

**Ingmar R. Prucha**  
**Curriculum Vitae**  
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**Citizenship and Place of Birth:**

United States and Austria

**Education:**

1973 M.A. (Dipl.Ing.) in Communications Engineering, University of  
Technology Vienna, Vienna, Austria  
1976 Diploma in Economics, Institute for Advanced Studies, Vienna, Austria  
1977 Ph.D. (Dr.techn.) in Mathematical Economics, University of Technology  
Vienna, Vienna, Austria  
Thesis Topic: "An Econometric Model of the Austrian Economy with  
Special Emphasis on Medium Term Aspects and the Measurement of the  
Capital Stock"

**Academic Employment:**

1991- Professor, Department of Economics, University of Maryland, College  
Park  
1987-1991 Associate Professor, Department of Economics, University of Maryland,  
College Park  
1981-1987 Assistant Professor, Department of Economics, University of Maryland,  
College Park  
1980-1981 Visiting Researcher and Adjunct Assistant Professor, C.V. Starr Center for  
Applied Economics and Department of Economics, New York University,  
New York  
1979-1980 Visiting Assistant Professor, Department of Economics, University of  
Maryland, College Park  
1977 Visiting Researcher, Department of Economics, University of  
Pennsylvania, Philadelphia  
1976-1980 "Assistent", Department of Economics, Institute for Advanced Studies,  
Vienna

### **Affiliate Appointments:**

- 1985-1989 Faculty Research Fellow, National Bureau of Economic Research, Cambridge, Massachusetts
- 1989-1992 Research Associate, National Bureau of Economic Research, Cambridge, Massachusetts
- 1985 - Faculty Member, Applied Mathematics and Scientific Computing Program, University of Maryland
- 1988- Member, Conference of Research in Income and Wealth
- 2003 - Faculty Member, Statistics Consortium, University of Maryland
- 2004 - Faculty Associate, Maryland Population Research Center, University of Maryland
- 2005- Fellow, CESifo Institute, Munich, Germany

### **Short Term Visiting Appointments:**

- 1982 summer Visiting Researcher, National Bureau of Economic Research, New York
- 1983 summer Visiting Researcher, National Bureau of Economic Research, New York
- 1995 October Visiting Researcher, University of Konstanz, Germany
- 1995 December Visiting Professor, Institute for Advanced Studies, Vienna, Austria
- 2002 April Visiting Professor, Institute for Advanced Studies, Vienna, Austria
- 2003 October Visiting Professor, University of Innsbruck, Austria
- 2005 July Visiting Professor, CESifo Institute, Munich, Germany
- 2006 June Visiting Professor, Singapore Management University, Singapore
- 2007 January Visiting Professor, University of Innsbruck, Austria
- 2007 July Visiting Professor, CESifo Institute, Munich, Germany
- 2007 July Visiting Professor, University of Munich, Germany

### **Research Interests:**

**Theoretical Econometrics:** Cross sectional and panel data models with spatial dependencies; dynamic nonlinear time series models; asymptotic theory for M-estimators, including maximum likelihood and GMM estimators; seemingly unrelated and simultaneous panel data models; robust and adaptive estimation methods; etc.

**Applied Econometrics:** Determinants of dynamic factor demand, including investment in physical and R&D capital; productivity; econometric modeling and estimation of depreciation rates for capital and R&D; growth convergence; etc.

**Recent Research Grant:**

“Specification and Estimation of Spatial Models”, National Science Foundation, June 1, 2000 - December 31, 2003. Joint research project with Harry Kelejian. Budget: \$231,578.

“New Methods and Software for Spatial-Regression Analysis”, National Institute of Health, SBIR, Phase I, with Stata Corp, September 1, 2006-November 30, 2007. Joint research project with David Drukker and Harry Kelejian. Budget: \$100,000.

“New Methods and Software for Spatial-Regression Analysis”, National Institute of Health, SBIR, Phase II, with Stata Corp, July 1, 2007-May 31, 2009. Joint research project with David Drukker and Harry Kelejian. Budget: \$750,000.

**Editorial Activities:**

1988-1992	Member of the editorial board of <i>Empirica</i> .
1997-present	Member of the editorial board of <i>Empirical Economics</i> .
2000-present	Associate Editor of <i>Econometric Theory</i> .
2004-present	Associate Editor of <i>Journal of Econometrics</i> .
2007-present	Member of the editorial board of <i>Letters in Spatial and Resource Sciences</i> .

Guest Editor (jointly with B. Baltagi and H.H. Kelejian) of *Journal of Econometrics* for annals issue entitled “Analysis of Spatially Dependent Data”, published in 2007

Guest Editor (jointly with B.M. Poetscher) of *Journal of Econometrics* for annals issue entitled “Contributions to Econometrics, Time Series Analysis, and Systems Identification: A Festschrift in Honor of Manfred Deistler”, published 2004

Program Committee of the North American Summer Meeting of the Econometric Society (Theoretical Econometrics) College Park, 2001.

**Honors and Awards:**

Journal of Econometrics Fellow

Founding Member of the Spatial Econometrics Association

Ph.D., summa cum laude (“Mit Auszeichnung”)

Summer General Research Board Summer Research Award, University of Maryland, College Park, 1983

Summer General Research Board Summer Research Award, University of Maryland, College Park, 1985

General Research Board Semester Research Award and BSOS Scholarship Incentive Award, University of Maryland, College Park, 1990/1991

Departmental Teaching Award, Department of Economics, University of Maryland, Fall 1981, Spring 1982, Fall 1982

Who’s Who in America, 2007 Edition, Marquis Who's Who, N.J.

**Activities in Model-building and Forecasting:**

- 1976-1980 Member of the quarterly economic forecasting team of the Institute for Advanced Studies, Vienna
- 1976-1979 Construction of a macroeconomic model of the Austrian economy used in the regular forecasting exercise of the Institute for Advanced Studies, Vienna, and within the world model of Project LINK, University of Pennsylvania, Philadelphia
- 1978-1980 Head (jointly with G. Munduch) of Project LINK Austria and Austrian representative to Project LINK
- 1978-1980 Member of the Interactive Simulation (IAS) System project for the development of a user oriented program package for economic research

**Memberships:**

American Economic Association  
American Statistical Association  
Econometric Society  
European Economic Association  
Royal Economic Society

**Referee for:**

Advances in Econometrics, American Economic Review, Austin Symposia in Economics, Canadian Journal of Economics, Communications in Statistics, Econometrica, Econometric Reviews, Econometrics Journal, Econometric Theory, Empirica, Empirical Economics, German Economic Review, International Economic Review, International Regional Science Review, Journal of Applied Econometrics, Journal of Business and Economic Statistics, Journal of Econometrics, Journal of Economic Dynamics and Control, National Science Foundation, NBER, Conference in Research in Income and Wealth, Regional Science and Urban Economics, Review of Economics and Statistics, Statistics Papers, Structural Change and Economic Dynamics

**References:**

Donald W.K. Andrews, Department of Economics, Yale University, New Haven, CT 06520, Tel.: 203-432-3698, Web: <http://cowles.econ.yale.edu/faculty/andrews.htm>

Lung-fei Lee, Department of Economics, Ohio State University, Columbus, OH 43210, Tel.: 614-292-5508, Web: <http://www.econ.ohio-state.edu/lee/>

Benedikt M. Poetscher, Department of Statistics, Econometrics and Applied Mathematics, University of Vienna, 1010 Vienna, Tel.: + 43-1-4277-38640, Web: <http://www.univie.ac.at/seam/cgi-bin/hp/seam.cgi?;poetscher>

Peter M. Robinson, Department of Economics, London School of Economics, London WC2A 2AE, Tel.: +44-020-7955-7516, Web: <http://personal.lse.ac.uk/robinso1/>

John P. Rust, Department of Economics, University of Maryland, College Park, MD 29742, Tel.: 301-405-3489, Web: <http://gemini.econ.umd.edu/jrust/>

Additional references are available upon request.

## Publications:<sup>1</sup>

### A. Books and Edited Volumes

“*Dynamic Nonlinear Econometric Models: Asymptotic Theory*,” (with B.M. Poetscher). New York: Springer Verlag, 1997.

“*Contributions to Econometrics, Time Series Analysis, and Systems Identification: A Festschrift in Honor of Manfred Deistler*,” eds. (with B.M. Poetscher), Annals Issue, *Journal of Econometrics*, 18(1-2), 2004.

*Analysis of Spatially Dependent Data*, eds. (with B. Baltagi and H.H. Kelejian), Annals Issue, *Journal of Econometrics*, 140(1), 2007.

### B. Articles

“Performance of the LINK System: 1970 vs. 1975 Trade Share Matrix” (with P. Beaumont, V. Filatov), *Empirical Economics*, 4(1), 1979, 11-41.

“R&D, Production Structure, and Productivity Growth in the U.S., Japanese, and German Manufacturing Sectors,” (with P.A. Mohnen and M.I. Nadiri) in *Proceedings of the Conference on Quantitative Studies of Research and Development in Industry*, Paris, 1983, 171-221.

“On the Asymptotic Efficiency of Feasible Aitken Estimators for Seemingly Unrelated Regression Models with Error Components,” *Econometrica*, 52(1), 1984, 203-207.

“The Structure of Simultaneous Equation Estimators: A Generalization Towards Nonnormal Disturbances” (with H.H. Kelejian), *Econometrica*, 52(3), 1984, 721-736. (\*)

“Maximum Likelihood and Instrumental Variable Estimation in Simultaneous Equation Systems with Error Components,” *International Economic Review*, 26(2), 1985, 491-506.

“Independent and Uncorrelated Disturbances in Linear Regression: An Illustration of the Difference,” (with H.H. Kelejian), *Economics Letters*, 19, 1985, 35-38.

“A Class of Partially Adaptive One-Step M-Estimators for the Nonlinear Regression Model with Dependent Observations,” (with B.M. Poetscher), *Journal of Econometrics*, 32(2), 1986, 219-251.

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<sup>1</sup>Papers where I am listed as the senior author are marked with a star.

“R&D, Production Structure and Rates of Return in the U.S., Japanese and German Manufacturing Sectors: A Nonseparable Dynamic Factor Demand Model,” (with P.A. Mohnen and M.I. Nadiri), *European Economic Review*, 30(4), 1986, 749-771.

“A Comparison of Alternative Methods for the Estimation of Dynamic Factor Demand Models under Nonstatic Expectations,” (with M.I. Nadiri), *Journal of Econometrics*, 33(1/2), 1986, 187-211. (\*)

“The Variance-Covariance Matrix of the Full Information Maximum Likelihood Estimators in Triangular Structural Systems: Consistent Estimation,” *Econometrica*, 55(4), 1987, 977-978.

“Seemingly Unrelated Regression,” in S. Kotz and N.L. Johnson (eds.), *Encyclopedia of Statistical Sciences*, Vol. 8, New York: Wiley, 1987, 329-331.

“On the Computation of Estimators in Systems with Implicitly Defined Variables,” (with M.I. Nadiri), *Economics Letters*, 26, 1988, 141-145. (\*)

“A Uniform Law of Large Numbers for Dependent and Heterogeneous Data Processes,” (with B.M. Poetscher), *Econometrica*, 57, 1989, 675-683.

“Generic Uniform Law of Large Numbers,” (with B.M. Poetscher), in S. Kotz and N.L. Johnson (eds.), *Encyclopedia of Statistical Sciences*, Supplementary Volume, New York: Wiley, 1989, 67-69.

“A Note on the Estimation of Non-Symmetric Dynamic Factor Demand Models,” (with D.B. Madan), *Journal of Econometrics*, 42, 1989, 275-283.

“Dynamic Factor Demand Models, Productivity Measurement, and Rates of Return: Theory and an Empirical Application to the U.S. Bell System,” (with M.I. Nadiri), *Structural Change and Economic Dynamics*, 2, 1990, 263-289.

“Comparison and Analysis of Productivity Growth and R&D Investment in the Electrical Machinery Industries of the United States and Japan,” (with M.I. Nadiri), in C.R. Hulten, ed., *Productivity Growth in Japan and the United States, Studies in Income and Wealth Series*, 53, University of Chicago Press, 1990, 109-133.

“Comments on 'The Impacts of Fixed Inputs on Investment Behavior and Productivity: An Empirical Comparison for the U.S. and Japanese Manufacturing Industries' by Catherine Morrison”, in C.R. Hulten, ed., *Productivity Growth in Japan and the United States, Studies in Income and Wealth Series*, 53, University of Chicago Press, 1990, 167-172.

“On the Specification of Accelerator Coefficients in Dynamic Factor Demand Models,” (with M.I. Nadiri), *Economics Letters*, 35, 1991, 123-129. (\*)

“Basic Structure of the Asymptotic Theory in Dynamic Nonlinear Econometric Models, Part I: Consistency and Approximation Concepts”, (with B.M. Poetscher), *Econometric Reviews*, 10, 1991, 125-216.

“Basic Structure of the Asymptotic Theory in Dynamic Nonlinear Econometric Models, Part II: Asymptotic Normality”, (with B.M. Poetscher), *Econometric Reviews*, 10, 1991, 253-325.

“Reply to Basic Structure of the Asymptotic Theory in Dynamic Nonlinear Econometric Models”, (with B.M. Poetscher), *Econometric Reviews*, 10, 1991, 349-357.

“Maximum Likelihood and Instrumental Variable Estimation in Simultaneous Equation Systems with Error Components,” in G.S. Madalla (ed.), *The Econometrics of Panel Data*, Vol. I, Edward Elgar Publishing Co., 1993, 308-326. (Reprint of article in *International Economic Review*, 26, 1985.)

“Generic Uniform Convergence and Equicontinuity Concepts for Random Functions: An Exploration of the Basic Structure,” (with B.M. Poetscher), *Journal of Econometrics*, 60, 1994, 23-63.

“On the Formulation of Uniform Laws of Large Numbers: A Truncation Approach,” (with B.M. Poetscher), *Statistics*, 25, 1994, 343-360.

“On the Econometric Estimation of a Constant Rate of Depreciation,” *Empirical Economics*, 20, 1995, 299-302.

“Estimation of the Depreciation Rate of Physical and R&D Capital in the U.S. Total Manufacturing Sector,” (with M.I. Nadiri), *Economic Inquiry*, 34, 1996, 43-56.

“Endogenous Capital Utilization and Productivity Measurement in Dynamic Factor Demand Models: Theory and an Application to the U.S. Electrical Machinery Industry”, (with M.I. Nadiri), *Journal of Econometrics*, 71, 1996, 343-379.(\*)

“Econometrics”, (with H.H. Kelejian), in S.I. Gass and C. M. Harris, eds., *Encyclopedia of Operations Research and Management Science*, Kluwer, 1996, 175-177.

“Basic Structure of the Asymptotic Theory in Dynamic Nonlinear Econometric Models, Part I: Consistency and Approximation Concepts”, (with B.M. Poetscher), in H. Bierens and R. Gallant (eds.), *Nonlinear Models*, Vol. 1, Edward Elgar Publishing, 1997, 333-424. (Reprint of article in *Econometric Reviews*, 10, 1991.)

“Basic Structure of the Asymptotic Theory in Dynamic Nonlinear Econometric Models, Part II: Asymptotic Normality”, (with B.M. Poetscher), in H. Bierens and R. Gallant

(eds.), *Nonlinear Models*, Vol. 1, Edward Elgar Publishing, 1997, 425-497. (Reprint of article in *Econometric Reviews*, 10, 1991.)

“Sources of Growth of Output and Convergence of Productivity in Major OECD Countries”, (with M.I. Nadiri), *International Journal of Production Economics*, 52, 1997, 133-146.

“Estimation of a Variable Rate of Depreciation: A Dummy Variable Approach,” *Structural Change and Economic Dynamics*, 8, 1997, 319-325.

“Estimation of the Spatial Autoregressive Parameter by Two Stage Least Squares Procedures: A Serious Problem”, (with H.H. Kelejian), *International Regional Science Review*, 20, 1997, 103-111.

“A Generalized Spatial Two Stage Least Squares Procedure for Estimating a Spatial Autoregressive Model with Autoregressive Disturbances”, (with H.H. Kelejian), *Journal of Real Estate Finance and Economics*, 17, 1998, 99-121.

“A Generalized Moments Estimator for the Autoregressive Parameter in a Spatial Model”, (with H.H. Kelejian), *International Economic Review*, 40, 1999, 509-533.

“Basic Elements of Asymptotic Theory,” (with B.M. Poetscher), in B. Baltagi (ed.), *A Companion in Theoretical Econometrics*, Basil Blackwell, 2001, 201-229.

“Dynamic Factor Demand Models and Productivity Analysis”, (with M.I. Nadiri), in E. Dean, M. Harper and C. Hulten (eds.), *New Directions in Productivity Analysis*, University of Chicago Press, 2001, 103-164.

“Reply to Dynamic Factor Demand Models and Productivity Analysis”, (with M.I. Nadiri), in E. Dean, M. Harper and C. Hulten (eds.), *New Directions in Productivity Analysis*, University of Chicago Press, 2001, 167-171.

“On the Asymptotic Distribution of the Moran I Test Statistic with Applications,” (with H.H. Kelejian), *Journal of Econometrics*, 104, 2001, 219-257.

“2SLS and OLS in a Spatial Autoregressive Model with Equal Spatial Weights,” (with H.H. Kelejian), *Regional Science and Urban Economics*, 32, 2002, 691-707.

“Small Sample Properties of Estimators of Spatial Autoregressive Models with Autoregressive Disturbances,” (with D. Das and H.H. Kelejian), *Papers in Regional Science*, 82, 2003, 1-26.

“Guest Editorial: Contributions to Econometrics, Time Series Analysis, and Systems Identification: a Festschrift in Honor of Manfred Deistler,” (with B.M. Poetscher), *Journal of Econometrics*, 118, 2004, 1-5.

“Estimation of Simultaneous Systems of Spatially Interrelated Cross Sectional Equations,” (with H.H. Kelejian), *Journal of Econometrics*, 118, 2004, 27-50.

“Instrumental Variable Estimation of a Spatial Autogressive Model with Autoregressive Disturbances: Large and Small Sample Results,” (with H.H. Kelejian and E. Yuzefovich), in J. LeSage and R.K. Pace, *Spatial and Spatiotemporal Econometrics, Advances in Econometrics*, Vol. 18. New York: Elsevier, 2004.

“Estimation Problems in Models with Spatial Weighting Matrices which have Blocks of Equal Elements”, (with H.H. Kelejian and Y. Yuzefovich), *Journal of Regional Science*, 46, 2006, 507-517.

“Guest Editorial: Analysis of Spatially Dependent Data,” (with H.H. Kelejian), *Journal of Econometrics* 140, 2007, 1-4.

“Panel Data Models with Spatially Correlated Error Components,” (with M. Kapoor and H.H. Kelejian), *Journal of Econometrics* 140, 2007, 97-130.

“HAC Estimation in a Spatial Framework,” (with H.H. Kelejian), *Journal of Econometrics* 140, 2007, 131-154.

“The Relative Efficiencies of Various Predictors in Spatial Econometric Models Containing Spatial Lags,” (with H.H. Kelejian), *Regional Science and Urban Economics* 37, 2007, 363-374.

“Specification and Estimation of Spatial Autoregressive Models with Autoregressive and Heteroskedastic Disturbances,” (with H.H. Kelejian), forthcoming in *Journal of Econometrics*.

### **Papers Submitted for Publication:**

“Central Limit Theorems and Uniform Laws of Large Numbers for Arrays of Random Fields,” (with N. Jenish), Department of Economics, University of Maryland, 2007

“A Spatial Cliff-Ord-type Model with Heteroskedastic Innovations: Small and Large Sample Results,” (with I. Arraiz, D.M. Drukker and H.H. Kelejian), Department of Economics, University of Maryland, 2007

### **Papers in Progress:**

“GMM Estimation of Dynamic Panel Data Models with Spatial Interactions,” (with J. Mutl)

“GMM Estimation of Panel Data Models with Cross Sectionally Dependent and Sequentially Exogenous Regressors,” (with G. Kuersteiner)

“Limit Theorems for Near-Epoch Dependent Arrays of Random Fields,” (with N. Jenish)

Spatial  $\beta$ - and  $\sigma$ -Convergence: Specification, Econometric Estimation and an Application to the Growth of European Regions,” (with P. Egger and M. Pfaffermayr)

### **Older Unpublished Papers:**

A list of earlier unpublished papers is available upon request. Those papers were written at the Institute for Advanced Studies, Vienna, between 1976 and 1980 and reflect my work as an applied economist at that institute. The topics of those papers range over the following areas of applied research:

- macro-econometric model building
- forecasting (including forecasts for Project LINK)
- policy evaluation
- econometric software development
- data construction