami, Florida.)
- "Some Observations on Demographics and Saving: A Comment," <u>Carnegie-Rochester</u> <u>Conference Series on Public Policy</u>, 34 (Spring 1991), 157-162.
- "Asset Prices under Habit Formation and Catching Up with the Joneses," <u>American</u> <u>Economic Review</u>, 80, 2 (May 1990), 38-42.
- "Birth, Death and Taxes," Journal of Public Economics, 39, 1 (June 1989), 1-15.
- "Consumption and Investment," Chapter 14 in Benjamin M. Friedman and Frank Hahn (eds.), <u>Handbook of Monetary Economics</u>, Volume II, Amsterdam: Elsevier Science Publishers, 1990, 725-778.
- "Assessing Dynamic Efficiency: Theory and Evidence," <u>Review of Economic Studies</u>, 56, 1 (January 1989), 1-20, with N. Gregory Mankiw, Lawrence H. Summers and Richard J. Zeckhauser.
- "Stock Prices under Time-Varying Dividend Risk: An Exact Solution in an Infinite-Horizon General Equilibrium Model," Journal of Monetary Economics, 22, 3 (November 1988), 375-393.

- "Investment and Sales: Some Empirical Evidence," in William A. Barnett, Ernst R. Berndt, and Halbert White (eds.), <u>Dynamic Econometric Modelling</u>, Cambridge University Press, 1988, 269-296, with Olivier J. Blanchard.
- "An Analysis of Fiscal Policy under Operative and Inoperative Bequest Motives," in Elhanan Helpman, Assaf Razin, and Efraim Sadka (eds.), <u>Economic Effects of the</u> <u>Government Budget</u>, M.I.T. Press, 1988, 91-106.
- "The Implications of Insurance for the Efficacy of Fiscal Policy," <u>Journal of Risk and</u> <u>Insurance</u>, 55, 2 (June 1988), 339-378.
- "Specification of the Joy of Giving: Insights from Altruism," <u>Review of Economics and</u> <u>Statistics</u>, 70, 1 (February 1988), 145-149, with Mark Warshawsky.
- "Fiscal Policies and International Financial Markets: Comment," in Jacob A. Frenkel (ed.) International Aspects of Fiscal Policies, University of Chicago Press, 1988, 217-221.
- "Operative Gift and Bequest Motives," <u>American Economic Review</u>, 77, 5 (December 1987), 1037-1047.
- "Comments," in Susan M. Wachter (ed.) <u>Social Security and Private Pensions: Providing for</u> <u>Retirement in the 21st Century</u>, D. C. Heath and Company, 1988, 35-40.
- "Optimal Monetary Growth," Journal of Monetary Economics, 19, 3 (May 1987), 437-450.
- "The Ricardian Equivalence Theorem," in John Eatwell, Murray Milgate and Peter Newman (eds.), <u>The New Palgrave: A Dictionary of Economic Theory and Doctrine</u>, Vol. 4, The Macmillan Press, Ltd., September 1987, 174-179.
- "Anticipated Tax Changes and the Timing of Investment: Comment," in Martin Feldstein (ed.) <u>The Effects of Taxation on Capital Formation</u>, University of Chicago Press, 1987, 196-200.
- "Aggregate Savings in the Presence of Private and Social Insurance," in Rudiger Dornbusch, Stanley Fischer and John Bossons (eds.) <u>Macroeconomics and Finance: Essays in</u> <u>Honor of Franco Modigliani</u>, M.I.T. Press, 1987, 131-157.
- "Capital Accumulation and Uncertain Lifetimes with Adverse Selection," <u>Econometrica</u>, 54, 5 (September 1986), 1079-1097.
- "Comment on Kotlikoff, Shoven, and Spivak," Journal of Labor Economics, 4, 3, part 2 (July 1986), S208-S215.
- "The Failure of Ricardian Equivalence under Progressive Wealth Taxation," Journal of Public Economics, 30, 1 (June 1986), 117-128.
- "The Expected Present Value of Profits and the Cyclical Variability of Investment," <u>Econometrica</u>, 54, 2 (March 1986), 249-273, with Olivier J. Blanchard.
- "Precautionary Saving and Accidental Bequests," <u>American Economic Review</u>, 75, 4 (September 1985), 777-791.
- "Dynamic Behavior of Capital Accumulation in a Cash-in-Advance Model," <u>Journal of</u> <u>Monetary Economics</u>, 16, 1 (July 1985), 55-71.

- "A Stochastic Model of Investment, Marginal q, and the Market Value of the Firm," <u>International Economic Review</u>, 26, 2 (June 1985), 305-322.
- "Inventories, Stock-outs and Production Smoothing," <u>Review of Economic Studies</u>, 52, 2 (April 1985), 283-293.
- "The Effects of Uncertainty on Investment and the Expected Long-Run Capital Stock," Journal of Economic Dynamics and Control, 7, 1 (February 1984), 39-53.
- "R & D and the Market Value of the Firm: A Note," in Griliches, Zvi (ed.), <u>R & D, Patents</u> and Productivity, University of Chicago Press, (1984), 261-269.
- "Energy Price Uncertainty and Optimal Factor Intensity: A Mean Variance Analysis," <u>Econometrica</u>, 51, 6 (November 1983), 1839-1845.
- "Tax Neutrality in the Presence of Adjustment Costs," <u>Quarterly Journal of Economics</u>, 98, 4 (November 1983), 705-712.
- "Market Structure and the Durability of Goods," <u>Review of Economic Studies</u>, 50, 4 (October 1983), 625-637.
- "Comment on 'Financing Private Business in an Inflationary Context: The Experience of Argentina between 1976 and 1980," in Aspe, Pedro, Rudiger Dornbusch and Maurice Obstfeld (eds.), <u>Financial Policies and the World Capital Market</u>, University of Chicago Press, (1983), 183-185.
- "On the Econometric Testing of Rationality-Market Efficiency," <u>Review of Economics and</u> <u>Statistics</u>, 65, 2 (May 1983), 318-323, with Frederic S. Mishkin.
- "An Intertemporal Model of Saving and Investment," <u>Econometrica</u>, 51, 3 (May 1983), 675-692, with Olivier J. Blanchard.
- "Optimal Investment under Uncertainty," <u>American Economic Review</u>, 73, 1 (March 1983), 228-233.
- "An Integrated View of Tests of Rationality, Market Efficiency and the Short-Run Neutrality of Monetary Policy," <u>Journal of Monetary Economics</u>, 11, 1 (January 1983), 3-24, with Frederic S. Mishkin.
- "Accelerated Depreciation and the Efficacy of Temporary Fiscal Policy: Implications for an Inflationary Economy," Journal of Public Economics, 19, 1 (October 1982), 23-47.
- "Dynamic Effects of Permanent and Temporary Tax Policies in a q Model of Investment," Journal of Monetary Economics, 9 (May 1982), 353-373.
- "A Dynamic Model of Investment and Capacity Utilization," <u>Quarterly Journal of</u> <u>Economics</u>, 96, 3 (August 1981), 379-403.
- "Taxes, Inflation, and the Durability of Capital," <u>Journal of Political Economy</u>, 89, 3 (June 1981), 548-560.
- "Dynamic Adjustment in a Putty-Putty Model: Implications for Testing the Putty-Clay Hypothesis," <u>International Economic Review</u>, 22, 1 (February 1981), 19-36.

- "Reply to Prescott's Comments," in Brunner, Karl and Allan H. Meltzer (eds.), <u>On the State</u> <u>of Macroeconomics</u>, Volume 12 of the Carnegie-Rochester Conference Series on Public Policy, a Supplementary Series to the <u>Journal of Monetary Economics</u>, (Spring 1980), 103-105.
- "Empirical Investment Equations: An Integrative Framework," in Brunner, Karl and Allan H. Meltzer (eds.), <u>On the State of Macroeconomics</u>, Volume 12 of the Carnegie-Rochester Conference Series on Public Policy, a Supplementary Series to the <u>Journal</u> <u>of Monetary Economics</u>, (1980), 39-91.
- "Money Demand during Hyperinflation," Journal of Monetary Economics, 5, 1 (1979), 97-104, with Rudiger Dornbusch, John Huizinga, and Alan Marcus.
- "Tax Incentives to Investment: An Assessment of Tax Credits and Tax Cuts," <u>New England</u> <u>Economic Review</u>, (November/December 1978), 54-66.
- "Input-Output Pricing in a Keynesian Model as Applied to Portugal," <u>Journal of</u> <u>Development Economics</u>, 5, (1978), 125-138, with Luis M. C. P. Beleza.
- "A Economia Portuguesa: Evolucao Recenta e Situacao Actual," in <u>Conferencia</u> <u>International sobre Economia Portuguese</u>, Lisbon, Portugal, (1977), with Miguel Beleza, Jeffrey Frankel, Raymond Hill, and Paul Krugman.
- "A Model of the Portuguese Economy," <u>Economia</u>, 1, 1, (1977), with Miguel Beleza, Jeffrey Frankel, Raymond Hill, and Paul Krugman.
- "A Comparison of Three Control Algorithms as Applied to the Monetarist Fiscalist Debate," <u>Annals of Economic and Social Measurement</u>, 4, 2, (1975); translated and reprinted in <u>Hacienda Publica Espanola</u> No. 51, (1978).

III. Working Papers and Manuscripts

Running Primary Deficits Forever in a Dynamically Efficient Economy: Feasibility and Optimality, joint with Stavros Panageas, August 2022, previously circulated as "Optimal Rollover of Government Debt in a Dynamically Efficient Economy."

"Are Zero-Covid Policies Optimal?" joint with Stavros Panageas, August 2020, revised August 2022 (previously circulated as "Social Distancing, Vaccination and the Paradoxical Optimality of an Endemic Equilibrium" and "Optimal Management of a Pandemic in the Short Run and the Long Run")

"Classical Measurement Error with Several Regressors," May 2017, revised May 2019.

"Investment with Leverage," June 2016.

"Optimal Capital Income Taxation," February 2006, revised May 2017.

"Investment, q with Fixed Costs: An Empirical Analysis," January 1996, with Janice C. Eberly.

- "Asset Prices under Heterogeneous Beliefs: Toward a Resolution of the Equity Premium Puzzle," Rodney L. White Center for Financial Research, Working Paper No. 9-89, February 1989.
- "The Long-Run Effects of Fiscal Policy under Altruism and Endogenous Fertility," revised February 1986.