Jose A. Lopez

Economic Research Department
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Education

UNIVERSITY OF PENNSYLVANIA, Department of Economics.
Ph.D. received December 1995
Dissertation: "Evaluating Forecasts of Exchange Rate Volatility"
Dissertation advisor: Prof. Francis X. Diebold

YALE COLLEGE. B.A., magna cum laude with distinction in Economics, 1988

BRONX HIGH SCHOOL OF SCIENCE. 1984

Work Experience

FEDERAL RESERVE BANK OF SAN FRANCISCO, Economic Research Department
Vice President, Head of the Financial Stability Research Section (October 2016 – present)
Vice President, Head of the Risk Modeling Research Section (Oct. 2010 – Sept. 2016)
Research Advisor in the Financial Research Section (October 2007 – September 2010)
Senior Economist in the Financial Research Section (March 2003 – September 2007)
Economist in the Financial Research Section (August 1998 – February 2003)
Research topics: yield curve modeling; market and credit risk modeling; supervisory ratings of financial institutions; modeling and forecasting financial volatility and correlation
Supervisory responsibilities have included providing quantitative analytical support to on-site bank exams and off-site bank surveillance regarding model risk management, capital adequacy, stress test implementation, and market-based indicators of financial firm soundness; providing independent model validation of internal Federal Reserve stress-testing models (2011-2014); and providing model oversight and governance of the internal Federal Reserve stress-testing models (2014-2016).

WHARTON FINANCIAL INSTITUTIONS CENTER, University of Pennsylvania
Research fellow (September 2008 - present)

BANK OF SPAIN, Financial Stability Division
Visiting economist (April 2006, May 2008, May 2009)

BANK FOR INTERNATIONAL SETTLEMENTS, Research and Policy Analysis Group
Visiting economist (March 2002)

FEDERAL RESERVE BANK OF NEW YORK, Research and Market Analysis Group
Economist in the Banking Studies Section (September 1995 - August 1998)
1997 President's Award for Excellence for consistent outstanding performance

UNIVERSITY OF PENNSYLVANIA, Department of Economics
Research Assistant for Prof. Francis X. Diebold (September 1992 - August 1995)

Academic Publications

"Pricing Deflation Risk with U.S. Treasury Yields," 2016, joint with J.H.E. Christensen and G.D. Rudebusch. *Review of Finance*, 20, 1107-1152.

"A Probability-Based Stress Test of Federal Reserve Assets and Income," 2015, joint with J.H.E. Christensen and G.D. Rudebusch. *Journal of Monetary Economics*, 73, 26-43.

"Foreign Entry into Underwriting Services: Evidence from the Japanese Big Bang Deregulation," 2014, joint with Mark Spiegel. *Journal of Money, Credit and Banking*, 46, 445–468.

"Do Central Bank Liquidity Operations Affect Interbank Lending Rates?," 2014, joint with J.H.E. Christensen and G.D. Rudebusch. *Journal of Business and Economic Statistics*, 32, 136-151.

"How Does Competition Impact Bank Risk Taking?," 2013, joint with G. Jiménez and J. Saurina. *Journal of Financial Stability*, 9, 185-195.

"Extracting Deflation Probability Forecasts from Treasury Yields," 2012, joint with J.H.E. Christensen and G.D. Rudebusch. *International Journal of Central Banking*, 8, 21-60.

"Bond Currency Denomination and the Yen Carry Trade," 2010, joint with C.A. Candeleria and M.M. Spiegel. *China and Asia in the Global Economy*, edited by Y.W. Cheung and G. Ma. Pages 245-282.

"Inflation Expectations and Risk in an Arbitrage-Free Model of Nominal and Real Bond Yields," 2010, joint with J.H.E. Christensen and G.D. Rudebusch. *Journal of Money, Credit and Banking*, 42S, 143-178.

"Empirical Analysis of Corporate Credit Lines," 2009, joint with G. Jiménez and J. Saurina. *Review of Financial Studies*, 22, 5069-5098.

"Empirical Analysis of the Average Asset Correlation for Real Estate Investment Trusts," 2009. *Quantitative Finance*, 9, 217-229.

"EAD Calibration for Corporate Credit Lines," 2008, joint with G. Jiménez and J. Saurina. *Journal of Risk Management at Financial Institutions*, 2, 121-129.

"Using Securities Market Information for Bank Supervisory Monitoring," 2008, joint with J.R. Krainer. *International Journal of Central Banking*, 4, 125-164.

"Alternative Measures of the Federal Reserve Banks' Cost of Equity Capital," 2006, joint with M.L. Barnes. *Journal of Banking and Finance*, 1687-1711.

"Evaluating Interest Rate Covariance Models within a Value-at-Risk Framework," 2005, joint with M.A. Ferreira. *Journal of Financial Econometrics*, 3, 126-168.

"Incorporating Equity Market Information into Supervisory Monitoring Models," 2004, joint with J.R. Krainer. *Journal of Money, Credit and Banking*, 36, 1043-1067.

"The Empirical Relationship between Average Asset Correlation, Firm Probability of Default and Asset Size," 2004. *Journal of Financial Intermediation*, 13, 265-283.

"Formulating the Imputed Cost of Equity Capital for Priced Services at Federal Reserve Banks," 2003, joint with E.J. Green and Z. Wang. *Federal Reserve Bank of New York Economic Policy Review*, 9, 55-81.

"How Might Financial Market Information be Used for Supervisory Purposes?," 2003, joint with J.R. Krainer. *Federal Reserve Bank of San Francisco Economic Review*, 29-45.

"Evaluating Covariance Matrix Forecasts in a Value-at-Risk Framework," 2001, joint with C.A. Walter. *Journal of Risk*, 3(3), 69-98.
(Reprinted in *Innovations in Risk Management: Seminal Papers from the Journal of Risk* (2004), edited by P. Jorion. London: Risk Books, 243-278.)

"Evaluating the Predictive Accuracy of Volatility Models," 2001. *Journal of Forecasting*, 20, 87-109.

"Is Implied Correlation Worth Calculating? Evidence from Foreign Exchange Option Prices," 2000, joint with C. A. Walter. *Journal of Derivatives*, 7(3), 65-82.

"Evaluating Credit Risk Models," 2000, joint with M.R. Saidenberg. *Journal of Banking and Finance*, 24, 151-167.

"Methods for Evaluating Value-at-Risk Estimates," 1999. *Federal Reserve Bank of San Francisco Economic Review*, 2, 3-15.

"Regulatory Evaluation of Value-at-Risk Models," 1999. *Journal of Risk*, 1(2), 37-64.
(Reprinted in *The Value-at-Risk Reference* (2007), edited by J. Danielsson. London: Risk Books & Journals, 455-488.)
(Reprinted in *Model Risk* (2006), edited by R. Gibson. London: Risk Waters Publishing, Chapter 12.)
(Reprinted in *Innovations in Risk Management: Seminal Papers from the Journal of Risk* (2004), edited by P. Jorion. London: Risk Books, 243-278.)
(Reprinted in *Model Risk: Concepts, Calibration and Pricing* (2000), edited by R. Gibson. London: Risk Publications, 289-308.)

"Supervisory Information and the Frequency of Bank Examinations," 1999, joint with B. Hirtle. *Federal Reserve Bank of New York Economic Policy Review*, 5, April, 1-20.

"Forecast Evaluation and Combination," 1996, joint with F.X. Diebold. *The Handbook of*

Statistics, Volume 14: Statistical Methods in Finance, G.S. Maddala and C.R. Rao (eds.), pages 241-268. Amsterdam: North-Holland.

"Modeling Volatility Dynamics," 1995, joint with F.X. Diebold. *Macroeconometrics: Developments, Tensions and Prospects*, Kevin Hoover (ed.), pages 427-466. Boston: Kluwer Academic Publishing.

<u>Other Publications</u>

"Differing Views on Long-Term Inflation Expectations," 2016, joint with Jens Christensen. *Federal Reserve Bank of San Francisco Economic Letter*, 2016-11, April 4.

"Corporate Credit Spread Modeling: A Selective Survey and Directions for Future Research" ("Modelización de los Diferenciales de Crédito Corporativo: Una Revisión Selectiva y Apuntes para Futuras Investigaciones"), 2015. *Papeles de Economía Española: Mercados de Crédito*, 146, 50-66.

"Assessing Supervisory Scenarios for Interest Rate Risk," 2015, joint with Jens Christensen. *Federal Reserve Bank of San Francisco Economic Letter*, 2015-29, September 8.

"Gauging Aggregate Credit Market Conditions," 2009. *Federal Reserve Bank of San Francisco Economic Letter*, 2009-32, October 19.

"Have BOPEC Rating Standards Changed over Time?," 2009, joint with J. Krainer. *Federal Reserve Bank of San Francisco Economic Review*, 13-24.

"Competencia y Riesgo en los Bancos: Existe Alguna Relacion?," 2008, joint with G. Jiménez and J. Saurina. *Papeles de Economia Española*, 124-133.

"What is Liquidity Risk?," 2008. *Federal Reserve Bank of San Francisco Economic Letter*, 2008-33, October 24.

"Foreign Intermediation in Japan During the Lost Decade," 2008, joint with M.M. Spiegel. *China and Asia: Economic and Financial Interactions*, Y.W. Cheung and K.Y. Wong (eds.), 195-214. London: Routledge.

"Regional Economic Conditions and Aggregate Bank Performance," 2008, joint with M. Daly and J.R. Krainer. *Research in Finance*, A.H. Chen (ed.), Volume 24, 103-128.

"The Economics of Private Equity Investments: Symposium Summary," 2008. *Federal Reserve Bank of San Francisco Economic Letter*, 2008-08, February 29.
(Reprinted in *Federal Reserve Bank of San Francisco Economic Review*, 2008, 81-83.)

"Competition and Risk Taking by Spanish Banks," 2008, joint with G. Jiménez and J. Saurina. *Proceedings of the 2007 Federal Reserve Bank of Chicago Conference on Bank Structure and Competition*, 369-376.

"Book Review of *The Credit Default Swap Basis* by Moorad Choudhry," 2007. *Journal of Risk*

Management in Financial Institutions, 1, 117-118.

"Corporate Access to External Financing", 2007. *Federal Reserve Bank of San Francisco Economic Letter*, 2007-31, October 19.

"U.S. Supervisory Standards for Operational Risk Management," 2007. *Federal Reserve Bank of San Francisco Economic Letter*, 2007-11, May 4.

"Financial Innovations and the Real Economy: Conference Summary," 2007, joint with J. Fernald and M. Doms. *Federal Reserve Bank of San Francisco Economic Letter*, 2007-05, March 2.

"Concentrations in Commercial Real Estate Lending," 2007. *Federal Reserve Bank of San Francisco Economic Letter*, 2007-01, January 5.

"What is the Federal Reserve Banks' Imputed Cost of Equity Capital?," 2006, joint with M. Barnes. *Federal Reserve Bank of San Francisco Economic Letter*, 2006-06, April 7.

"Financial Structure and Macroeconomic Performance over the Short and Long Run," 2005, joint with M.M. Spiegel. *Macroeconomic Implications of Post-Crisis Structural Changes: Proceedings of the 2002 East-West Center / Korean Development Institute Conference*, L.J. Cho, D. Cho and Y.H. Kim (eds.), pages 75-103. Seoul: Korea Development Institute.

"Exchange Rate Cointegration Across Central Bank Regime Shifts," 2005. *Research in Finance*, A.H. Chen (ed.), Volume 22, pages 327-356.

"Policy Issues Regarding Credit Risk Transfer," 2005. *Federal Reserve Bank of San Francisco Economic Letter*, 2005-34, December 2.

"Stress Tests: Useful Complements to Financial Risk Models," 2005. *Federal Reserve Bank of San Francisco Economic Letter*, 2005-14, June 24.

"Outsourcing by Financial Services Firms: The Supervisory Response," 2004. *Federal Reserve Bank of San Francisco Economic Letter*, 2004-34, November 26.

"Discussant's Comments on 'Market Indicators, Bank Fragility and Indirect Market Discipline' by Gropp, Vesala and Vulpes," 2004. *Federal Reserve Bank of New York Economic Policy Review*, 10, 67-72.

"Supervising Interest Rate Risk Management," 2004. *Federal Reserve Bank of San Francisco Economic Letter*, 2004-26, September 17.

"Policy Applications for Global Macroeconometric Models: Comment on Pesaran, Schuermann and Weiner's 'Modeling Regional Interdependencies using a Global Error-Correcting Macroeconometric Model'," 2004, joint with R. Dennis. *Journal of Business and Economic Statistics*, 22, 165-169.

"Policy Applications of a Global Macroeconomic Model," 2004, joint with R. Dennis. *Federal Reserve Bank of San Francisco Economic Letter*, 2004-14, June 11.

"The Current Strength of the U.S. Banking Sector," 2003, joint with J. Krainer. *Federal Reserve Bank of San Francisco Economic Letter*, 2003-37, December 19.

"Monitoring Debt Market Information for Bank Supervisory Purposes," 2003, joint with J. Krainer. *Federal Reserve Bank of San Francisco Economic Letter*, 2003-35, Nov. 28.

"Forecasting Supervisory Ratings Using Securities Market Information," 2003, joint with John Krainer. *Proceedings of the 2003 Federal Reserve Bank of Chicago Conference on Bank Structure and Competition*, D.D. Evanoff (ed.), pages 278-289. Chicago: Federal Reserve Bank of Chicago.

"Disclosure as a Supervisory Tool: Pillar 3 of Basel II," 2003. *Federal Reserve Bank of San Francisco Economic Letter*, 2003-22, August 1.

"How Financial Firms Manage Risk," 2003. *Federal Reserve Bank of San Francisco Economic Letter*, 2003-03, February 14.

"Using Equity Market Information to Monitor Banking Institutions," 2003, joint with J. Krainer. *Federal Reserve Bank of San Francisco Economic Letter*, 2003-01, January 17.

"Supervisory and Regulatory Concerns Regarding Bank Internal Ratings Systems," 2002, joint with M.R. Saidenberg. *Credit Ratings: Methodologies, Rationale and Default*, Michael Ong (ed.), pages 305-314. Risk Books.

"Off-Site Monitoring of Bank Holding Companies," 2002, joint with J. Krainer. *Federal Reserve Bank of San Francisco Economic Letter*, 2002-15, May 17.

"What Is Operational Risk?," 2002. *Federal Reserve Bank of San Francisco Economic Letter*, 2002-02, January 25.
(Reprinted in *Banking Strategy*, K.N. Rao (ed.), Vol. 2, 32-38. Hyderabad, India: ICFAI Books.)

"Financial Instruments for Mitigating Credit Risk," 2001. *Federal Reserve Bank of San Francisco Economic Letter*, 2001-34, November 23.

"The Federal Reserve Banks' Imputed Cost of Equity Capital," 2001. *Federal Reserve Bank of San Francisco Economic Letter*, 2001-23, August 10.

"Modeling Credit Risk for Commercial Loans," 2001. *Federal Reserve Bank of San Francisco Economic Letter*, 2001-12, April 27.
(Reprinted in the *California Real Estate Journal*, Feb 25, 2002.)

"Patterns in the Foreign Ownership of U.S. Banking Assets," 2000. *Federal Reserve Bank of San Francisco Economic Letter*, 2000-35, November 24.

"The Development of Internal Models Approaches to Bank Regulation & Supervision: Lessons from the Market Risk Amendment," 2000, joint with M.R. Saidenberg. *Bank Fragility and Regulation: Evidence from Different Countries*, George Kaufman (ed.), pages 239-254. Holland: Elsevier Science.

"Geometric Relationships in a Currency Trio," joint with C. Walter, 2000. *Derivatives Quarterly*, 6, 14-21.

"Volatility Spillovers in the U.S. Treasury Market," 2000. *Federal Reserve Bank of San Francisco Economic Letter*, 2000-04, February 18.

"The Basel Proposal for a New Capital Adequacy Framework," 1999. *Federal Reserve Bank of San Francisco Economic Letter*, 1999-23, July 30.

"Methods for Evaluating Credit Risk Models," 1999. *Bank of England Financial Stability Review*, June, 109-110.

"Using CAMELS Ratings to Monitor Bank Conditions," 1999. *Federal Reserve Bank of San Francisco Economic Letter*, 1999-19, June 11.

"How Frequently Should Banks Be Examined?," 1999. *Federal Reserve Bank of San Francisco Economic Letter*, 1999-07, February 24.

"Alternative Methods for Evaluating Value-at-Risk Estimates," 1998. *Federal Reserve Bank of New York Economic Policy Review*, 4, October, 119-124.

"Does Lifeline Checking Achieve its Goal of Assisting the 'Unbanked'?," 1998, joint with J. Doyle and M. Saidenberg. *Federal Reserve Bank of New York Current Issues in Economics and Finance*, 4, June.

"Testing Your Risk Tests," 1998. *The Financial Survey*, May-June, 18-20.

"Regulatory Evaluation of Value-at-Risk Models Using Probability Forecasts," 1997. *Proceedings of the 1997 Federal Reserve Bank of Chicago Conference on Bank Structure and Competition*, D.D. Evanoff (ed.), pages 289-307. Chicago: Federal Reserve Bank of Chicago.

"Competitiveness in the Eurocredit Market," 1991, joint with J.M. Balder and L.M. Sweet. *International Competitiveness of U.S. Financial Firms: Products, Markets and Conventional Performance Measures*. New York: Federal Reserve Bank of New York.

Technical Working Papers

"MVU Whitepaper on Performance Monitoring for Stress-Testing Models," joint with Nick Klagge, 2014.

"Lessons from the Academic Literature on Risk Measurement for the Trading Book: A Report to the Basel Committee's Trading Book Group," joint with the Research Task Force working group, 2010.

"Policy Analysis of Financial Market Data for Macroeconomic Forecasting Purposes," 2008.

"Market Data in Action: An On-line Training Module for Federal Reserve Bank Examiners," joint with R. Barstow, F. Furlong, J. Krainer and M. Riddle, 2008.

"Validating Internal Ratings of Emerging Market Banks: A Case Study in IRB Validation for the Federal Reserve System Examiner Course on Advanced Credit Risk Measurement for IRB Corporate Activities," 2005.

"IRB Validation Concepts and Techniques: Training Materials for the Federal Reserve System Examiner Course on Advanced Credit Risk Measurement for IRB Corporate Activities," joint with E. Larson and K. LeBlond, 2005.

"Ratings, PD Concepts and Quantification: Training Materials for the Federal Reserve System Examiner Course on Advanced Credit Risk Measurement for IRB Corporate Activities," joint with T. Schuermann.

"Alternative Measures of the Cost of Equity Capital for the Federal Reserve Banks= Payments Services: Technical Supplement to the 2004 PSAF Review," joint with M. Barnes, 2005.

"Supervisory Tools for Assessing Financial Market Signals for Bank Holding Companies," joint with F. Furlong and J. Krainer, 2004.

"Federal Reserve Bank of San Francisco Comment Letter on Modifying the Method for Imputing Priced-Service Income from Clearing Balance Investments," joint with F. Furlong, 2003.

"Further Evidence on The Empirical Relationship between Average Asset Correlation, Firm Probability of Default and Asset Size," 2003.

"Manual for Calculating the Federal Reserve Banks' Imputed Cost of Equity Capital: Version 2.0," joint with R. Stever, 2002.

"The Application of the ASRF Framework for Credit Risk Capital Requirements to the KMV Methodology," 2001.

"Analysis of the Proposed Basel Capital Adequacy Guidelines for Bank Foreign Exchange Positions," 1991.

Permanent Working Papers

"When and How Do Firms First Take a Bank Loan?," joint with G. Jiménez and J. Saurina.

"Determinants of Access to External Finance: Evidence from Spanish Firms," joint with R. Lago Gonzalez & J. Saurina. Federal Reserve Bank of San Francisco Working Paper #2007-22.

Presented at the 2007 conference of the Federal Reserve System Committee on Financial Structure & Regulation.

"Volatility Spillovers in the U.S. Treasuries Market," joint with M. Fleming. Federal Reserve Bank of San Francisco Working Paper #1999-09.

Presented at the Third Workshop of the ECB-CFS Research Network on ACapital Markets and Financial Integration in Europe".

"Foreign Exchange Variances: An Application of the French & Roll Methodology."

Working Papers

"International Evidence on Bank Funding Profiles and Performance," joint with M.M. Spiegel.

Presented at "International Banking: Microfoundations and Macroeconomic Implications", 2014, a conference organized by the De Nederlandsche Bank and the International Monetary Fund.

"Can Term Structure Factors Drive Stochastic Volatility?," joint with J.H.E. Christensen and G.D. Rudebusch. Federal Reserve Bank of San Francisco Working Paper #2014-01.

Presented at the 2010 "Day Ahead" Conference of the Federal Reserve System.

"Common Risk Factors in the U.S. Treasury and Corporate Bond Spreads: An Arbitrage-Free Dynamic Nelson-Siegel Modeling Approach," joint with J.H.E. Christensen.

Presented at the 2007 conference of the Federal Reserve System Committee on Financial Structure and Regulation.

Work in Progress

"Modeling Interwar Exchange Rate Volatility," joint with Kris Mitchener.

"Calibrating Macroprudential Policy to Forecasts of Financial Stability," joint with Scott Brave.

Service to the Profession

International Banking, Economics and Finance Association

President Elect and ASSA Program Chair, 2015-present
Summer Conference Program Chair, 2014
Vice President, 2012-2014.

Associate editor, *Journal of Risk Management in Financial Institutions.* 2007-present.

Referee for *American Economic Review; American Economic Journal: Macroeconomics; Economic Journal; International Economic Review; Journal of Applied Econometrics; Journal of Business & Economic Statistics; Journal of Econometrics; Journal of Monetary Economics; Journal of Money, Credit & Banking; Review of Finance; Review of Financial Studies; Economic Inquiry; European Economic Review; Journal of Banking & Finance; Journal of Credit Risk; Journal of Empirical Finance; Journal of Financial Intermediation; Journal of Financial and Quantitative Analysis; Journal of Forecasting; Journal of International Money & Finance; Journal of Risk; International Journal of Central Banking; The Manchester School; Management Science; Economic Letters; Economic Modeling; Empirical Economics; International Journal of Forecasting; Japan and the World Economy; Journal of Economics and Business; Journal of Financial Stability; Journal of Financial Services Research; Journal of Futures Markets; Journal of Real Estate Finance & Economics; Multinational Finance Journal; Southern Economic Journal; Spanish Economic Review; Studies in Nonlinear Dynamics & Econometrics; Federal Reserve Bank of New York Current Issues in Economics & Finance; Federal Reserve Bank of New York Staff Reports; Federal Reserve Bank of New York Economic Policy Review; Federal Reserve Bank of San Francisco Economic Review; Risk Magazine; Annals of Operations Research; Business Economics; Contemporary Economic Policy; Emerging Markets Finance and Trade; Financial Management; Financial Review; International Review of Financial Analysis; Journal of Risk Finance; Journal of Risk Management in Financial Institutions; Journal of Risk Model Validation; Quantitative Finance*

Grant reviewer for the National Science Foundation, 1998, 2000, 2001 and 2003.

Program Committee, 2004, 2006 & 2008-2013 Conferences of the Financial Intermediation Research Society.

Program Committee, 2008 & 2009 Conferences of the Financial Management Association.

Manuscript reviewer for Academic Press, 2002.

Steering Committee Member, Global Association of Risk Professionals - San Francisco Chapter, November 1999 - July 2001, May 2003 – December 2009.

Special Skills

Fluency in Spanish; knowledge of most major econometrics software packages

Professional Affiliation

American Economic Association
American Finance Association
International Banking, Economics and Finance Association
Society for Financial Econometrics