

## **Diego J. Pedregal**

### **Curriculum Vitae**

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#### **Contact information**

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#### **Education and professional record**

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2009 - present	Full Professor, Escuela Técnica Superior de Ingenieros Industriales, Universidad de Castilla-La Mancha, Ciudad Real, Spain
2002 – 2009	Associate Professor (with tenure), Escuela Técnica Superior de Ingenieros Industriales, Universidad de Castilla-La Mancha, Ciudad Real, Spain.
2007 – 2008	Spanish National Energy Commission external consultant, Spain.
2006 – 2007	European Central Bank external consultant, Frankfurt, Germany.
2005 – 2006	Ebro Hydrological Confederation external consultant, Spain.
1999 – 2002	Assistant Professor, Escuela Técnica Superior de Ingenieros Industriales, Universidad de Castilla-La Mancha.
1997 – 1999	Risk analyst at the Credit Scoring department, Banco del Comercio, BBV holding, Madrid, Spain. Assistant Professor (part time), Autónoma University of Madrid, Spain.
1996	Barclaycard plc. external consultant, UK.
1994 – 1997	Research Associate, Environmental Science Department, Lancaster University, UK.
1991 – 1995	Ph.D. in Economics, Autónoma University of Madrid. Subject area: Econometrics and Time Series Analysis.
1991 – 1992	M.A. in “Public Finance and Economic Programming”, Institute for Fiscal Studies, Madrid, Spain.
1986 – 1991	First degree in Economics, Autónoma University of Madrid, Spain.

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## Research Profile

Full Professor at an Industrial Engineering School with more than 15 years of experience in research, over 30 publications in the open literature and more than 40 contributions to international conferences. Post doctoral stay of three years at Lancaster University (UK). Research contributions in the areas of Unobserved Components models, signal extraction, time series analysis, data-based modelling, signal processing and forecasting. Expertise in the use of the Matlab/Simulink™ software environment, author of several toolboxes for Matlab™ and co-author of the Captain toolbox. Applied work in two main areas: Economics and Engineering. More specifically the areas include economic modelling and forecasting of fiscal variables; transport economics; modelling of business cycles; electricity load and price forecasting; predictive maintenance of industrial equipment; modelling of hydrological systems. Collaborations and consultancy interests include: Barclaycard plc. UK, the Ebro Hydrological Confederation and the Spanish National Energy Commission. Active collaborator at the Centre for Andalusian Studies (centrA) in Spain.

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## Teaching Profile

Presently teach at the University of Castilla-La Mancha on accredited courses in Statistics, Industrial Economics and Business Administration. Developed and taught a wide range of courses in a university context, including undergraduate and postgraduate degree modules in Statistics, Economics, Business Administration, State Space systems modelling and Matlab/Simulink programming.

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## Publications

### Educational book

Pedregal, D.J. (2011), Manual de Microeconomía. Todo lo imprescindible para entenderla. Ediciones Lulú. <http://www.lulu.com>. ISBN 978-1-4475-1725-2.

Pedregal, D.J. (2011), Manual de Macroeconomía. Todo lo imprescindible para entenderla. Ediciones Lulú. <http://www.lulu.com>. ISBN 978-1-4477-1113-1.

### Book chapters

García, F.P. and Pedregal, D.J. (2011), "Digital Filters for Maintenance Management", in: F.P. García (ed.), Digital Filters, InTech, Rijeka, Croatia.

Pedregal, D.J., Contreras, J., and Sánchez, A. (2010), "ECOTOOL: A general MATLAB Forecasting Toolbox with applications to Electricity Markets", in: P.M. Pardalos, M.V.F. Pereira, N.A. Iliadis, S. Rebennack and A. Sorokin(eds), Handbook of Networks in Power Systems, Springer Verlag.

Young, P.C., Pedregal, D.J. (2004), 'Environmental forecasting'. *Encyclopedia of Environmetrics*, editado por A.H. El-Shaarawi and W.W. Piegorsch (J. Wiley). <http://www.wiley.com/legacy/wileychi/eoenv/pdf/Vaf007-.pdf>

Pedregal, D.J., Young, P.C. (2002), 'Statistical Approaches to Modelling and Forecasting Time Series'. En Clements, M. and Hendry, D. (eds.), *Companion to Economic Forecasting* (Blackwell Publishers), 69-104.

Young, P.C., Pedregal, D.J. (1997), 'Data-Based Mechanistic Modelling'. C. Heij *et al.* (eds.), *System Dynamics in Economic and Financial models* (J. Wiley, Chichester), 169-213.

Young, P.C., Pedregal, D.J. (1997), 'Comments on "Multivariate Structural Time Series Models" ' by A. Harvey and S. J. Koopman. C. Heij *et al.* (eds.), *System Dynamics in Economic and Financial models* (J. Wiley, Chichester), 291-293.

### **Papers on international journals**

Leal, T., Pedregal, D.J., Pérez, J.J. (2011), 'Short-term monitoring of the Spanish government balance', *SERIEs*, 2, 97-119.

Carnero, C., Pedregal, D.J. (2010), 'Modelling and forecasting occupational accidents of different severity levels in Spain', *Reliability Engineering and System Safety*, 95, 1134-1141.

Castillo, JI, Castro, M, Pedregal, DJ, (2010), "An econometric analysis of the effects of the penalty points system driver's license in Spain", *Accident Analysis & Prevention* 42 (4): 1310-1319.

García, F.P., Pedregal, D.J., Roberts, C. (2010), 'Time Series methods applied to failure prediction and detection', *Reliability Engineering & System Safety*, 95, 698-703.

Pedregal, D.J., Trapero, J.R. (2010), 'Mid-term hourly electricity forecasting based on a multi-rate approach', *Energy Conversion and Management*, 51, 105-111.

Pedregal, D.J., Pérez, J.J. (2010), 'Should quarterly government finance statistics be used for fiscal surveillance in Europe?', *International Journal of Forecasting*, 26, 794-807.

Onorante, L., Pedregal, D.J., Pérez, J.J., Signorini, S. (2010), 'The usefulness of infra-annual government cash budgetary data for fiscal forecasting in the euro area', *Journal of Policy Modeling*, 32, 98-119.

Trapero, J.R., Pedregal, D.J. (2009), 'Frequency domain methods applied to forecasting electricity markets', *Energy Economics*, 31, 727-735.

Pedregal, D.J., Dejuán, O., Gómez, N. y Tobarra, M.A. (2009), 'Modelling demand for crude oil products in Spain', *Energy Policy*, 37, 4417-4427.

Pedregal, D.J., Rivas, R., Feliu, V., Sánchez, L., Linares, A. (2009), 'A non-linear forecasting system for the Ebro River at Zaragoza, Spain', *Environmental Modelling and Software*, 24, 502-509.

Pedregal, D.J., Carnero, C. (2009), 'Vibration analysis diagnostics by continuous-time models: A case study', *Reliability Engineering and System Safety*, 94, 244-253.

Pedregal, D.J., García, F.P., Roberts, C. (2009), 'An algorithmic approach for maintenance management based on advanced state space systems and harmonic regressions', *Annals of Operations Research*, 166, 109-124.

Rivas, R., Feliu, V., Sánchez, L., Pedregal, D.J., Linares, A., Aguilar, J.V., Langarita, P. (2008), 'Identificación del primer tramo del canal principal de riego "Imperial de Aragón"', *Ingeniería hidráulica en México*, 23, 71-87.

Pedregal, D.J., Young, P.C. (2008), Development of improved adaptive approaches to electricity demand forecasting, *Journal of the Operational Research Society*, 59, 1066-1076.

Pedregal, D.J., Young, P. C., (2007), 'The Development of Improved Adaptive Approaches to Electricity Demand Forecasting', *Journal of Operational Research Society*, (in press).

García, F.P., Pedregal, D.J. (2007), 'Applied RCM<sup>2</sup> algorithms based on statistical methods', *International Journal of Automation and Computing*, 4, 109-116.

Pedregal, D.J., Trapero, J.R., (2007), 'Electricity prices forecasting by automatic dynamic harmonic regression models', *Energy Conversion and Management*, 48, 1710-1719.

Taylor, C.J., Pedregal, D.J., Young, P.C., Tych, W., (2006) 'Time series analysis and forecasting with the Captain toolbox', *Environmental Modelling and Software*, 22, 797-814.

García, F.P., Pedregal, D.J., Schmid, F., (2006), 'Unobserved Components models applied to the assessment of wear in railway points: a case study', *European Journal of Operational Research*, 176, 1703-1712.

Pedregal, D.J., Young, P.C., (2006), 'Modulation cycles, an approach to modelling periodic components from rapidly sampled data, with application to electricity demand forecasting', *International Journal of Forecasting*, 22, 181-194.

Pedregal, D.J., Carnero, C., (2006), 'State Space models for Condition Monitoring. A case study', *Reliability Engineering and System Safety*, 91, 171-180.

Pedregal, D.J., García, F.P., Schmid, F., (2004), 'Predictive maintenance of railway systems based on Unobserved Components Models', *Reliability Engineering and System Safety*, 83, 103-110.

Pedregal, D.J. and Young, P.C. (2002), 'Statistical Approaches to Modelling and Forecasting Time Series'. In Clements, M. and Hendry, D. (eds.), *Companion to Economic Forecasting*, 69-104. Blackwell Publishers: Oxford.

Tych, W., Pedregal, D.J., Young, P.C. and Davies, J., (2002), 'An unobserved component model for multi-rate forecasting of telephone call demand: the design of a forecasting support system'. *International Journal of Forecasting*, 18, 673-695.

Pedregal, D.J. (2001), 'Trend models for the prediction of economic cycles'. *Review on Economic Cycles*, III, 14-31.

Pedregal, D.J. (2001), 'Book review: Tourism demand modelling and forecasting. Modern Econometric approaches, Haiyan Song and Stephen F. Witt (1999) (Elsevier Science Ltd.)'. *International Journal of Forecasting*, 17, 297-299.

Pedregal, D.J. (2000), 'Analysis of economic cycles using Unobserved Components Models'. *Review on Economic Cycles*, II, 77-92.

Pedregal, D.J. and Young, P.C. (2000), 'Some comments on the use and abuse of the Hodrick-Prescott Filter'. *Review on Economic Cycles*, II, 93-104.

Young, P.C., Pedregal, D.J. and Tych, W. (1999), 'Dynamic Harmonic Regression'. (1999). *Journal of Forecasting*, 18, 369-394.

Young, P.C. and Pedregal, D.J. (1999), 'Recursive and En-Block approaches to signal extraction'. *Journal of Applied Statistics*, 26, 103-128.

Young, P.C. and Pedregal, D.J. (1999), 'Macro-Economic relativity: Government spending, private investment and unemployment in the USA'. *Structural Change and Economic Dynamics*, 10, 359-380.

Young, P.C. and Pedregal, D.J. (1997), 'Data-Based Mechanistic Modelling'. In Heij, C. *et al.* (eds.), *System Dynamics in Economic and Financial models*, 169-213. J. Wiley: Chichester.

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Young, P.C. and Pedregal, D.J. (1997), 'COMMENTS ON THE PAPER "An analysis of the international tourism demand in Spain" '. *International Journal of Forecasting*, 13, 551-556.

Young, P.C. and Pedregal, D.J. (1996), 'Recursive Fixed Interval Smoothing and the evaluation of LIDAR measurements: A comment on the paper by Holst, Hössjer, Björklund, Ragnarsson and Edner'. *Environmetrics*, 7, 417-427.

Pedregal, D.J. (1996), 'Forecasting with STAMP'. *O.R. Insight*, 9, No. 3, 29-32.

Pedregal, D.J. (1996), 'SOFTWARE review: Bayesian Analysis of Time Series (BATS)'. *International Journal of Forecasting*, 12, 429-432.

## Conferences and Workshops since year 2000

Castillo, J.I., Pedregal, D.J., (2010), '¿Puede el miedo a ir a la cárcel disminuir los accidentes de carretera?', XIII Encuentro de Economía Aplicada, 10 y 11 de Junio, Universidad Pablo de Olávide, Sevilla.

Sivatte, I., Pedregal, D.J., Guadamillas, F. (2010), 'Work-life benefits and work-family culture perceptions of employees with and without supervisory responsibilities', 30<sup>th</sup> Annual International Conference of the Strategic Management Society, Roma (Italia).

Sivatte, I., Guadamillas, F., Pedregal, D.J. (2010), 'Antecedents and consequences of implementing work-life initiatives in Spanish organizations', 25<sup>th</sup> anniversary workshop on strategic human resource management, Barcelona.

Pedregal, D.J., Castillo, J.I., Castro, M. (2009), 'An econometric analysis of the effects of the Penalty Points System License in Spain', II Workshop on Transport and Urban Economics, Universidad de Sevilla.

Pedregal, D.J., Pérez, J.J. (2009), 'Should quarterly government finance statistics be used for fiscal surveillance in Europe?', First Macroeconomic Forecasting Conference. Roma, Italia.

Sivatte, I., Guadamillas, F., Pedregal, D.J. (2008), 'The measurement of work-life benefits and culture', 23<sup>rd</sup> Workshop on Strategic Human Resource Management. Bled, Slovenia.

Trapero, J.R., Pedregal, D.J. (2007), 'Análisis del ciclo económico basado en filtros adaptativos de ranura', XI Congreso de Ingeniería de Organización. Madrid.

Pérez, J.J., Pedregal, D.J. (2007), 'Fiscal forecasting with mixed frequency data: forecasting euro area government deficit', *27<sup>th</sup> International Symposium on Forecasting*. New York.

Onorante, L., Pérez, J.J., Signorini, S., Pedregal, D.J. (2007), 'Short-term public finance indicators for fiscal surveillance in Europe', *27<sup>th</sup> International Symposium on Forecasting*. New York.

Sivatte, I., Guadamillas, F., Pedregal, D.J. (2007), 'The importance of a corporate culture which supports work-life benefits and its impact on firm performance', VI International Workshop on Human Resource Management, Jerez de la Frontera.

García, F.P., Pedregal, D.J., Roberts, C. (2007), 'New methods for the Condition Monitoring of Level Crossings Registration Status', *5th International Conference on Quality and Reliability*, Chiang Mai (Thailand).

Rivas, R., Feliu, V., Sánchez, L., Pedregal, D.J., Linares, A., Aguilar, J.V., Largarita, P. (2007), 'System Identification of Aragon's Imperial Irrigation Main Canal', *8th IFAC Symposium on Cost Oriented Automation*, Ciudad de La Habana (Cuba).

Rivas, R., Feliu, V., Sánchez, L., Pedregal, D.J., Linares, A., Aguilar, J.V., Largarita, P. (2007), 'Fractional PI Control of an Irrigation Main Canal', *8th IFAC Symposium on Cost Oriented Automation*, Ciudad de La Habana (Cuba).

Trapero, J.R., Pedregal, D.J. (2006), 'Métodos en el dominio de la frecuencia aplicados a mercados eléctricos', *X Congreso de Ingeniería de Organización*. Valencia.

Pedregal, D.J., Trapero, J.R. (2006), 'Electricity markets forecasting based on Frequency Domain Methods', *26<sup>th</sup> International Symposium on Forecasting*. Santander (Spain). Organised by the International Institute of Forecasters.

García, F.P., Pedregal, D.J., (2006), 'An algorithm for detecting faults in railway point mechanisms', *SAFEPROCESS 2006*. September. Beijing (China).

García, F.P., Pedregal, D.J., (2006), 'An algorithm approach to maintenance management', *APMOD 2006*. June. Madrid (Spain).

García, F.P., Roberts, C., Pedregal, D.J., (2006), 'Failure analysis using condition monitoring systems: a case study', *ICEFA II*. September. Toronto (Canada).

Pedregal, D.J., García, F.P., Trapero, J.R., (2005), 'Electricity load and prices forecasting by Dynamic Harmonic Regression models', *IX Congreso de Ingeniería de Organización*. Gijón (Spain).

García, F.P., Pedregal, D.J., (2005), 'A digital filter based approach to the remote condition monitoring', *Conference of the International Federation of Operational Research Societies 2005*. Honolulu (USA).

Pedregal, D.J., Young, P.C., (2005), 'Forecasting telephone call demand at a Barclaycard plc. Call centre in Great Britain: An Unobserved Components approach', *13<sup>th</sup> INFORMS Applied Probability Conference*. Ottawa (Canada). Organised by INFORMS Applied Probability Society.

Pedregal, D.J., Pérez, J.J., (2005), 'Forecasting the General Government deficit: the role of leading indicators', *25th International Symposium on Forecasting*. San Antonio (Texas, EEUU). Organised by the International Institute of Forecasters.

Pedregal, D.J., Castillo, J.I. (2004), 'SVAR análisis of airport traffic in Spain', *Workshop of Transport Economics*, Sevilla (Spain). Organised by the Centre for Andalusian Studies (centrA).

Pedregal, D.J., (2004), 'Matlab toolboxes for the analysis of Time Series', *Workshop on Recent Advances in Time Series Modelling and Forecasting*, Sevilla (Spain). Organised by the Centre for Andalusian Studies (centrA).

Pedregal, D.J. (2003), Time Series análisis with Matlab, Course in the Centre for Andalusian Studies (centrA). Sevilla (Spain).

Pedregal, D.J. , Pérez, J.J. (2003), 'A fiscal indicator for the Euro Area', *Workshop on Monitoring and Forecasting Public Finances*. Sevilla (Spain). Organised by the Centre for Andalusian Studies (centrA).

Pedregal, D.J., Pérez, J.J. and Toro, J. (2002), Leading Fiscal Indicators for the Euro Area Government Deficit, *Workshop on Fiscal Policy I*. Sevilla (Spain). Organised by the Centre for Andalusian Studies (centrA).

Pedregal, D.J. (2001), Filter Design and Model Based Analysis of Economic Cycles, *II International Meeting on Economic Cycles*. Madrid (Spain).

Pedregal, D.J. and Young, P.C. (2000), Alternative Seasonal Models for the Analysis of Non-stationary Time Series, *20th International Symposium on Forecasting*. Lisbon (Portugal). Organised by the International Institute of Forecasters.

Pedregal, D.J. (2000), A New class of Unobserved Components Models for the analysis of Economic Cycles, *I Congreso Internacional sobre Ciclos Económicos*. Orense (Spain).

Pedregal, D.J. (2000), Modelización Flexible de Sistemas Dinámicos, *I Workshop de Ingeniería de Organización*. Bilbao (Spain).

### **Other academic activities**

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Supervision of over 25 MSc projects.

Supervision of three completed Ph.D. thesis at the Universidad de Castilla-La Mancha.

Departmental administrative activities have included academic secretariat at the Industrial Engineering School at the University of Castilla-La Mancha.

Member of the International Institute of Forecasters, since 1996.

Referee of international journals, like the European Journal of Operational Research, Journal of Forecasting, International Journal of Forecasting, Journal of Statistics and Data Analysis, IEEE Transactions on Power Systems, Reliability Engineering and Systems Safety y el Centrum voor Wiskunde en Informatica (CWI) Quarterly. Referee for the conference CISCi on engineering during 2006-2008.

Member of committees in charge of the evaluation of research projects at the National Agency of Evaluation (ANEP) of the Spanish Science and Technology Ministry.

Development of software packages: several packages related to the previous research activities. Programming is carried out as toolboxes in Matlab<sup>TM</sup> including Graphical User Interfaces:

- CAPTAIN: a general package for time series modelling and forecasting (<http://cres1.lancs.ac.uk/captain/>).
- SSPACE: general and flexible modelling of time series taking advantage of the power of State Space systems framework. <http://www.uclm.es/profesorado/diego>.
- ECOTOOL (ECONometrics TOOLbox): Matlab toolbox for time series, including a big number of functions for the analysis, modelling, forecasting and diagnosis of time series models. <http://www.uclm.es/profesorado/diego>.