

# AGUSTÍN MARAVALL

FEBRUARY 2010

## HIGHEST ACADEMIC DEGREES

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- Ph.D. in Economics, University of Wisconsin, Madison, USA (1971-75). Dissertation published as a Springer-Verlag monograph.
- Doctor Ingeniero Agrónomo, Universidad de Madrid, Spain (1961-68). *Suma cum laude* dissertation, part of which published in the *Journal of Econometrics*

## PROFESIONAL DATA

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### a) *Professional Experience*

- Chief Economist, Head of the Time Series Analysis Unit, Oficina de Estudios Monetarios y Financieros (2001-; previously at the Oficina de Estadística, 1996-2001), Servicio de Estudios, **Banco de España**, Madrid, Spain.
- Full Professor, Department of Economics, **European University Institute**, Florence, Italy (1989-96).
- Senior Economist, Servicio de Estudios, **Banco de España**, Madrid, Spain (1979-89). (From June to December 1987, on loan to the **Instituto Nacional de Estadística**, Madrid, Spain).
- Staff Economist, Division of Research and Statistics, **Federal Reserve Board of Governors**, Washington DC, (1975-79).
- Ingeniero Superior, Secretaría General Técnica, **Ministerio de Agricultura**, Madrid, Spain (1968-71).

### b) *Teaching Experience*

Courses in Econometrics, Mathematical Statistics, Time Series Analysis, and Seasonal Adjustment Methods:

- Full Professor, Department of Economics, courses in Mathematical Statistics and Time Series Analysis, European University Institute, Florence (1989-96).
- After 1996:
  - Eurostat: European Statisticians Training Program (ESTP), Luxembourg, 2004-2010.
  - Training of European Statisticians (TES) Institute, Luxembourg, 1996-2003.
  - Centro de Estudios Monetarios y Financieros (CEMFI), Madrid, 2000-2006.
  - Escuela de Economía, Colegio de Economistas, Madrid, 2001-2006.
  - Analistas Financieros Internacionales (AFI), Graduate Program on Quantitative Finance, Madrid, 1996-2000.
- Before 1989:
  - Universidad Autónoma de Madrid (Profesor Adjunto), Universidad Complutense de Madrid (Profesor Adjunto), École de Hautes Études en Sciences Sociales-GREQE (Directeur d'Études), George Washington University (Assistant Professor), University of Wisconsin (Teaching Assistant).
  - Centro de Formación, Banco de España, 1981-83; CEMFI, 1983-88.

For more information on courses, see section "Short Courses" below.

## Publications

### a) *Not in Spanish*

- “Automatic Model Identification of Many Series with Program TSW: Aggregate Results.” **JSM Proceedings, American Statistical Association** (Business and Economics Section), 424 – 438, 2009
- “Automatic Identification of Regression-ARIMA models with TRAMO-SEATS.” **Proceedings of the European Conference on Modelling and Simulation**, European Council on Modelling and Simulation, 2009.
- “Large Scale Applied Time Series Analysis with TRAMO-SEATS.” **FCSM Conference Research Papers, Federal Committee on Statistical Methodology**, Arlington, VA, 2007.
- "Temporal Aggregation, Systematic Sampling, and the Hodrick-Prescott Filter" (with Ana del Río), *Computational Statistics and Data Analysis*, 52, 975-998, 2007.
- “An Application of the TRAMO-SEATS Automatic Procedure; Direct versus Indirect Adjustment,” *Computational Statistics and Data Analysis*, 50, 2167-2190, 2006.
- "Data Quality Control with ARIMA Filtering," *IFC Bulletin*, International Statistical Institute. Irvin Fischer Committee on Central Bank Statistics, 22, 48-53, 2005.
- “Combining Filter Design with Model-based Filtering: An Application to Business-cycle Estimation” (with Regina Kaiser), *International Journal of Forecasting*, (followed by discussion,) 21, 691-710, 2005.
- “Kalman Filter” in *An Eponymous Dictionary of Economics*, eds.: Segura, J. and Rodriguez Braun, C. Cheltenham: Edward Elgar, 2004.
- “A Class of Diagnostics in the ARIMA-model-based Decomposition of a Time Series” in *Seasonal Adjustment*, European Central Bank, November 2003.
- “Seasonal Outliers in Time Series” (with R. Kaiser), special issue on Time Series, *Estadística, Journal of the Inter-American Statistical Institute*, 15, 101-142, 2003.
- “A Tool for Quality Control of Time Series Data; Program TERROR” *IFC Bulletin*, International Statistical Institute, Irving Fischer Committee on Central-Bank Statistics, 13, 22-36, 2002.
- “Brief Description of the TRAMO-SEATS Methodology,” in *Modeling Seasonality and Periodicity*, Proceedings of the 3rd. International Symposium on Frontiers of Time Series Modeling, The Institute of Statistical Mathematics, Tokyo, 2002.
- "Comment on a paper by Professors Harvey and Chen," *Journal of the Royal Statistical Society*, B, 63, 2001.
- *Measuring Business Cycles in Economic Time Series*, (with R.Kaiser). Lecture Notes in Statistics, 154, New York: Springer-Verlag, 190 pp, 2001.
- "An application of TRAMO-SEATS: Changes in Seasonality and Current Trend-Cycle Assessment" (with R. Kaiser), in *ICES II, Proceedings of the Second International Conference on Establishment Surveys* (invited papers), Alexandria, VA: American Statistical Association, Washington, DC, 2001.
- "Automatic Modeling Methods for Univariate Series" (with V. Gómez), in D.Peña, G.C.Tiao, and R.S.Tsay (eds.) *A Course in Time Series Analysis*, Ch. 7, New York: J. Wiley and Sons, 2001.

- "Seasonal Adjustment and Signal Extraction in Economic Time Series" (with V. Gómez), in D.Peña, G.C.Tiao, and R.S.Tsay (eds) *A Course in Time Series Analysis*, Ch. 8, 202-247, New York: J. Wiley and Sons, 2001.
- "An Application of TRAMO-SEATS: Model Selection and Out-of-sample Performance" (with F.J. Sanchez), in *Proceedings in Computational Statistics, Compstat 2000*, Heidelberg: Physica-Verlag, 2000.
- "An Application of TRAMO and SEATS" in *Annali di Statistica: Seasonal Adjustment Procedures. Experiences and Perspectives*, 129, X, 20, 2000.
- "Comment on a paper by Professors Durbin and Koopman," *Journal of the Royal Statistical Society*, B, 62, 1, 2000.
- "Notes on Time Series Analysis, ARIMA Models, and Signal Extraction," (with R. Kaiser), Working Paper 0012, Research Department, Bank of Spain, 2000.
- "Estimation Error and the Specification of Unobserved Component Models" (with C. Planas), *Journal of Econometrics*, 92, 325-353, 1999. To be reprinted in P. Newbold and S.J. Leybourne, *Recent Developments in Time Series*, The International Library of Critical Writings in Econometrics, Cheltenham, UK: Edward Elgar Publ.
- "Estimation of the Business Cycle: A Modified Hodrick-Prescott Filter" (with R. Kaiser), *Spanish Economic Review* 1, 175-206, 1999.
- "Missing Observations in ARIMA models: Skipping Approach versus Additive Outlier Approach" (with V. Gómez and D. Peña), *Journal of Econometrics* 88, 341-364, 1999.
- "Short-Term Analysis of Macroeconomic Time Series," in A. Kirman and L.A. Gérard Varet, eds., *Economics: Beyond the Millennium*, Oxford: Oxford University Press, 1999.
- "Comment on the X12ARIMA Seasonal Adjustment Method," *Journal of Business and Economic Statistics*, 16, 155-160, 1998.
- "Use and Mostly Abuse of Time Series Techniques in Economic Analysis," in *Applications of Mathematics to Economics and Management*, Lisbonne: Instituto Superior de Economía e Gestao, 1997.
- "Practical Experiences with SEATS" (with B. Feldmann), *Allg. Statistisches Archiv*, 81, 1997.
- "New Methods for Quantitative Analysis of Short-Term Economic Activity" (with V. Gómez), in A. Prat (ed.), *Proceedings in Computational Statistics*, Heidelberg, Physica-Verlag, 1996.
- "Unobserved Components in ARCH Models: An Application to Seasonal Adjustment" (with G. Fiorentini), *Journal of Forecasting*, 15, 175-201, 1996.
- "Missing Observations and Additive Outliers in Time Series Models" (with D. Peña), EUI Working Paper Eco No. 92/97, Department of Economics, European University Institute, in R. Mariano (ed.), *Advances in Statistical Analysis and Statistical Computing* (vol. 3), JAI Press.
- "Unobserved Components in Economic Time Series" in H. Pesaran and M. Wickens (eds.), *The Handbook of Applied Econometrics*, chap. 1, 12-72. Oxford: Basil Blackwell, 1995.
- "Estimation, Prediction and Interpolation for Nonstationary Series with the Kalman Filter" (with V. Gómez), *Journal of the American Statistical Association*, 89, 611-624, 1994.
- "Use and Misuse of Unobserved Components in Economic Forecasting," *Journal of Forecasting*, 13, 157-178, 1994.

- "Encompassing Univariate Models in Multivariate Time Series: A Case Study" (with A. Mathis), *Journal of Econometrics*, 61, 197-233, 1994. Reprinted in A. Zellner and F. Palm, *The Structural Econometric Time Series Analysis Approach*, Cambridge: Cambridge University Press, 2004.
- "Stochastic Linear Trends: Models and Estimators," *Journal of Econometrics*, 56, 5-37, 1993. Reprinted in A. Harvey and T. Proietti (eds.), *Readings in Unobserved Component Models*, Advanced Texts in Econometrics, Oxford University Press, 2005.
- "Initializing the Kalman Filter with Incompletely Specified Initial Conditions" (with V. Gómez), in R. Chen (ed.), *Approximate Kalman Filter (Series on Approximation and Decomposition)*, London: World Scientific Publ. Co., 39-62, 1993.
- "Time Series Regression with ARIMA Noise and Missing Observations - Program TRAMO" (with V. Gómez) in EUI Working Paper ECO, 92/81, Florence, European University Institute, 1992. A summary published in *Bulletin of the International Statistical Institute*, 49th Session, Book 1, Florence, 1993.
- "Signal Extraction in ARIMA Time Series - Program SEATS" in EUI Working Paper ECO, 92/65, Florence, European University Institute, 1992. A summary published in *Bulletin of the International Statistical Institute*, 49th Session, Book 2, Florence, 1993.
- "Computing Missing Values in Time Series" (with V. Gómez and D. Peña), in Y. Dodge and J. Whittaker (eds.), *Proceedings in Computational Statistics*, Heidelberg: Physica-Verlag, 1992.
- "Noisy Data and Monetary Policy" (with D.A. Pierce) in New Palgrave *Dictionary of Money and Finance*, New York: MacMillan, 1992.
- "Interpolation, Outliers, and Inverse Autocorrelations" (with D. Peña), *Communications in Statistics - Theory and Methods*, 20, 1991.
- "On the Dynamic Structure of a Seasonal Component," *Journal of Economic Dynamics and Control*, 13, 81-91, 1989.
- "Comment on Intertemporal Consumer Behavior under Structural Changes in Income" (with J.J. Dolado), *Econometric Reviews*, 8, 1989.
- "A Note on Minimum Mean Squared Error Estimation of Signals with Unit Roots," *Journal of Economic Dynamics and Control*, 12, 589-593, 1988.
- "The Use of ARIMA Models in Unobserved Components Estimation" in W. Barnett, E. Berndt and H. White (eds.), *Dynamic Econometric Modelling*, Cambridge: Cambridge University Press, 1988.
- "A Prototypical Seasonal Adjustment Model" (with D.A. Pierce), *Journal of Time Series Analysis*, 8, 177-193, 1987. Reprinted in S. Hylleberg (ed.), *Modelling Seasonality*, Oxford University Press, 1992.
- "On Minimum Mean-Squared-Error Estimation of the Noise in Unobserved Component Models," *Journal of Business and Economic Statistics*, 5, 115-120, 1987.
- "An Application of Model-Based Estimation of Unobserved Components," *International Journal of Forecasting*, 2, 305-318, 1986.
- "The Transmission of Data Noise into Policy Noise in U.S. Monetary Control" (with D.A. Pierce), *Econometrica*, 54, 961-979, 1986.
- "Revisions in ARIMA Signal-Extraction," *Journal of the American Statistical Association*, 81, 736-740, 1986.
- "Comment on a paper by Professors Harvey and Durbin," *Journal of the Royal Statistical Society*, A, 149, 1986.

- "Errori nei Dati e loro Effetti sulle Politiche" in U. Trivellato (ed.), *Errori dei Dati Preliminari, Previsioni e Politiche Economiche*, Cleup editore, 1986.
- "On Structural Time Series Models and the Characterization of Components," *Journal of Business and Economic Statistics*, 3, 350-355, 1985. Reprinted in Harvey, A.C. (ed.), *Time Series*, Cheltenham: Edward Elgar Publ., 1994.
- "Signals and Revisions in Economic Time Series" (with D.A. Pierce), *Questio* (volume in the memory of G.M. Jenkins), 8, 1984.
- "Advances in Model-Based Seasonal Adjustment" (with D.A. Pierce), *Proceedings of the American Statistical Association*, Business and Economics Section, 1984.
- "Comment on Issues Involved in the Seasonal Adjustment of Economic Time Series," *Journal of Business and Economic Statistics*, 2, 1984.
- "Model-Based Treatment of a Manic-Depressive Series" in *Computer Science and Statistics*, Symposium on the Interface, Amsterdam: North-Holland, 1984.
- "Preliminary Data Error and Monetary Aggregate Targeting" (with D.A. Pierce), *Journal of Business and Economic Statistics*, 1, 179-186, 1983.
- "An Application of Nonlinear Time Series Forecasting," *Journal of Business and Economic Statistics*, 1, 66-74, 1983.
- "Comments on Forecasting White-Noise" in A. Zellner (ed.), *Applied Time Series Analysis of Economic Data*, Proceedings of the Bureau of the Census-NBER-ASA Conference, Washington DC: Department of Commerce, 1983.
- "Comments on Modelling Considerations in the Seasonal Adjustment of Economic Data" in A. Zellner (ed.), *Applied Time Series Analysis of Economic Data*, Proceedings of the Bureau of the Census-NBER-ASA Conference, Washington DC: Department of Commerce, Bureau of the Census, 1983.
- "Uncertainty in the Monetary Aggregates: Sources, Measurement and Policy Effects" (with D.A. Pierce, W.P. Cleveland and D.W. Parke) (followed by discussion), *Journal of Finance*, 36, 507-515, 1981.
- "On Identification of Multivariate Time Series Models," *Journal of Econometrics*, 16, 1981.
- "The Effects of Alternative Seasonal Adjustment Methods on Monetary Policy" (followed by discussion), *Journal of Econometrics*, 14, 115-136, 1980.
- *Identification in Dynamic Shock-Error Models*, Lecture Notes in Economics and Mathematical Systems, Berlin-Heidelberg-New York: Springer-Verlag, 164 pp., 1979.
- "Short Run Forecasting of Demand Deposits via Sectorial Disaggregation (The Demand Deposits Ownership Survey)," *Proceedings of the American Statistical Association*, Business and Economics Section, 1978.
- "Transitory Variations in the Monetary Aggregates" (with R.D. Porter, D.A. Pierce and D.W. Parke), in *Improving the Monetary Aggregates: Federal Reserve Staff Study*, pp. 1-33. Washington DC: Federal Reserve Board of Governors, 1978.
- "Comments on 'Analysis and Modeling of Seasonal Time Series' by G.E.P. Box, S. Hillmer and G.C. Tiao," in A. Zellner (ed.), *Seasonal Analysis of Economic Time Series*, Proceedings of a U.S. Department of Commerce-Bureau of the Census Conference, Washington DC: Department of Commerce, 1978.
- "Identification of the Dynamic Shock-Error Model: The Case of Dynamic Regression" (with D.J. Aigner) in D.J. Aigner and A.S. Goldberger (eds.), *Latent Variables in Socioeconomic Models*, Amsterdam: North-Holland, 1977.

- "A Note on Three-Stage Least Squares Estimation," *Journal of Econometrics*, 4, 1976.
- "Bayesian Weekly Forecasts of M1 Subject to Monthly Constraints," *Proceedings of the American Statistical Association*, Business and Economics Section, 1976.
- Contributor to the *Dictionary of the Social Sciences*, UNESCO.
- Book Review: *Journal of the American Statistical Association*.

b) *In Spanish*

- "Un nuevo método para el control de calidad de los datos en series temporales" (with C. Luna), *Boletín Económico*, Banco de España, May 37-44, 1999.
- "Economía y estadística," *Revista de Política Científica*, 36, 24-29, 1993.
- "Reflexiones sobre la utilización del análisis de series temporales en economía," *Revista Española de Economía*, 7, 1990.
- "Análisis de un cierto tipo de tendencias," *Cuadernos Económicos*, 44, 1990.
- "La extracción de señales y el análisis de coyuntura," *Revista Española de Economía*, 6, 1989.
- "Descomposición de series temporales: especificación, estimación e inferencia; con una aplicación a la oferta monetaria en España" (followed by discussion), *Estadística Española*, 114, 11-69, 1987.
- "Una interpretación de los resultados de la nueva encuesta de población activa" (with M.D. García), *Boletín Trimestral de Coyuntura*, Instituto Nacional de Estadística, September 1987.
- "Una medida de volatilidad en series temporales con una aplicación al control monetario en España" (with S. Bentolila), *Investigaciones Económicas*, January 1986.
- "La desestacionalización de las series de agregados monetarios" (with J. Salaverría), *Boletín Económico*, Banco de España, June 1986, 17-33.
- "Predicción con modelos de series temporales," en *Predicción y Economía de las Telecomunicaciones*, Madrid, FUNDESCO, 1986.
- "Sobre la extracción de una señal en un modelo ARIMA," *Revista Española de Economía*, 1, 25-54, 1984.
- "Desestacionalización de los activos líquidos en manos del público," *Boletín Económico*, Banco de España, April 1984.
- "Depresión, euforia y el tratamiento de series maniaco-depresivas: el caso de las exportaciones," *Información Comercial Española*, 604, 67-78, 1983.
- "Identificación de modelos dinámicos con errores en las variables," *Cuadernos Económicos*, 24, 103-118, 1983.
- "Desestacionalización de las disponibilidades líquidas y de sus componentes," *Boletín Económico*, Banco de España, April 1982.
- *Detección de no-linealidad y predicción por medio de procesos estocásticos bilineales, con una aplicación al control monetario*, Estudios Económicos, 25, Madrid, Banco de España, 1982.
- "Desestacionalización de las disponibilidades líquidas e intervalos de confianza para las mediciones de sus tasas de crecimiento," *Boletín Económico*, Banco de España, May 1981.

- *Intervalos de confianza de los factores estacionales y medición de las tasas de crecimiento de las series monetarias*, Estudios Económicos, 21, Madrid, Banco de España, 1981.
- "La desestacionalización de los depósitos del sistema bancario," *Boletín Económico*, Banco de España, September 1980.
- *Desestacionalización y política monetaria*, Estudios Económicos, 19, Madrid, Banco de España, 1980.
- "Una aproximación al equilibrio del sector agrario," *Revista Española de Economía*, January-April 1972. (The paper received an Instituto de Desarrollo Económico award of 175000 pesetas.)
- *Producción y demanda de frutas para 1975 y 1980*, Madrid, Ministerio de Agricultura, 1970.
- *Diseño de una explotación ganadera en Castilla*, Madrid, Escuela Técnica Superior de Ingenieros Agrónomos, 1970. (At the time, out of 500 theses, 10 had been selected for publication).
- Contributor to the *Diccionario de Ciencias Sociales*, Madrid, Alianza Editorial, 1996
- Book Review: *Revista de Historia Económica*.

## SOFTWARE DEVELOPMENTS

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In collaboration with Víctor Gómez during the period 1987-1999, and of Gianluca Caporello since 1991, I have completed several programs for statistical analysis and treatment of economic time series. The programs complement each other and put together the work and research of many years.

The first program is called "**T**ime Series **R**egression with **ARIMA** Noise, **M**issing Observations and **O**utliers" (**TRAMO**). The program estimates a mixed ARIMA-regression model and computes optimal forecasts and interpolators for (possibly) non-stationary series, with missing observations, and in the presence of outliers, breaks, and perhaps calendar effects. The program contains an option for automatic model identification, automatic detection and correction of several types of outliers and of trading day and other calendar effects. Several types of intervention variables can also be included.

The second program is called "**S**ignal **E**xtraction in **ARIMA** **T**ime **S**eries" (**SEATS**). It estimates and forecasts unobserved components (such as the seasonal, trend, transitory, and noise components) in time series, using signal extraction techniques applied to regression-ARIMA models. The program contains a part on diagnostics and inference, with an analysis of the estimation and forecasting errors. TRAMO and SEATS are oriented towards their use in both short-term economic policy or monitoring, and large-scale statistical production.

TRAMO contains an extension (**TERROR**) to the problem of error detection and quality control of data in large data bases of time series; SEATS can be used for estimation of long-term trends and "business cycles." Program **TSW** is a Windows version that puts the programs together and contains some extensions mostly having to do with the treatment of many series.

The programs can be run in an entirely automatic manner and are used intensively at data producing agencies, policy making institutions, research, and business. They can be applied for in-depth analysis of important series, or for routine applications to many series. Three European task forces, set up for the purpose of providing a recommendation concerning seasonal adjustment methods, recommended TRAMO-SEATS. The first one,

the Seasonal Adjustment Research Appraisal (SARA) committee, formed by Italian statisticians from official agencies, universities, and private companies, presented its conclusion at a conference organized in Rome by the Italian Statistical Office in June, 1998. The second one, a EUROSTAT task force on seasonal adjustment, formed by statisticians from the different divisions of EUROSTAT, presented its report at a EUROSTAT-

International Statistical Institute (ISI) Conference in Bucharest, October 1998 (the final recommendation also included the program X12 ARIMA, from the US Bureau of the Census). The third task force, created by the European Central Bank, recommended both TRAMO-SEATS and X12 ARIMA. In August 2007, the Hungarian Central Statistical Office presented at the ISI meeting the results of a project, financed by Eurostat, on the current seasonal adjustment practices in 32 countries of the European Statistical System: “In EU countries about 80% of the institutions use TRAMO/SEATS as seasonal adjustment method. 52% of them use this as a standalone method and about 20% use this in combination with X12-ARIMA. All of the new EU countries have chosen TRAMO/SEATS and 8 of them as a standalone method. Other methods take 10% of the market.” Accordingly, the “ESS Guidelines on Seasonal Adjustment” published in 2009, that attempts to establish shared rules- based on best statistical practices- among institutions within the European Statistical System, only focus on two methods: X12-ARIMA and TRAMO-SEATS.

The US Bureau of the Census has incorporated and adapted the Automatic Model Identification procedure of TRAMO to their official X12 ARIMA package and is completing work on a new program, X13-ARIMA-SEATS, that will include SEATS as an alternative option to X12. A US Bureau of Labour Statistics task force on seasonal adjustment has also recommended the use of TRAMO-SEATS as well as X12-ARIMA. At present, TRAMO and SEATS are used in agencies, institutions, and companies throughout the world.

The programs are described in:

- **Programs TRAMO and SEATS. Instructions for the User.** Gómez, V. and Maravall, A., Working Paper 9628, Research Department, Bank of Spain (with several updates).
- **Guide for Using the Programs TRAMO and SEATS,** Gómez V. and Maravall, A. (1998). Working Paper #9805, Research Department, Bank of Spain.
- **Program TERROR for Quality Control of Time Series Data,** Caporello, G. and Maravall, A. (2003). Occasional Paper #1, Research Department, Bank of Spain.
- **Program TSW: Reference Manual,** (2001). Working Paper number 0112, Research Department, Bank of Spain.
- **Program TSW: Revised Reference Manual,** (2004). Occasional Paper 0408, Research Department, Bank of Spain.

More documentation is available in Working Papers of the Bank of Spain and of the European University Institute, and in several of the papers listed above under **PUBLICATIONS**.

The programs, manuals, documentation, and additional facilities, such as interfaces and macros, are freely available from the Bank of Spain Web Site (<http://www.bde.es/servicio/software/econome.htm>). Additional interfaces have been developed. Early examples are “DEMETRA,” developed by Eurostat, and “TRAMO-SEATS Components,” developed at the Bank of Belgium, which have evolved into a joint project, DEMETRA+, in collaboration with the Bank of Spain, the European Central Bank, and the US Bureau of the Census. They have also been incorporated into some standard econometrics/statistics packages (examples are E-views or GRETL).

## SEMINARS, CONFERENCES AND SHORT COURSES

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### *a) Invited Seminars and Conferences*

#### ▪ *International Meetings and Workshops*

*(Only invited presentations are considered.)*

American Economic Association and American Finance Association (Denver, 1980); American Statistical Association Annual Meeting (New York, 1984; Chicago, 1996; Washington, D.C, 2009); Bureau of the Census-NBER-ASA Conference on Time Series Analysis of Economic Data (Washington DC, 1981); 16th Symposium on the Interface (Atlanta, 1984); Conference on Seasonal Adjustment Methods, International Statistical Institute-Eurostat (Bucharest, 1998); Conference on Seasonal Adjustment and its Implications for Short-term Analysis and Forecasting (Luxembourg, 2006); (EC)<sup>2</sup> Conference (Rotterdam, 1991); Econometrics Society Latin American Meeting (Córdoba, Argentina, 1993); Econometrics Society North American Meeting (Montreal, 1979); Econometric Society European Meeting (Berlin, 1998); European Conference on Modelling and Simulation, (Madrid, 2008); Federal Committee an Statistical Methodology Research Conference (Washington, DC, 2007); Fifth CEMAPRE Conference (Lisboa, 1997); First Catalan International Symposium on Statistics (Barcelona, 1983); International Conference: Financial Markets Dynamics and Forecasting (Paris, 1993); International Conference on Economics: The Next Ten Years (Marseille, 1992); International Conference on Establishment Surveys (Buffalo, NY, 2000); International Conference on Modelling Monetary and Financial Sectors (Taipei, 2000); International Conference on Uncertainty in Modelling and Policy (Washington, DC, 1982); International Conference on Challenges to Central Bank Statistical Activities (ISI-BIS, Basel, 2002); International Conference: 'Economics: a Quantitative Science?' (Marseille, 2002); International Economic Association (Madrid, 1983); First International Institute of Forecasters Workshop: Nonlinearities, Business Cycles and Forecasting (Madrid, 2003); International Seminar on Business Cycle Estimation, Bank of Italy (Rome, 1999); International Seminar on Seasonal Adjustment Procedures, Experiences and Perspectives, ISTAT (Rome, 1998); International Statistical Institute Conference (Sydney, 2005; Lisbonne 2007); International Symposium on Computational Statistics (Neuchâtel, 1992; Barcelona, 1996; Utrecht, 2000); International Symposium on Forecasting (London, 1984; Paris, 1986, 1991; Mérida, México, 2003; Santander, 2006); International Symposium on Modelling Seasonality and Periodicity, Institute of Statistical Mathematics (Tokyo, 2002); NBER Economics and Control Conference (Austin, 1978); Seminar on Data Revisions (Florence, 1984); Seminar on Econometric Modeling (IBM Institute, Oberlech, 1986); Southern European Economic Association (Toledo, 1988); Seminar on Seasonal Adjustment Methods, Bundesbank (Frankfurt, 1999); Third Austin Symposium in Economics (Austin, 1986); United Nations Statistical Commission and Economic Commission for Europe: Work Session on Statistical Data Editing (Madrid, 2003); Workshop on Seasonal Adjustment, U.S. Bureau of the Census Research Conference (Washington DC, 1995); Workshop on Seasonal Adjustment Methods and the Aggregation of EMU Quarterly Accounts, German Institute for Economic Research (Berlin, 1999); Workshop on Seasonal Adjustment, Bank of England (London, 2000); Workshop on Output Gap Estimation, European Central Bank (Frankfurt, 2000) and Seminar on Seasonal Adjustment, European Central Bank (Frankfurt, 2002).

- ***Seminars at International Institutions***

Bank of Italy; Bank of England; Bank of Portugal; Bank of the Netherlands; Bank of France; Bank of Turkey; Bundesbank; Bank of Belgium; CEE Division 2 (Brussels); Center for Economic Research (University of Tilburg); Center for Operations Research in Economics (Louvain-la-Neuve); China Europe International Business School (Shanghai); East China Normal University (Shanghai); European Central Bank; EUROSTAT (Luxembourg); Federal Reserve Board of Governors; Federal Reserve Bank of Atlanta; German Institute for Economic Research (DIW); Institut National de la Statistique et des Études Économiques (Paris); Institute of Economic Research (Vienna); Istituto Nazionale di Statistica (Roma); National Statistical Institute of Sweden; Observatoire Français des Conjonctures Économiques (Paris); OCDE, Economics and Statistics Department; Universidade Técnica de Lisboa; Università Commerciale Luigi Bocconi (Milano); Università di Firenze; Università di Napoli; Università di Padova; Università di Venezia; Université d'Aix-Marseille; Université de Lausanne; Université Libre de Bruxelles; University of Aarhus; London School of Economics; Fudan University (Shanghai); Harvard University; Humboldt Universität zu Berlin; Indiana University; University of Birmingham (UK); University of El Cairo; University of California (Berkeley); University of California (Davis); University of California (Los Angeles); University of Chicago; New York University; University of Pennsylvania; University of Rochester; University of Southern California; University of Stockholm; University of Texas; University of Wisconsin; Yale University; US Bureau of the Census; US Bureau of Labor Statistics; Washington Statistical Society.

- ***Seminars at Spanish Institutions***

Banco de España; BBVA; Centro de Estudios Monetarios y Financieros; Federación de Cajas Rurales, Valencia; Fundación de Economía Aragonesa; Fundación Centro de Estudios Andaluces; FEDEA; FUNDESCO; Instituto Nacional de Estadística; Ministerio de Economía; Universidad Autónoma de Barcelona; Universidad Autónoma de Madrid; Universidad Carlos III de Madrid; Universidad Central de Barcelona; Universidad Complutense de Madrid; Universidad de Alicante; Universidad de Comillas; Universidad de Málaga; Universidad de Navarra; Universidad del País Vasco; Universidad Pública de Navarra; Universidad Internacional Menéndez Pelayo (at Santander, Sitges and Segovia); Universidad Pompeu Fabra de Barcelona; Universidad de Valencia; Universidad de Zaragoza.

***b) Short Courses (between 6 and 40 hours; mode: 30 hours)***

Advanced Seminar in Econometrics (Bagni di Lucca, 1989; Ridraccoli, 1990); Agencia Tributaria, Ministerio de Economía (Madrid, 2000); Banco de España (1988, 1997, 2003, 2005, 2006, 2009); Bank of Italy (1997); Banco de México and INEGI (2003); Banco de la Reserva de Perú (2002, 2010); Banco de El Salvador (2000); US Bureau of the Census (1999); US Bureau of Labor Statistics (2004); Caja de Ahorros de Granada (1998); Central Bureau of Statistics of the Netherlands (The Hague, 2009); Central Statistical Office of Slovenia (1995); Confederación de las Cajas de Ahorro, Madrid (1988); Consejo Monetario Centroamericano (2006); Directorate General of Budget, Accounting and Statistics of Taiwan (2000); ECFIN, CEE, Brussels (2003); European Central Bank (2001); European Courses in Advanced Statistics (1997, 2005); EUROSTAT (1994); Federal Reserve Board of Governors (2000); GREQAM (Marseille, 1985), IDSC Institute, Cairo (2006); Instituto de Estudios Fiscales, Madrid (2010); Instituto Estadístico de Andalucía (2004); Instituto Nacional de Estadística, Madrid (2000, 2003, 2006); International Monetary Fund (1999); Ministry of Finance of Portugal (1987); National Statistical Institutes of Belgium (2001), Estonia (2000), France

(2008), Italy (1998), Portugal (1994), Sweden (2003), Turkey (2006) and Ukraine (2002), OECD, Paris (2001); Organization of National Statistics (Newport, 2009); People's Bank of China, Beijing (2008); Universidad Politécnica de Catalunya (1997); University of Alcalá (2007), Valencia (2001), Marseille (1986), Napoli (1987,1994) and Venezia (1992); Washington Statistical Society (1999).

## ADDITIONAL INFORMATION

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### **a) Associate Editor**

*Journal of Business and Economic Statistics*, American Statistical Association (1983-96).

*Journal of Econometrics*, North-Holland (1993-1999).

*Econometric Reviews*, Marcel Dekker (1985-95).

*Journal of Business Cycle Measurement and Analysis*, OECD and CIRET (2004-2007).

*Estadística Española*, Instituto Nacional de Estadística (1986-95).

*Estadística*, Inter-American Statistical Institute (1988-95).

*Revista Española de Economía* (Co-editor 1984-1989; 1990-96 in Advisory Board).

### **b) Supervision and Advisory work**

Supervisor of 10 thesis and member of the Ph.D. exam committee in departments of Economics, Statistics, Mathematics, and Engineering at several European universities.

Advisor: National Science Foundation; Economic and Social Research Council; Scientific Research Division of NATO; Comisión Asesora de Investigación Científica y Técnica; OCDE Consultant; Special Adviser to Eurostat and European Central Bank; Member of the Program Committee and the Scientific Committee in many international meetings and conferences.

Member of the High Advisory Council on R & D, Generalitat Valenciana, and of the Board of Directors of the (recent) Institute for Advanced Studies of Madrid (IMDEA).

### **c) Languages**

Spanish; English (I lived in the USA for 7 ½ years); French (I lived in France for 5 ½ years); Italian (I lived in Italy for 7 years).

### **d) Fellowships and Awards**

Fulbright Fellow; Ford Foundation Fellow; Wisconsin Alumni Research Foundation Fellow; Phi Kappa Phi Honor Society; Oficial de la Orden Civil del Mérito Agrario; Elected Member of the International Statistical Institute.

*Fellow* of the Journal of Econometrics, 1996. ("For extraordinary research contributions to Econometrics.")

*Fellow* of the American Statistical Association, 2000. ("For contributions to the theory and application of time series modelling and seasonal adjustment; and for editorial service to the profession.")

*Julius Shiskin Award for Economic Statistics, 2004.*

The Award, established in 1979, honors an unusually original and important contribution to aid in the management and interpretation of the economy or exceptionally sound and innovative research in economic statistics. The selection committee is formed by the following US organizations: National Bureau of Economic Research, Bureau of Economic Analysis, Office of Management and Budget, Bureau of the Census, Bureau of Labor Statistics, Washington Statistical Society, National Association for Business Economics, and American Statistical Association (Business and Economics Section), with the last three being the sponsoring organizations.

2004 has been the first year the recipient was not in a North American institution. The award was given “in recognition of his outstanding leadership and contributions to methods, software, training, and consultation for model-based seasonal adjustment and its acceptance by national statistical offices and central banks,” with a “Special Recognition” of his “Contribution to Improving the Quality of Economic Statistics and in Exhibiting the Highest Standards of Quality, Thoughtfulness and Professional Integrity.”

*Rey Jaime I Prize in Economics, 2005.*

The prize honors scientific research in Spain in the fields of basic science, economics, environment, medicine, and new technologies. It is sponsored by the Spanish Royal House, the "Fundación Premios Rey Jaime I", and the "Generalitat Valenciana." The selection committee included several Nobel Prize winners, and the prize contains a financial reward of 100,000 euros. The Prize was awarded in recognition of his research in applied time series analysis and of its worldwide impact notably at economic agencies and institutions.

*First Galicia Prize in Statistics, 2006.*

The prize is sponsored by the Caixa Galicia Foundation and the Galicia Statistical Institute and bestows a financial award of 18,000 euros. It was awarded for “extraordinary merits in the field of statistics, both theoretical and applied, that have contributed substantially to improvements in the production of statistics at public institutions.”