

**ARNAB BHATTACHARJEE**

**Work:** Department of Economics, School of Social Sciences, Room 1.06, Mary Burton Building, Heriot-Watt University, Edinburgh EH14 4AS, Scotland, United Kingdom;  
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**DATE OF BIRTH:** August 24, 1969

**NATIONALITY:** United Kingdom

**EDUCATION**

- *Ph.D. in Statistics*, Indian Statistical Institute, Kolkata, India, 2009. Title: “Order restricted covariate effects and hazard regression models”. Adviser: Prof. Debasis Sengupta.
- *Ph.D. in Economics*, University of Mumbai, Mumbai, India, 2002. Title: “Valuation of Corporate Debt and Equity – Some Contributions in the Indian case”. Adviser: Prof. Abhay Pethe.
- *M.Stat. – Master of Statistics*, Indian Statistical Institute, Kolkata, India, with specialisation in Applied Statistics and Data Analysis, 1993. (61.2% marks)
  - Record 95 percent marks in M.Stat. dissertation, May 1993
  - Among 5 M.Stat. students invited to speak at the P.C.Mahalanobis Memorial Seminar, June 1993
  - Project in a M.Stat. module published as a research paper (*J Ind Soc Agri Stat*, 1992, **44**(3), 286–291)
- *B.Stat. (Hons.) – Bachelor of Statistics (with Honours)*, Indian Statistical Institute, Kolkata, India, 1991.

**CAREER**

- **April 2013 to present:** Professor of Economics, Heriot-Watt University, UK.
- **June 2013 to present:** Director, Spatial Economics & Econometrics Centre (SEEC), Heriot-Watt University, UK.
- **External Academic Appointments:** Visiting Professor of Statistics and Probability, Michigan State University (USA); Visiting Professor of Urban Planning, University of Aveiro (Portugal); Research Visiting Professor of Regional Economics, University of Illinois at Urbana-Champaign (USA).
- **External Fellowships:** Elected Life Member, International Statistical Institute (since 2004); Fellow, Robinson College, Cambridge (UK); Life Member, Indian Statistical Institute.
- **External Advisory Engagements:** *Scottish Parliament Information Centre (SPICe)*, (Member, Advisory Panel); *European Central Bank* (Technical Expert on Econometrics).
- **October 2010 to March 2013:** Reader in Economics, University of Dundee, UK.
- **October 2004 to September 2010:** Lecturer in Economics and Finance, University of St Andrews, UK.
- **February 2001 to September 2004:** Research Associate, Department of Applied Economics, and Fellow, College Lecturer and Director of Studies (Economics), Robinson College, University of Cambridge, UK.
- **June 1995 to July 2000, and August 2000 to June 2006:** Research Officer and Assistant Adviser respectively in the Reserve Bank of India, Mumbai, India (India’s central bank).

**CURRENT RESEARCH AREAS****Econometrics and Statistics**

- *Spatial econometrics, Network interactions and Inference on covariance structures:*
  - (i) Spatial functional regression models, spatial heterogeneity and arbitrary spatial dependence,
  - (ii) Estimation of spatial weights matrices in spatial cross-section/panel data under weak and strong spatial dependence (that is, with and without factor structures),
  - (iii) Inferring on interactions in endogenous spatial structure, social networks and committees, and
  - (iv) Moment-based evaluation of dynamic stochastic general equilibrium models; with applications to social networks and committees, climate science, housing and regional economics.
- *Semiparametric and Nonparametric Inference:*
  - (i) Order restricted nonparametric regression in transformation and single-index models,
  - (ii) Bayesian inference with unobserved heterogeneity, and under multiple order restrictions; with applications to monetary policy, demography, regional economics and macroeconomics.
- *Duration Models and Survival Analysis:*
  - (i) Hazard regression models under order restrictions on covariate dependence and ageing,
  - (ii) Nonparametric inference on unobserved heterogeneity (frailty) distribution, and
  - (iii) Causal inference, both Granger- and Rubin-causality, in hazard regression models; with applications to firm exits, infant/child mortality and business cycle in the cross section.

**Spatial and Housing Economics**

- Quantifying the role of space in determining neighbourhood effects, spillovers and spatial structure
- Spatio-temporal transmission of shocks, with implications for urban planning and housing policy.

**Macroeconomics and monetary economics**

- Empirical validation of macroeconomic models and interpretation of shocks.
- Heterogeneity, strategic interactions and committee decision making in monetary policy committees.

**Corporate finance, strategy and industrial economics**

- Corporate finance, performance and default, particularly the impact of macroeconomic instability.
- Firm and industry effects, strategic role of resources within the firm, and entrepreneurship.

**RESEARCH AND PUBLICATIONS****Journal articles**

- "Sustainable Procurement Performance of Large Enterprises across Supply Chain Tiers and Geographic Regions". (with A. Ghadge, E. Kidd, S. Choudhury and M.K. Tiwari), 2018, *International Journal of Production Research* (forthcoming).
- "Institutional Regimes and Profitability Transitions: Indian Manufacturing Firms" (with S.K. Majumdar), 2018, *Indian Growth and Development Review* (forthcoming).
- "Causal Ordering and Inference on Acyclic Networks" (with G. Basak and S. Das), 2018, *Empirical Economics* 55(1), Special Issue in Honor of Ingmar Prucha, 213-232.
- "Functional regression over irregular domains" (with L. Cai and T. Maiti), 2017, *Spatial Economic Analysis* 12, 182-201.
- "Endogenous Spatial Structure and Delineation of Housing Submarkets" (with E.A. de Castro, T. Maiti and J.L. Marques), 2016, *Journal of Applied Econometrics* 31, 32-57.
- "Influence, Interactions and Heterogeneity: Taking Personalities out of Monetary Policy Decision-Making" (with S. Holly), 2015, *Manchester School* 83(2), 153-182.
- "Two-Step Lasso Estimation of the Spatial Weights Matrix" (with A. Ahrens), 2015, *Econometrics (MDPI)* 3(1), 128-155.
- "General equilibrium effects of spatial structure: Health outcomes and health behaviours in Scotland" (with T. Maiti and D.J. Petrie), 2014, *Regional Science and Urban Economics* 49, 286-297.
- "Financial Distress of Chinese Firms: Microeconomic, Macroeconomic and Institutional Influences" (with J. Han), 2014, *China Economic Review* 30, 244-262.
- "Firms, Markets and the State: Institutional Change and Manufacturing Sector Profitability Variances in India" (with S. Majumdar), 2014, *Organization Science* 25(2), 509-528.
- "Estimation of the Spatial Weights Matrix under Structural Constraints" (with (Late) C.J.-Butler), 2013, *Regional Science and Urban Economics* 43, 617-634.
- "Understanding Interactions in Social Networks and Committees" (with S. Holly), 2013, *Spatial Economic Analysis* 8(1), 23-53.
- "Os Padrões Espaciais do Mercado da Habitação: Uma Noção Multidimensional Não Euclidiana do Espaço" (in Portuguese, trans: "Spatial Patterns of the Housing Market: Multidimensional Non-Euclidean Notion of Space") (with J.L. Marques and E.A. de Castro), 2013, *Revista Portuguesa de Estudos Regionais* 32(1), 5-23.
- "Spatial Interactions in Hedonic Pricing Models: The Urban Housing Market of Aveiro, Portugal" (with E.A. de Castro and J.L. Marques), 2012, *Spatial Economic Analysis* 7(1), 133-167.
- "Structural Interactions in Spatial Panels" (with S. Holly), 2011, *Empirical Economics* 40(1), Special issue on *Panel Data Econometrics*, 69-94.
- "Partial Orders with respect to Continuous Covariates and Tests for the Proportional Hazards Model", 2011, *Journal of Statistical Planning and Inference* 141(1), 243-261.
- "Rational Partisan Theory, Uncertainty and Spatial Voting: Evidence for the Bank of England's MPC" (with S. Holly), 2010, *Economics and Politics* 22(2), 151-179.
- "Productivity, Preferences and UIP Deviations in an Open Economy Business Cycle Model" (with J.S. Chadha and Q. Sun), 2010, *Open Economies Review* 21(3), 365-391. Full version in: A. Taylor (Ed.) 'Cycles, Contagion and Crises', Financial Markets Group Special Paper 183, London School of Economics & Political Science, 2008, 463-513.
- "Macroeconomic Instability and Business Exit: Determinants of Failures and Acquisitions of UK Firms" (with C. Higson, S. Holly and P. Kattuman), 2009, *Economica*, 76(301), 108-131.
- "Regional Variation in Productivity: A Study of the Danish Economy" (with E.A. de Castro and (Late) C.J.-Butler), 2009, *Journal of Productivity Analysis*, 31(3), 195-212. Portuguese translation also published.
- "Macroeconomic Instability and Corporate Failure: The Role of the Legal System" (with C. Higson, S. Holly and P. Kattuman), 2009, *Review of Law and Economics*, 5(1), 1-32.
- "Money and Monetary Policy in Dynamic Stochastic General Equilibrium Models" (with C. Thoenissen), 2007, *The Manchester School*, 75(S1), Sept. 2007, 88-122.
- "Estimation in Hazard Regression Models under Ordered Departures from Proportionality", 2004, *Computational Statistics and Data Analysis*, 47(3), 517-536.
- "Strikes and Public Policy: Indian Evidence" (with S. Ghosh), 2003, *Indian J. Labour Economics*, 46(4), 725-736.
- "Testing for the proportionality of hazards in two samples against the increasing cumulative hazard ratio alternative" (with D. Sengupta and B. Rajeev), 1998, *Scandinavian Journal of Statistics*, 25(4), 637-647.
- "On the Coefficient of Variation for the  $L$  and  $L$ -bar Classes of Life Distributions" (with D. Sengupta), 1996, *Statistics and Probability Letters*, 27(2), 177-180.
- "A post-script to 'Regression post-mortem'" (with P. Bhimasankaram, D. Sengupta, A. Bhattacharjee and A. Roy), 1992, *Journal of the Indian Society for Agricultural Statistics*, 44(3), 286-291.

**Papers under submission/ revision**

- "Variable Selection with Spatially Autoregressive Errors: A Generalized Moments LASSO Estimator" (with L. Cai, R. Calantone and T. Maiti), Revise & Resubmit: *Sankhyā Series B* (Special Issue on Econometrics in Honour of P.C. Mahalanobis).
- "Monetary Policy under Model Uncertainty: A Bayesian Analysis of FOMC Forecasts" (with P. Gelain), Submitted: *International Economic Review*.
- "Identifying the Causal Structure of Directed Acyclic Graphs" Submitted: *Journal of Econometrics*.
- "Spatially Varying Regression Over Irregularly Shaped Regions: Application to a Hedonic House Price Model". (with T. Maiti, X. Wang and P.-S. Zhong), Being submitted: *Journal of the American Statistical Association*.
- "Operating Leverage over the Business Cycle". (with C. Higson and S. Holly), Submitted: *Journal of Financial and Quantitative Analysis*.
- "Entrepreneurial Motives and Performance: Why Might Better Educated Entrepreneurs be Less Successful?" (with J. Bonnet, N. Le Pape and R. Renault), Submitted: *American Economic Journal (Applied Economics)*.
- "The Chicken and Egg Story: A Structural Quantitative Production View" Being submitted: *Am. J. Agricultural Economics*.
- "Spatial Diffusion of Fertility in Portugal: A Bayesian Approach for Spatial Clustering of Curves" (with E.A. Castro, T. Maiti, J.L. Marques, and Z. Zhang). Being submitted: *Journal of Population Economics*.
- "The Causal Link between Radiative Forcing and Climate Change" (with A. Banerji and J. Martins). Being submitted: *Nature Climate Change*.

**Books and Chapters**

- **Book:** "Spatial Statistics for the Social Sciences: Concepts and Tools for Multidisciplinary Research" (with E.A. Castro, T. Maiti and J. Marques), ~400 pages, Chapman & Hall/CRC Press, draft in revision, final submission: December 2018.
- **Book:** "Applied Econometrics using STATA" (with S. Holly), ~350 pages (plus disk with data and programs), work in progress.
- "MPC Decision Making, the Long Expansion and the Crisis: Integration with global economy, Heterogeneity and Network dynamics" (with S. Holly), 2016. In: J.S. Chadha, A. Chrystal, J. Pearlman, P. Smith and S. Wright (Eds.), *'The UK Economy in the Long Expansion and its Aftermath'*, Cambridge University Press: Cambridge UK, Chapter 7, 294–329.
- "Regional fertility data analysis: A small area Bayesian approach" (with E.A. Castro, T. Maiti, J.M. Martins and Z. Zhang), 2015. In: S.K. Upadhyay, U. Singh, D.K. Dey and A. Loganathan (Eds.), *'Current Trends in Bayesian Methodology with Applications'*, Chapman & Hall/CRC Press, Chapter 10, 203–224.
- "Methods and models of analysis in the urban housing market" (with J.L. Marques and E.A. de Castro), 2012. In: R. Capello and T.P. Dentinho (Eds.), *'Networks, Space and Competitiveness: Evolving Challenges for Sustainable Growth'*, Edward Elgar: Cheltenham UK, Chapter 7, 149–180.
- "Variação regional da produtividade: um estudo sobre a economia dinamarquesa" (Portuguese translation of: "Regional Variation in Productivity: A Study of the Danish Economy", *J Prod Anal* **31**(3), 195–212, with E.A. de Castro and (Late) C.J.-Butler), 2011. In: E. Castro, E. Haddad and P. Ramos (Eds.), *'Modelos Operacionais de Economia Regional'*, Principia: Cascais, Portugal, 297–326.
- "Software in India: Development Implications of Globalization and the International Division of Labor" (with P. Kattuman), 2004. In: M. Kagami, M. Tsuji and E. Giovannetti (Eds.) *'Information Technology Policy and the Digital Divide: Lessons for Developing Countries'*, Edward Elgar: Cheltenham UK, 92–113.

**Editorials and Opinion Pieces**

- **Editorials, *Spatial Economic Analysis*:** "Contemporary Developments in the Theory and Practice of Spatial Econometrics" (with S. Holly & J. Mur, 2018, **13**(2), 139–147); "Raising the Bar" (1)–(8), (with J. Elhorst et al., 2016–2018, various issues).
- **Editorial, *Sankhyā Series B*:** "Mahalanobis' Econometric Contributions: Current Context and Inspirations" (with T. Maiti, 2019).
- **Opinion:** "Why contract theory won Hart and Holmström the Nobel economics prize" (with J. Byrne), 10 October 2016.

**Work in Progress**

- "Inferring Structural Ordering: How does the UK economy respond to international shocks?" (with A. Christev).
- "Testing Proportional Hazards with Unrestricted Univariate Unobserved Heterogeneity".
- "Economic Growth and Migration" (with J. Ditzén).
- "Bayesian Inference of Spatial Weights" (with P. Eibich).
- "Neighborhood versus Selection Effects: Missing the wood for the trees?" (with D. Maclennan).
- "Uncovering Clubs and Congestion Effects: Some Monte Carlo Evidence" (with R. Hicks and K. Schnier).
- "Structural economic models with large number of potential explanatory variables and inclusion/exclusion restrictions" (with G. Hewings and T. Maiti).
- "Network Structure of the Federal Open Markets Committee" (with S. Holly & M.M. Waseja).
- "Firm Dynamics and Exit Hazard: Reconciling Theory and Evidence using Hazard Regression Models".
- "Regional Variations in Child Mortality in India" (With S. Bhalotra).

**AWARDS, HONOURS AND IMPACT**

- **Hind-Rattan Award 2016 (*Jewel of India*):** One of Govt. of India's top civilian awards for expats of Indian heritage, for "outstanding services, achievements and contributions to society".
- **Spatial Economic Analysis.** Top 10 papers 2005–15, *Spatial Economic Analysis* **8**(1), 23–53, 2013 (with S. Holly).
- **Distinguished Paper Award, 2010 Academy of Management Meeting,** Montréal, Canada (August 2010), for paper titled "The Profitability Dynamics of Indian Firms" (with S. Majumdar).
- **Chair, Organising Committee:** EC<sup>2</sup> Conference (European Conferences of the Econom(etr)ics Community) on *'Theory and Practice of Spatial Econometrics'*, Heriot-Watt University, Dec. 2015.
- **Organising/Scientific Committee:** 50<sup>th</sup> Annual Conference of the Money Macro and Finance Research Group, Heriot-Watt University, Sept. 2018; 11<sup>th</sup> Annual Workshop of Portuguese Regional Science Association (APDR) and Conference on *Territory, Real Estate and Housing*, University of Aveiro, Nov. 2011.
- **Organiser, Invited Sessions:** Unprecedented 3 times success in bidding for Invited Sessions at the American Statistical Association's Joint Statistical Meetings (JSM) – *'Recent Developments in Statistics of Economic Data in High Dimensional Contexts'* (Baltimore, 2017), *'Economic and Business Applications in High Dimensional and Big Data Contexts'* (Chicago, 2016), and *'Statistics of Economic and Business Networks'* (Boston, 2014); *'Unknown or Endogenous Spatial Weights'* (Spatial Econometrics Association Annual Conference, Washington DC, 2013).
- **Impact:** Research generated active policy debate and impact on the organization of Monetary Policy Committees.
- **Expert** on econometric evidence for the **Supreme Court of New South Wales (Australia):** Chief Commissioner of State Revenue vs Southern Cross Airports Corporation Pty Limited (SC proceedings 2008/277254), 2008–12.
- **CPD – current developments in econometrics** at public/private organizations: European Central Bank (twice a year); Bank of England; Greater London Authority; Deloitte UK; EMI UK; Independent Project Analysis (USA).
- **Elected to a Life Membership** of the **International Statistical Institute** in 2004, in recognition of "contributions to the advancement of Statistics".
- **Citations:** Research cited 820 times (455 since 2013) – Hirsch's h-index 12; i10-index 16 (*Google Scholar*).

**SELECTED PLENARY AND INVITED LECTURES**

- **Invited Lectures,** JSM (Joint Statistical Meetings of the American Statistical Association): "Structural economic models with large number of potential regressors and inclusion/exclusion restrictions" (2017, Baltimore); "Functional regression models for large spatial data with endogeneity and unstructured dependence" (2016, Chicago); and "Business Networks in US Manufacturing" (2014, Boston) – 3 invited lectures is a highly unusual honour for a researcher beyond the US.
- "Frequentist Inference in Spatial Discrete Choice Models with Endogenous Congestion Effects and Club-Correlated Random Effects". **Invited Lecture** at Stata Users Group Meeting, London, Sept. 2015.
- **Plenary Lecture:** "Space, Territory and Housing Markets", European Network for Housing Research Annual Conference 2015, *Housing and Cities in a Time of Change: Are We Focusing on People?*, Lisbon, June 2015.
- **Invited Inauguration Lecture,** 7<sup>th</sup> Jean Paelinck Seminar (in honor of "The Father of Spatial Econometrics"). "Inference on Unknown or Endogenous Spatial Weights: Why's and How's", Zaragoza, Nov. 2014.
- "MPC Decision Making, Long Expansion and the Crisis: Integration with global economy, Heterogeneity and Network dynamics". **Invited Presentation,** Conf. on *'Causes and Consequences of the Long UK Expansion: 1992 to 2007'*, Cambridge, UK, Sept. 2013.
- "Understanding the spatial structure of housing markets: use of new data and methodologies". **Plenary Session** on *Space and the Housing Market* at the 11<sup>th</sup> Annual Workshop of Portuguese Regional Science Association (APDR) and Conference on *Territory, Real Estate and Housing*, University of Aveiro, Nov. 2011.

- "Structural Interactions in Spatial Panels". Invited Presentation at the *Conference in Honour of Sir David F. Hendry*, University of St Andrews, July 2010.
- "Taking Personalities out of Monetary Policy Decision Making? Interactions, Heterogeneity and Committee Decision-making in the Bank of England's MPC" (with S. Holly). Presented in Plenary Sessions at *Research Workshop on Monetary Policy Committees*, Norges Bank (Oslo, Sept. 2007), *17th EC<sup>2</sup> Conference on "The Econometrics of Monetary Policy and Financial Decision Making"* (Rotterdam, Dec. 2006) and Invited Lecture at the *Conference marking the launch of the Macroeconomics Chapter of SIRE (Scottish Institute for Research in Economics)* (Glasgow, June 2007).
- "Models of Firm Dynamics and the Hazard Rate of Exits: Reconciling Theory and Evidence using Hazard Regression Models", Presented in a Plenary Session at *15th EC<sup>2</sup> Conference on "The Econometrics of Industrial Organization"* (Marseille, Dec. 2004).

### **CURRENT EXTERNAL COLLABORATORS**

- In the UK: Cambridge (S. Holly, P. Kattuman); Dundee (C. Morelli, C. Whatley); London Business School (C. Higson); Oxford (P. Eibich); St Andrews (D. MacLennan, D. Ulph), Swansea (R. Choudhuri).
- Abroad: College of William & Mary USA (R. Hicks); Federal Reserve Cleveland (P. Gelain); Indian Stat. Inst. (G. Basak, S. Das); Michigan State Univ. USA (T. Maiti); Univ. Aveiro PRT (E.A. de Castro, J.M. Martins, J. Marques); Univ. Caen FRA (J. Bonnet, N. Le Pape); Univ. California Merced USA (K. Schnier); Univ. Cergy-Pontoise FRA (R. Renault); Univ. Chicago USA (Z. Zhang); Univ. Illinois (G. Hewings); Univ. Melbourne AUS (D.J. Petrie); Univ. Minnesota USA (S. Chatterjee).

### **SERVICES TO THE PROFESSION**

- **Co-Editor & Editor-Elect**: *Spatial Economic Analysis* (2015-); Ass. Editor, *Revista Portuguesa de Estudos Regionais* (2012-); Editor, *Sankhyā B* (Special Issue on Econometrics celebrating 125<sup>th</sup> Anniversary of P.C. Mahalanobis).
- **External Examiner**: UG Economics (Durham & Newcastle Univ.); PG Economics (Glasgow Univ.); PhD exams (several).
- **Refereeing**: About 50 journals and funding bodies.
- **Member**: American Statistical Association, The Econometric Society, European Network for Housing Research, European Real Estate Society, Indian Statistical Institute (Life Member), International Association for Statistical Computing, International Statistical Institute (Elected Life Member), Royal Economic Society, Scottish Housing Economics and Finance Research Network (Founder Member), Spatial Econometrics Association.

### **PROJECT GRANTS**

- Heriot-Watt University: "Sustainable Rehabilitation of the Rohingya: Resources (Water, Housing) and Gender", £45,000, 2018.
- Fundação para a Ciência e a Tecnologia, Portugal (Ministry of Science, Technology and Higher Education). "P-RIDE (Portugal: Regional Integration of Demography and Economy)", with Univ. Aveiro, Univ. Beira Interior and Univ. Lisbon (Portugal) and Univ. Sao Paulo (Brazil). Awarded: € 198,846. Duration: Jan. 2016 to Dec. 2018.
- Scottish Institute for Research in Economics (SIRE), Royal Economic Society, Timberlake Consultants, Econometric Theory, International Association for Applied Econometrics and Bank of England. Funding for organizing EC<sup>2</sup> Conference (European Conferences of the Economet(etr)ics Community) on *'Theory and Practice of Spatial Econometrics'*, Heriot-Watt University, 2015. Awarded: ≈£18,990.
- DECC (HM Department of Energy & Climate Change). "Monte Carlo Modeling of Correlated Variables for Energy Demand Forecasts", with AF-Mercados. Awarded: £ 5,000. Duration: June 2015.
- Scottish Institute for Research in Economics (SIRE). Workshop/Training Grants, *Regional Economics Workshop* (Nov. 2012), PhD Masterclasses on *Bayesian Inference* (Nov. 2013, Apr. 2014), *IV/GMM Inference* (Apr. 2014) and *Spatial Econometrics* (June 2014), ≈£1,000 each time.
- The Carnegie Trust, UK. Travel Grant, "Scottish Health Outcomes: The Importance of a Spatial Perspective". With C. Morelli and D.J. Petrie (Univ. Dundee, UK). Awarded: £2,000. April 2012.
- Economic and Social Research Council, UK. Travel Grant, ESRC Secondary Data Analysis Initiative, "The Spatial Structure of Health and Healthcare in Scotland". With D. Petrie (Univ. Dundee, UK) and T. Maiti (Michigan State Univ., USA). Awarded: £1,500. March 2012.
- Fundação para a Ciência e a Tecnologia, Portugal (Ministry of Science, Technology and Higher Education). "Drivers of Housing Demand in Portuguese Urban System". With E.A. de Castro and J.L. Marques (Univ. Aveiro, Portugal) and T.S. Marques (Univ. Porto, Portugal). Awarded: € 79,415. Duration: Sept. 2010 to Aug. 2012.
- KPMG, UK. "Identifying and Modelling Macro-Economic Effects on Counter-Party Default". With C. Higson (London Bus. School, UK) and S. Holly (Univ. Cambridge, UK). Awarded: £ 75,000. Duration: Sept. 2002 to Sept. 2005.

### **TEACHING AND SUPERVISION ACTIVITIES**

#### **TEACHING, EXAMINING AND CURRICULUM DESIGN**

**Lecturing**: Heriot-Watt University, Joint PhD Training (Heriot-Watt & Edinburgh Univ.), Scottish Graduate Programme in Economics, Michigan State University (USA), University of Dundee, University of St Andrews and University of Cambridge. **External**: Univ. Durham (2011-16), Newcastle (2012-17), Glasgow (2018 - ).

#### **SUPERVISION OF DOCTORAL STUDENTS**

- **Ongoing** (Heriot-Watt): Mark Wang (submission: 2018), Romi Hartarto & Mustapha Waseja (2017 - ).
- **Completed**: Heriot-Watt Univ. - Jan Ditzén (2018), Achim Ahrens and Toriquel Bashar (2017), Antonio Carvalho (2016); Michigan State Univ., USA - Zhen Zhang (2015), L. Cai and S. Chakraborty (2016); Univ. Aveiro, Portugal and Univ. Dundee, UK - João Marques (2012); St Andrews Univ. - Jie Han (2012), Kirby Faciane (2010), Qi Sun (2009) and Andreas Humpe (2007).

#### **TEACHING ON PROFESSIONAL COURSES**

- **PhD Masterclasses**: Spatial Econometrics (German Institute for Economic Research (DIW) Berlin, 2014), Panel Data Econometrics (Edinburgh Univ., 2014); Bayesian Inference (Aveiro Univ., Portugal, 2013).
- **Public courses** on "Applied Econometrics using STATA": Cass Business School (London), George Washington University (Washington DC), Zicklin School of Business (City University of New York).
- **Lectures** on applied econometrics: Bank of England, European Central Bank, Greater London Authority.
- **CPD Programmes**: Deloitte, EMI, Glasgow Caledonian University, Independent Project Analysis (USA), KPMG.

### **ADMINISTRATIVE EXPERIENCE**

Various, at **Heriot-Watt Univ.**, **Reserve Bank of India**, **University of Dundee**, **University of St Andrews** and **Univ. Cambridge**.