

## **Arturo Estrella**

Professor Emeritus, School of Humanities, Arts and Social Sciences  
Rensselaer Polytechnic Institute  
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### **PRINCIPAL FIELDS**

Financial economics, macroeconomics, monetary policy, financial regulation, econometric theory and applied econometrics

### **EDUCATION**

Ph.D., Harvard University, Economics, 1983  
A.M., Harvard University, Economics, 1982  
M.A., University of Michigan, Applied Mathematics, 1976  
M.A., University of Puerto Rico, Mathematics, 1974  
A.B., Columbia University, Philosophy, 1972

### **POSITIONS HELD**

#### *Rensselaer Polytechnic Institute*

Professor Emeritus, School of Humanities, Arts and Social Sciences (2019- )  
Professor of Economics (2008-2018)  
Head of Economics Department (2008-2012)  
Professor of Economics and Finance, by courtesy, Lally School of Management and Technology (2010-2013)

#### *Economic Consultant*

Financial economics, econometric forecasting (2014- )

#### *University at Albany*

Affiliated Professor of Economics (2009-2018)

#### *Columbia University*

Adjunct Professor of Economics (2004-2006)

#### *Federal Reserve Bank of New York*

*Research Group*: Senior Vice President (1996-2008), Vice President, Assistant Vice President, Research Officer, Senior Economist, Economist (1983-1989, 1994-1995)

*Bank Supervision Group:* Assistant Vice President, Head of Banking Studies and Analysis (1990-1993), Member of working groups of the Basel Committee on Banking Supervision (1991-2001), Chair of Basel Committee Working Group on Credit Ratings (1999-2000)

*Markets Group:* Visiting Economist, Open Market Desk (1985)

*General Motors Corporation, Investment Funds Activity*  
Portfolio strategy advisor (1986-87)

*Fordham University, Graduate School of Arts and Sciences*  
Adjunct Lecturer, Economics Department (1985-86)

*Harvard University, Department of Economics*  
Teaching assistant for graduate macroeconomics, undergraduate macroeconomics and econometrics (1981-83)

*University of Puerto Rico, Faculty of Business Administration*  
Instructor, Management and Finance Departments (1978-79)

*Government of Puerto Rico Retirement System*  
Actuary (1976-78)

## **BOOKS**

“Alan Greenspan’s Three Recessions” In progress

“The Economics of Recession” Cheltenham, United Kingdom: Edward Elgar Publishers, November 2017

## **JOURNAL PUBLICATIONS**

“Risk-Taking Channel of Monetary Policy” (With Tobias Adrian and Hyun Song Shin)  
*Financial Management*, Fall 2019. Selected by editors as best article in Fall issue.

Monthly column on economic issues for *El Nuevo Día*, daily print and online newspaper in San Juan, Puerto Rico, January 2017-June 2019

“The Price Puzzle and VAR Identification” *Macroeconomic Dynamics* Volume 19, Issue 8, December 2015

“Valuing Guaranteed Bank Debt: The Roles of the Strength and Size of the Bank and the Guarantor” (with Sebastian Schich) *Journal of Economic and Financial Studies*, October 2015

“Puerto Rico Government Debt and the U.S. Federal Government” Monograph published and distributed by the Francisco Carvajal Foundation, Guaynabo, Puerto Rico, June 2015

“Market Discipline and Capital Regulation” In Hal Scott, ed., *Capital Study Report: Use of Market Discipline*, Committee on Capital Markets Regulation, Cambridge, MA, January 2014

"The impact of sovereign guarantees on the quality of bank debt: Theory and evidence from Europe" (with Sebastian Schich) In LaBrosse, Raymond, Rodrigo Olivares-Caminal, Sebastian Schich, and Dalvinder Singh, eds., *Financial Crisis Containment and Government Guarantees*, Edward Elgar Publishing, May 2013

“Discussion of ‘Mismatch Risk, Government Guarantees, and Financial Instability: The Case of the U.S. Pension System’ by Zvi Bodie” *International Journal of Central Banking*, January 2012

“Sovereign and Banking Sector Debt: Interconnections through Guarantees” (with Sebastian Schich) OECD *Financial Market Trends*, No. 101 Volume 2, 2011

“Monetary Tightening Cycles and the Predictability of Economic Activity.” (With Tobias Adrian) *Economics Letters*, May 2008

“The Yield Curve as a Leading Indicator: Some Practical Issues.” (With Mary R. Trubin) *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, July/August 2006

“The Yield Curve and Recessions.” *The International Economy*, Summer 2005

“Why Does the Yield Curve Predict Output and Inflation?” *Economic Journal*, July 2005

“Productivity, Monetary Policy, and Financial Indicators.” In *Investigating the Relationship between the Financial and the Real Economy*, Bank for International Settlements, Basel, Switzerland, April 2005

“Bank Capital and Risk: Is Voluntary Disclosure Enough?” *Journal of Financial Services Research*, October 2004

“The Cyclical Behavior of Optimal Bank Capital.” *Journal of Banking and Finance*, June 2004

“Critical Values and *P Values* of Bessel Process Distributions: Computation and Application to Structural Break Tests.” *Econometric Theory*, December 2003

“How Stable Is the Predictive Power of the Yield Curve? Evidence from Germany and the United States.” (with Anthony P. Rodrigues and Sebastian Schich) *Review of Economics and Statistics*, August 2003

“Monetary Policy Shifts and the Stability of Monetary Policy Models.” (with Jeffrey C. Fuhrer) *Review of Economics and Statistics*, February 2003

“Dynamic Inconsistencies: Counterfactual Implications of a Class of Rational Expectations Models.” (With Jeffrey C. Fuhrer) *American Economic Review*, September 2002

“Securitization and the Efficacy of Monetary Policy.” Federal Reserve Bank of New York *Economic Policy Review*, May 2002

“Capital Ratios and Credit Ratings as Predictors of Bank Failures.” (with Stavros Peristiani and Sangkyun Park) In Ong, Michael K., ed., *Credit Ratings: Methodologies, Rationale and Default Risk*, London: Risk Books, 2002

“Mixing and Matching: Prospective Financial Sector Mergers and Market Valuation.” *Journal of Banking and Finance*, December 2001

“Financial Innovation and the Monetary Transmission Mechanism.” *Focus on Austria*, Oesterreichische Nationalbank, 3-4 2001

“Dealing with Financial Instability: The Central Bank’s Toolkit.” Sveriges Riksbank *Economic Review*, Second Quarter 2001

“Regulatory Capital and the Supervision of Financial Institutions: Some Basic Distinctions and Policy Choices.” In Anthony Santomero, Staffan Viotti and Anders Vredin, eds., *Challenges for Modern Central Banking*, Boston: Kluwer Academic Publishers, 2001

“Comment on ‘A Regulatory Regime for Financial Stability’ (by David T. Llewellyn).” In Alexander Dallinger, ed., *Der einheitliche Finanzmarkt – Eine Zwischenbilanz nach zwei Jahren WWU (The Single Financial Market: Two Years into EMU)*, Oesterreichische Nationalbank, 2001

“Credit Ratings and Complementary Sources of Credit Quality Information.” (Chair of Working Group on Credit Ratings) Basel Committee on Banking Supervision Working Paper No. 3, August 2000

“Capital Ratios as Predictors of Bank Failures.” (with Stavros Peristiani and Sangkyun Park) Federal Reserve Bank of New York *Economic Policy Review*, July 2000

“Rethinking the Role of NAIRU in Monetary Policy: Implications of Model Formulation and Uncertainty.” (with Frederic S. Mishkin) In John B. Taylor, ed., *Monetary Policy Rules*, Chicago: NBER and University of Chicago Press, 1999

“The Future of Regulatory Capital: General Principles and Specific Proposals.” *Schweizerische Zeitschrift für Volkswirtschaft und Statistik (Swiss Journal of Economics and Statistics)*, December 1998

“Formulas or Supervision? Remarks on the Future of Regulatory Capital.” Federal Reserve Bank of New York *Economic Policy Review*, October 1998

“A New Measure of Fit for Equations With Dichotomous Dependent Variables.” *Journal of Business and Economic Statistics*, April 1998

“Predicting U.S. Recessions: Financial Variables as Leading Indicators.” (With Frederic S. Mishkin) *Review of Economics and Statistics*, February 1998

“Approximation of Changes in Option Values and Hedge Ratios: How Large Are the Errors?” (With John Kambhu) In *The Measurement of Aggregate Market Risk*, Bank for International Settlements, November 1997

“Is There a Role for Monetary Aggregates in the Conduct of Monetary Policy?” (With Frederic S. Mishkin) *Journal of Monetary Economics*, October 1997

“The Predictive Power of the Term Structure of Interest Rates in Europe and the United States: Implications for the European Central Bank.” (With Frederic S. Mishkin) *European Economic Review*, July 1997

“The Yield Curve as a Predictor of Recessions in the United States and Europe.” (With Frederic S. Mishkin) In *The Determination of Long-Term Interest Rates and Exchange Rates and the Role of Expectations*, Bank for International Settlements, August 1996

“Comment on ‘The Behavior of Interest Rates Implied by the Term Structure of Eurodollar Futures’ (by Narasimhan Jegadeesh and George G. Pennacchi).” *Journal of Money, Credit and Banking*, August 1996

“The Yield Curve as a Predictor of U.S. Recessions.” (With Frederic S. Mishkin) *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, June 1996

“Taylor, Black and Scholes: Series Approximations and Risk Management Pitfalls.” In *Risk Measurement and Systemic Risk: Proceedings of a Joint Central Bank Research Conference*, Board of Governors of the Federal Reserve System, January 1996

“A Prolegomenon to Future Capital Requirements.” Federal Reserve Bank of New York *Economic Policy Review*, July 1995

“The Price Risk of Options Positions: Measurement and Capital Requirements.” (With John Kambhu, Darryll Hendricks, Stefan Walter and Soo Shin) *Quarterly Review*, Federal Reserve Bank of New York, Summer-Fall 1994

“The Term Structure as a Predictor of Real Economic Activity.” (With Gikas Hardouvelis) *Journal of Finance*, June 1991

“Corporate Leverage and Taxes in the U.S. Economy.” In Edward J. Frydl, ed., *Studies on Corporate Leverage*, Federal Reserve Bank of New York, September 1990

“Possible Roles of the Yield Curve in Monetary Analysis.” (With Gikas Hardouvelis) In *Intermediate Targets and Indicators for Monetary Policy: A Critical Survey*, Federal Reserve Bank of New York, July 1990

“The Separation of Liquidity and Price Risk.” (With Edward J. Ozog) In *Funding and Liquidity: Recent Changes in Liquidity Management Practices at Commercial Banks and Securities Firms*, Federal Reserve Bank of New York, July 1990

“Integrating Liquidity and Price Risk Management.” (With Christine M. Cumming and Edward J. Ozog) In *Funding and Liquidity: Recent Changes in Liquidity Management Practices at Commercial Banks and Securities Firms*, Federal Reserve Bank of New York, July 1990

“Estimating the Funding Gap of the Pension Benefit Guaranty Corporation.” (With Beverly Hirtle) *Quarterly Review*, Federal Reserve Bank of New York, Fall 1988

“Interest Rate Swaps: An Alternative Explanation.” (With Marcelle Arak, Laurie Goodman and Andrew Silver) *Financial Management*, Summer 1988. Reprinted in C. R. Beidelman, ed., *Interest Rate Swaps*, Irwin, 1991.

“Consistent Margin Requirements: Are They Feasible?” *Quarterly Review*, Federal Reserve Bank of New York, Summer 1988

“Domestic Banks and Their Competitors in the Prime Commercial Loan Market.” In R.G. Davis, ed., *Recent Trends in Commercial Bank Profitability*, Federal Reserve Bank of New York, September 1986

“Collateralized Mortgage Obligations: Do They Reduce Cash Flow Uncertainty?” (With Andrew Silver) *Quarterly Review*, Federal Reserve Bank of New York, Summer 1984

“Corporate Use of Pension Overfunding.” *Quarterly Review*, Federal Reserve Bank of New York, Spring 1984. Reprinted in T.M. Havrilesky and R. Schweitzer, eds., *Contemporary Developments in Financial Markets and Institutions*, Harlan Davidson, 1987.

## **RESEARCH PAPER SERIES**

“Monetary Tightening Cycles, Financial Cycles, and the Business Cycle” (with Tobias Adrian and Hyun Shin) Federal Reserve Bank of New York Staff Report No. 421, January 2010; Presented at AEA Annual Meetings

“Monetary Tightening Cycles and the Predictability of Economic Activity.” (with Tobias Adrian) Federal Reserve Bank of New York Staff Report No. 397, October 2009; Includes updates to article published in *Economics Letters*, May 2008

“Consistent Covariance Matrix Estimation in Probit Models with Autocorrelated Errors.” (with Anthony P. Rodrigues) Federal Reserve Bank of New York Staff Report No. 39, April 1998

“Aggregate Supply and Demand Shocks: A Natural Rate Approach.” Federal Reserve Bank of New York Research Paper No. 9739, December 1997

## **ARTICLES IN PROGRESS**

“Credit Market States and the Credit Cycle”

“A Real-Time Recession Indicator”

“Generalized Canonical Regression”

“Sovereign Guarantees on Private Bank Debt: Effects on Credit Ratings and Credit Default Swap Spreads” (with Sebastian Schich)

“Extracting Business Cycle Fluctuations: What Do Time Series Filters Really Do?”

“Decoding Productivity: Business Cycle Properties of Labor Productivity Growth”

“One-Sided Test for an Unknown Breakpoint: Theory, Computation, and Application to Monetary Policy” (with Anthony P. Rodrigues)

## **SELECTED INVITED LECTURES**

*Financial Management Association Meetings*, New Orleans, Louisiana. Received Financial Management editors’ award for article “Risk-Taking Channel of Monetary Policy” (Tobias Adrian and Hyun Song Shin, coauthors). October 25, 2019

*University at Albany*. Economics seminar, “The Price Puzzle and VAR Identification.” March 9, 2016

*Francisco Carvajal Foundation*, Puerto Rico. Presentation and press conference, “Puerto Rico Government Debt and the U.S. Federal Government.” June 25, 2015

*Francisco Carvajal Foundation*, Puerto Rico. Overview and discussion of ideas for economic and financial development of Puerto Rico. January 14, 2014

*Organization for Economic Cooperation and Development*, Paris, France. “Sovereign and Banking Sector Debt: Interconnections through Guarantees.” October 2011

*International Monetary Fund*, Washington, D.C. “Reforming Bank Regulation: Beyond Basel II.” November 2009

*Banque de France and CREST*, Paris, France. “Term Premiums and the Predictability of Recessions.” November 2008

*International Monetary Fund*, Washington, D.C. “The Yield Curve as a Leading Indicator.” October 2008

*Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, NY.* Jerome S. Reinert '56 Visiting Executive Series: "The Crystal Ball in Interest Rates." October 2008

*Puerto Rico Chamber of Commerce, San Juan, Puerto Rico.* "Economic Conditions in the United States and Puerto Rico." June 2008

*Universidad del Sagrado Corazón, San Juan, Puerto Rico.* "Economic Conditions in the United States." October 2005

*Banco de España and IESE Business School, Madrid, Spain.* "Banks and Monetary Transmission in the Current U.S. Environment." October 2004

*Austrian National Bank, Vienna, Austria.* "Financial Innovation and the Monetary Transmission Mechanism." November 2001

*Sveriges Riksbank, Stockholm, Sweden.* "Dealing with Financial Instability: The Central Bank's Toolkit." January 2001

*Sveriges Riksbank, Stockholm, Sweden.* "Regulatory Capital and the Supervision of Financial Institutions: Some Basic Distinctions and Policy Choices." January 2000

*Bank for International Settlements, Basel, Switzerland.* "The Future of Regulatory Capital: General Principles and Specific Proposals." December 1998