

## CURRICULUM VITAE

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### Education:

Ph.D., Princeton University, 1986, Economics  
M.A., Princeton University, 1983, Economics  
B.A., with Honors, Swarthmore College, 1969, Social Sciences

### Fields of Specialization:

Financial Institutions  
Monetary Theory  
Industrial Organization

### Professional Employment:

#### Current Position:

Vice President and Economist  
Section Head  
Regional and Applied Microeconomics  
Research Department  
Federal Reserve Bank of Philadelphia  
Current position: January 2011 to present  
Previous position: Assistant Vice President  
and Section Head, July 2007-January 2011  
With employer: Since September 1988

#### Previous Academic Positions:

Visiting Professor  
Economics Department  
Swarthmore College  
Spring 2003, Spring 2007, Fall 2011  
Lecturer  
Economics Department

Bryn Mawr College  
Fall 2003  
Lecturer  
Finance Department  
Wharton School  
Spring 1991  
Assistant Professor  
Economics Department  
Rutgers University  
September 1985 to June 1990

**Courses Taught:** Introduction to Economics  
Intermediate Macroeconomics  
Graduate Macroeconomics  
Commercial Bank Management  
Economics of Creativity

**Previous Professional Employment**

Economist, Citibank, New York, N.Y., 1978-1981.  
Consultant (Senior Economist), The Conference Board, 1974-1978.

**Service**

**Special Issue Editor:** *Journal of Real Estate Finance and Economics*  
"Information and Screening in Real Estate Finance"  
November 1994.

*Journal of Real Estate Finance and Economics*  
"New Directions in Information and Screening in  
Real Estate Finance" July 1996.

**Editorial Board:** *Journal of Real Estate Finance and Economics.*  
1993-2000  
*Review of Income and Wealth, 2008-*

**Member:** Conference on Research in Income and Wealth  
International Association for Research in Income  
and Wealth  
Society for Economic Measurement

**Referee:** *American Economic Review*  
*Financial Management Association*  
*International Economic Review*  
*Journal of Banking and Finance*  
*Journal of Financial Intermediation*  
*Journal of Money, Credit, and Banking*  
*Journal of Real Estate Finance and Economics*  
*Journal of Urban Economics*

*National Science Foundation  
Review of Economics and Statistics  
Review of Income and Wealth  
Review of Financial Studies  
MIT Press*

**Recent Distinguished Presentations:**

Keynote Address, Intellectual Capital For Communities 9, Paris, France, June 6, 2013, “Creativity and Economics.”

Plenary Presentation, Office of Price and Living Conditions Town Hall, U.S. Bureau of Labor Statistics, Washington DC, April 21, 2009, “Intangible Measurement.”

Keynote Address, XX ADIAT Conference, Monterey, Mexico, March 5, 2008, “The Rise of Intellectual Capital.”

Potomac Lecture, 2008 World Congress on National Economic Measures, May 15, 2008, Washington DC. “Intangibles and National Income Measurement.”

Statistics Canada Expert Seminar Series, Ottawa, Canada, December 1, 2008, “Challenges in the Measurement of Rent.”

**Research and Scholarly Activity**

**Books:**

Saving Energy in Manufacturing: The Post-Embargo Record, with John G. Myers, Ballinger, Cambridge (Mass.), 1978.

Energy Consumption in Manufacturing, with John G. Myers and others, Ballinger, Cambridge (Mass.), 1974.

**Published Articles:**

“Improving the Treatment of Holding Gains and Default Losses in National Accounts,” with Marshall Reinsdorf, Dominique Durant and Kyle Hood, *Review of Income and Wealth*, forthcoming.

“Credit Ratings, Private Information, and Bank Monitoring,” with Kasper Roszbach, *Journal of Financial Intermediation*, forthcoming.

“The Impact of the Home Valuation Code of Conduct on Home Appraisals and Mortgage Outcomes,” 2016, with Lei Ding, *Real Estate Economics* 44(3), Fall, 658-690.

“House-Price Expectations, Alternative Mortgage Products and Default,” 2016 (with Jan K. Brueckner and Paul S. Calem), *Journal of Money, Credit, and Banking*, February, 81-112.

“Sourcing Substitution and Related Price Index Biases,” with Alice O. Nakamura, W. Erwin Diewert, John S. Greenlees and Marshall B. Reinsdorf, in Susan N. Houseman and Michael Mandel, eds., *Measuring Globalization: Better Trade Statistics for Better Policy*, Vol. 1, Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, 2015, 21-73.

“Durable Financial Regulation: Monitoring Financial Instruments as a Counterpart to Regulating Financial Institutions” in Charles Hulten and Marshall Reinsdorf, eds, *Wealth, Financial Intermediation and the Real Economy*, NBER Studies in Income and Wealth, Chicago: University of Chicago Press, 2015, 67-88.

“Advertising, Intangibles, and Unpriced Entertainment,” in Ahmed Bounfour and Tsutomu Miyagawa, eds., *Intangibles, Market Failure and Innovation Performance*, Springer, 2015, 11-26.

“Building the Innovation Union: Lessons from the 2008 Financial Crisis,” (with Alice O. Nakamura and Masao Nakamura) in Carayannis, Elias G. and George M. Korres, eds., *The Innovation Union in Europe*, Cheltenham, UK: Edward Elgar, 2013.

“Subprime Mortgages and the Housing Bubble,” (with Jan Brueckner and Paul Calem), *Journal of Urban Economics* 71, March 2012, pp.230-243.

“Implications of the Housing Market Bubble for Sustainable Homeownership,” (with Paul Calem and Susan Wachter) in Susan M. Wachter and Marvin M. Smith, eds., *The American Mortgage System: Crisis and Reform*, Philadelphia: Penn Press, 2011.

“Wal-Mart Innovation and Productivity: A Point of View,” (with Richard B. Freeman, Alice O. Nakamura, Marc Prud’homme, and Amanda Pyman), *Canadian Journal of Economics* 44, May 2011, 486-508.

“Price Dynamics, Retail Chains and Inflation Measurement.” (with Alice Nakamura and Emi Nakamura), *Journal of Econometrics* 161, 1, March 2011, 47-55.

“Rents Have Been Rising, Not Falling, in the Postwar Period,” (with Theodore M. Crone and Richard Voith), Review of Economics and Statistics 92, 3, August 2010, 628-642.

“Intangible Investment and National Income Accounting: Measuring a Scientific Revolution.” Review of Income and Wealth 56, Issue S1, June 2010, s135-s155.

“The Housing Bubble and a New Approach to Accounting for Housing in a CPI” (with W. Erwin Diewert and Alice O. Nakamura), Journal of Housing Economics 18, September 2009, 156-171.

“Hedonic Estimates of the Cost of Housing Services: Rental and Owner-Occupied Units,” (with Theodore M. Crone and Richard P. Voith) Conference Volume: International Conference on Index Number Theory, Vancouver, BC, 2008.

“National Income Accounts,” International Encyclopedia of the Social Sciences, 2<sup>nd</sup> edition. New York: Macmillan, 2007, 397-405.

“Transactions Accounts and Loan Monitoring,” (with Loretta Mester and Micheline Renault), Review of Financial Studies 20 May 2007, 529-556.

Review of Carl W. Biven’s Jimmy Carter’s Economy: Policy in an Age of Limits, Journal of Economic Literature 42, June 2004, 515-516.

"Banking and Finance in Argentina in the Period 1900-35," with Carlos E. J. M. Zarazaga, in Gerardo della Paolera and Alan M. Taylor, eds. A New Economic History of Argentina. Cambridge: Cambridge University Press, 2003, 295-323.

“A Trillion Dollars a Year in Intangible Investment and the New Economy,” in John R.M. Hand and Baruch Lev, eds., Intangible Assets, Oxford: Oxford University Press, 2003, 19-47.

“Education and Training in an Era of Creative Destruction,” in Stull, William J., and Nicholas Sanders, eds., The School-To-Work Movement: Origins and Destinations, NY: Praeger, 2003, 49-65.

“Measuring Housing Services Inflation,” (with Theodore M. Crone and Richard Voith), Journal of Economic and Social Measurement, 26 (3,4) 2000, 153-172.

“The Measurement of Retail Output and the Retail Revolution,” Canadian Journal of Economics, 32 (2) April 1999, 408-425.

“Economic Growth in Argentina in the Period 1900-1930: Some Evidence from Stock Market Returns,” (with Carlos E.J.M. Zarazaga) in John H. Coatsworth and Alan M. Taylor, Latin America and the World Economy Since 1800, Harvard University Press, 1998, 247-270.

“Branch Banking and the Geography of Bank Pricing,” (with Paul Calem) Review of Economics and Statistics 80, November 1998, 600-610.

"New Directions in Information and Screening in Real Estate Finance," (with William W. Lang) Journal of Real Estate Finance and Economics, July 1996, 5-10.

" 'Flight to Quality' in Bank Lending and Economic Activity," (with William W. Lang), Journal of Monetary Economics, August 1995, 145-164.

"Information and Screening in Real Estate Finance: An Introduction," (with William W. Lang) Journal of Real Estate Finance and Economics 9, November 1994, 171-176.

"Recent Research in Commercial Banking: Information and Lending," Financial Markets, Institutions & Instruments 2, December 1993, 73-88.

"A Model of Redlining," (with William W. Lang) Journal of Urban Economics 33, March 1993, 223-234.

"Commercial Bank Information: Implications for the Structure of Banking," in Structural Change in Banking, Michael Klausner and Lawrence J. White, eds., Irwin, New York, 1993, 131-160. Also, reprinted as "Exploring the Checking Account Hypothesis," in Journal of Retail Banking (Winter 1992-3).

"Entry-Deterring Debt," with James J. McAndrews, Journal of Money, Credit and Banking 24, February 1992, 98-110.

"The Dynamics of Credit Markets in a Model with Learning," with William W. Lang, Journal of Monetary Economics 26, October 1990, 305-318.

"Information Losses in a Dynamic Model of Credit," with William W. Lang, Journal of Finance 44, July 1989, 731-746.

"Energy and Pollution Effects on Productivity: A Putty-Clay Approach," (with John G. Myers) in John Kendrick and Beatrice Vaccara, eds., New Developments in Productivity Measurement and Analysis, NBER Studies in Income and Wealth Vol. 44, U. of Chicago, Chicago, 1980.

"Data Adequacy for Productivity Analysis: A Case Study of the Primary Paper Industry," (with John G. Myers) in Panel to Review Productivity Statistics, National Research Council, Measurement and Interpretation of Productivity, National Academy of Sciences, Washington, DC, 1979.

**Federal Reserve Bank of Philadelphia Publications:**

"Accounting for Growth in the Age of the Internet: The Importance of Output-Saving Technical Change" with Charles Hulten, Working Paper 17-24, July 2017.

"Appraising Home Purchase Appraisals," with Paul Calem and Lauren-Lambie-Hanson, Working Paper 17-23, July 2017.

"' Don't Know What You Got Till It's Gone' The Effects of the Community Reinvestment Act (CRA) on Mortgage Lending in the Philadelphia Market" with Lei Ding, Working Paper 17-15, June 2017.

"Valuing 'Free' Media in GDP: An Experimental Approach" with Jon Samuels and Rachel Soloveichik, Working Paper 16-24, August 2016.

"Credit Ratings, Private Information, and Bank Monitoring Ability" with Kasper Roszbach, Working Paper 16-14, June 2016.

"The System of National Accounts and Alternative Economic Perspectives," with Alice O. Nakamura, Working Paper 15-32, September 2015.

"The Impact of the Home Valuation Code of Conduct on Appraisal and Mortgage Outcomes," with Lei Ding, Working Paper 15-28, July 2015.

"Valuing 'Free' Media Across Countries in GDP," with Rachel Soloveichik. Working Paper 15-25, July 2015.

"Creativity and Economic Growth: Theory, Measures, and Potentials for Morocco," Working Paper 15-21, April 2015.

"Information Losses and Home Mortgage Appraisals," with Paul Calem and Lauren Lambie-Hansen, Working Paper 15-11, March 2015.

"House Price Expectations, Alternative Mortgage Products, and Default," with Jan Brueckner and Paul Calem, Working Paper 15-1, January 2015.

"Sourcing Substitution and Related Price Index Biases," with Alice O. Nakamura, W.

Erwin Diewert, John S. Greenlees and Marshall B. Reinsdorf, Working Paper 14-34, November 2014.

“Hidden Value: How Consumer Learning Boosts Output” Federal Reserve Bank of Philadelphia *Business Review*, Third Quarter 2014.

“The Impact of the Home Valuation Code of Conduct on Home Appraisals and Mortgage Outcomes,” with Lei Ding, Working Paper 14-23, August 2014.

“Should Default be Forgotten? Evidence From Variation in Removal in Negative Credit Information,” with Marieke Bos, Working Paper 14-21, August 2014.

“Brewing Bubbles: How Mortgage Practices Intensify Housing Booms,” Federal Reserve Bank of Philadelphia *Business Review*, First Quarter 2014.

“House Price Expectations, Alternative Mortgage Products, and Default,” with Jan Brueckner and Paul Calem, Working Paper 13-36, September 2013.

“Credit Ratings and Bank Monitoring Ability,” with Kasper Roszbach, Working Paper 13-21, May 2013.

“What You Don’t Know Can Hurt You: Keeping Track of Risks in the Financial System,” Federal Reserve Bank of Philadelphia *Business Review*, First Quarter 2013.

"Durable Financial Regulation: Monitoring Financial Instruments as a Counterpart to Regulating Financial Institutions," Working Paper 13-2, December 2012.

"Should Defaults Be Forgotten? Evidence from Legally Mandated Removal," with Marieke Bos, Working Paper 12-29, November 2012.

"Building the Innovation Union: Lessons from the 2008 Financial Crisis," with Alice O. Nakamura and Masao Nakamura, Working Paper 12-17, June 2012.

“Subprime Mortgages and the Housing Bubble,” with Jan K. Brueckner and Paul S. Calem, Working Paper 11-12/R, September 2011.

“Credit Cycles and Adverse Selection Effects in Consumer Credit Markets: Evidence from the HELOC Market,” with Paul Calem and Matt Cannon, Working Paper 11-13, February 2011.

“Durable Financial Regulation: Monitoring Financial Instruments as a Counterpart to Regulating Financial Institutions,” Working Paper 10-22, June 2010.

“How Much is that Home Really Worth? Appraisal Bias and House-Price Uncertainty,” Federal Reserve Bank of Philadelphia *Business Review*, First Quarter 2010.

“Intangible Investment and National Income Accounting: Measuring a Scientific



Revolution,” Working Paper 09-11, May 2009

“The Mismeasured U.S. Saving Rate is Still Useful: Using the Real-Time Data Set to Improve Forecasting,” Federal Reserve Bank of Philadelphia *Business Review*, Fourth Quarter 2008.

“The CPI for Rents: A Case of Understated Inflation,” (with Theodore M. Crone and Richard Voith) Working Paper No. 08-28, October 2008.

“Gimme Shelter! Rents Have Risen, Not Fallen, Since World War II” Federal Reserve Bank of Philadelphia *Business Review*, Second Quarter 2007

"Mismeasured Personal Saving and the Permanent Income Hypothesis," [Working Paper 07-8](#), March 2007.

“National Income Accounts,” Working Paper No. 06-11, June 2006

“Underestimating Advertising: Innovation and Unpriced Entertainment.” Federal Reserve Bank of Philadelphia *Business Review*, Fourth Quarter 2005.

“Transactions Accounts and Loan Monitoring,” (with Loretta Mester and Micheline Renault) Working Paper No. 05-14, June 2005.

“Advertising, Intangible Assets, and Unpriced Entertainment,” Working Paper No. 05-11, May 2005.

“Benchmark Revisions and the U.S. Personal Saving Rate,” (with Tom Stark) Working Paper No. 05-6, April 2005.

“Hedonic Estimates of the Cost of Housing Services: Rental- and Owner-Occupied Units,” (with Theodore M. Crone and Richard Voith) Working Paper No. 04-22, October 2004.

"CEOs, Clerks, and Computers and the Rise of Competition in the Late 20th Century,” Federal Reserve Bank of Philadelphia *Business Review*, Third Quarter 2004.

“Let a Hundred Flowers Bloom! Decentralization and Innovation,” Federal Reserve Bank of Philadelphia *Business Review*, First Quarter 2003.

“Investing in Intangibles: Is a Trillion Dollars Missing from GDP?” Federal Reserve Bank of Philadelphia *Business Review*, Fourth Quarter 2001.

“Economics and the New Economy: The Invisible Hand Meets Creative Destruction,” Federal Reserve Bank of Philadelphia *Business Review*, July/August 2000, pp. 15-30.

“Intangibles: What Put The New in the New Economy?” Federal Reserve Bank of

Philadelphia *Business Review* (July/August 1999)

"The Retail Revolution and Food-Price Mismeasurement," *Business Review* (May/June 1998)

"Is the U.S. Economy Really Growing Too Slowly? Maybe We're Measuring Growth Wrong," *Business Review* (March/April 1997)

"Measuring Inflation in a High-Tech Age," *Business Review* (November/December 1995.)

"Is U.S. Economic Performance Really That Bad?" Working Paper No. 95-21, October 1995.

"Small Borrowers and the Survival of the Small Bank: Is the Mouse Bank Mighty or Mickey?" *Business Review*, (November/December 1994).

"Loan Screening Within and Outside of Customer Relationships," Working Paper No. 93-15, June 1993.

"Information Externalities: Why Lending May Sometimes Need a Jump Start," *Business Review*, (January/February 1993).

"Bank Branching," (with Bruno M. Parigi), Working Paper No. 92-18, August 1992.

"Optimal Acceptance Policies for Journals," (with Sherrill Shaffer), Working Paper No. 91-15, August 1991.

"Lessons on Lending and Borrowing in Hard Times," *Business Review*, (July/August 1991)

Reprinted in *The Commercial Bank Management Reader*, Robert W. Kolb, ed., Kolb, FL, 1992. Also in Ohio Savings and Loan League *Record*.

"Delegated Monitoring with Diseconomies of Scale," Working paper No. 91-9. March 1991.

"Housing Appraisals and Redlining," (with William W. Lang), Working paper No. 91-3. January 1991.

"Worker Debt with Bankruptcy," (with James J. McAndrews), Working paper No. 91-2. January 1991.

"Reforming Deposit Insurance When Banks Conduct Loan Workouts and Runs are Possible," Working paper No. 90-30, December 1990.

"Closing Troubled Financial Institutions: What Are the Issues?," *Business Review*,

(May/June 1990).

Reprinted in Financial Institutions and Markets: A Reader, R. W. Kolb, ed., Kolb, FL, 1991. Also in The Commercial Bank Management Reader, R. W. Kolb, ed., Kolb, FL, 1992. Also in The Examiner 15 #2, Fall 1990. Ohio Record, 47 #1, Jan/Feb 1991.

"Optimal Bank Closure for Deposit Insurers," (with William W. Lang), Working paper No. 90-12, January 1990.

"Learning in the Marketplace: Free Entry is Free Riding," (with William W. Lang), Working Paper No. 89-13. February 1989.

"Loan Workouts and Commercial Bank Information: Why Banks Are Special," Working paper No. 89-11. February 1989.