

Dr. Paul J Metcalfe

Independent Consultant

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Overview

Paul Metcalfe is an experienced economist specializing in economic regulation, cost-benefit and cost-effectiveness appraisal, stated preference survey design and analysis, and applied econometrics. He has advised clients in water, transport, environment, health, post, telecoms and local government sectors. In addition to his consulting work, Mr Metcalfe currently teaches an MSc course at City University on quantitative methods for competition and regulation.

Education

2012	LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE PhD Environmental Economics
2007	LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE M.Sc Geography
2005	Centre for Micro-Data Methods and Practice (CeMMAP), University College London, UK Panel Time-Series Course; Tutor: Ron Smith Discrete Choice Modelling Course; Tutor: William Greene
2004	StataCorp Advanced Stata Programming Net Course
2001	UNIVERSITY OF YORK M.Sc. Economics
1998	UNIVERSITY OF BRISTOL B.Sc. Economics

Professional Associations

Royal Economic Society
Association of Environmental and Resource Economists
European Association of Environmental and Resource Economists
UK Network of Environmental Economists
Chartered Institute of Water and Environmental Management

Career Details

2008 - Present	INDEPENDENT CONSULTANT
2010 - Present	CITY UNIVERSITY <u>Visiting Lecturer</u> , MSc Economics of Competition and Regulation
2002 - 2008	NERA ECONOMIC CONSULTING
2006 - 2008	<u>Special Consultant</u> , London
2004 - 2006	<u>Consultant</u> , Water Practice, London
2002 - 2004	<u>Analyst</u> , Water Practice, London
2002	NORWICH UNION <u>Project Consultant</u> , York
1998 – 2000	CENTRE FOR MARKET AND PUBLIC ORGANISATION, UNIVERSITY OF BRISTOL <u>Research Assistant</u>

Project Experience

- **UK Water Industry Research**
Carrying out Willingness to Pay Surveys
Advised on issues relating to the development of a common framework for the design and conduct of willingness to pay surveys in the context of valuing the benefits of water company investment programmes. This included identifying and defining the relevant service measures, attributes and levels plus the wider survey features that may affect the reliability and robustness of WTP results; identifying aspects of service or environmental improvement which may be better valued in ways other than by such surveys, and providing guidance on valuation for such cases.
- **Competition Commission, UK**
Peer Review of Stated Preference Survey Design
Reviewed a stated preference survey questionnaire for use in the Payment Protection Insurance inquiry.
- **Infraco, Uganda**
Appraisal of an Infrastructure Investment Proposal
Advised on the design and analysis of a stated preference survey to appraise the viability of water, electricity and transport infrastructure investment proposals in rural Uganda.
- **Ministère de l'Ecologie, de l'Energie, du Développement Durable et de l'Aménagement du Territoire (MEEDDAT), France**
An Econometric Model of Household Vehicle Choice
Developed a model of household vehicle choice in France. The model was estimated using discrete choice econometric methods on data from a large sample of individual households. The main purpose of the model was to predict the effect of introducing a new vehicle excise tax favouring the least-polluting vehicles.
- **Postcomm, UK**
The Social Value of the Post Office
Designed and analysed a UK-wide survey to quantify the social value of the post office network to UK households and businesses. Choice experiments and contingent valuation methods were employed to elicit values.
- **Environment Agency, UK**
Further Analysis of the Benefits of the Water Framework Directive to England and Wales
Developed extensions to the spreadsheet model created for CRP Project 4b/c (see below), and conducted analyses of the benefits of the Water Framework Directive under specified scenarios. Also provided training in the use of the models and in the interpretation of the results. The models were used in the development of the river basin management plans for the first Water Framework Directive planning period (2009-2015).
- **Defra (CRP Project 4d), UK**
Public Preferences for Water Framework Directive Outcomes [Prioritisation]
Co-managed a study to design and analyse a national household survey to elicit household preferences between alternative types of improvement to the water environment. The results are being used to help determine the content of the first set of river basin management plans required by the EU Water Framework Directive.
- **Defra (CRP Project 4b/c), UK**
Valuing the Benefits of the Water Framework Directive to England and Wales
Managed a major government study to design a survey instrument capable of valuing the benefits of the EU Water Framework Directive to households in England and Wales, and then analyse the results using a range of econometric techniques. The project involved focus group research, stakeholder interviews and a literature review to inform the survey design. The main outputs were a detailed report, and a spreadsheet model valuing the benefits of specified implementations of the Water Framework Directive.

- **Anglian Water, UK**
Peer Review of Benefits Appraisal for PR09 CBA
Contributed to a peer review of ICS's evaluation of the benefits of Anglian Water's investment programme for PR09.
- **Anglian Water, Thames Water and South West Water, UK**
Stated Preference Valuation of Water and Sewerage Service Attributes
In five separate projects, advised on design and analysis issues relating to stated preference surveys for valuing improvements to water and sewerage service levels, for three UK water and sewerage companies. The results of the surveys were to be used for business optimisation modelling and in regulatory submissions for the 2009 price review.
- **A Major International Pharmaceutical Company**
Stated Preference Analysis of Consumer Preferences for Drug Attributes
Advised on analysis and interpretation of results from choice modelling study of consumer preferences for drug attributes.
- **Thames Water, UK**
Drought Order Economic Impact Assessment
Managed a project assessing the costs and benefits to residents and businesses in the London and Thames Valley areas of a proposed statutory drought order, which would limit the use of water for non-essential uses.
- **Defra (CRP Project 1c), UK**
Screening Economic Mechanisms for Inclusion in Programmes of Measures for the Water Framework Directive
Managed a project evaluating which pricing policies, cost recovery mechanisms and economic instruments could potentially play a role in the achievement of the objectives of the Water Framework Directive.
- **Thames Water, UK**
Valuing the Economic and Social Cost of Drought Water Use Restrictions
Managed a project involving a stated preference study of the costs of drought water use restrictions to customers. Study included qualitative and quantitative research, design, implementation and analysis.
- **Water UK**
Long-Term Planning in the UK Water Sector
Co-wrote a scoping note on issues concerning long-term planning for policy-makers, regulators and water companies.
- **Thames Water, UK**
The Economics of Wastewater Supply-Demand Planning
Managed a project involving the design of a cost-benefit framework for planning investments in the wastewater service.
- **Environment Agency, UK**
Time-Limited Licences
Examined the economic implications of the Environment Agency's intended approach to the management of abstraction licences.
- **Department for Regional Development, Northern Ireland**
Reform of Northern Ireland Water Service
Undertook research contributing to a wide-scale analysis of the options for institutional reform of the Northern Ireland water sector. The project comprised: examination of restructuring of the national water utility and development of options for private sector participation; forecasting anticipated efficiency improvements; constructing financial valuation model; and, asset valuation.

- **A European Water Service Provider**
Activity-Based Cost Modelling
 Managed a project involving the construction of a model for the fair allocation of all the costs of water and sewerage services across household, industry and commercial customers for the determination of bills.
- **Eurocontrol**
Cost Benchmarking Analysis
 Managed a project involving an econometric stochastic frontier analysis of European air navigation service providers' costs.
- **Lloyd's Pharmacies, UK**
Forecasting Prescriber Volumes
 Developed an econometric model with which to forecast prescription volumes for different classes of drug within primary care trust areas. The model was based on panel data analysis of population demographics and historic trends.
- **Network Rail – Office of Rail Regulation, UK**
Enhancement Framework in Regulated Utilities
 Wrote a chapter describing some key features of the England and Wales, and Scottish, water and sewerage industries in respect of the way that risks in capital enhancement projects are allocated between companies, customers and third parties. The full report drew comparisons between the electricity, gas, water and sewerage, airports and rail industries.
- **Essential Services Commission, Australia**
Note on Infrastructure Charges
 Wrote a note on the scope and structure of the infrastructure charge in the England and Wales water and sewerage industry. Included a discussion of the issues surrounding the charge since it was introduced at privatisation and the resulting reforms that took place.
- **Lloyd's Pharmacies, UK**
Estimating Determinants of Prescription Volumes
 Advised on panel data econometric issues for a project analysing the effects of local area characteristics on volumes of different types of drugs prescribed by GPs.
- **Office of the Deputy Prime Minister, UK**
Review of Seasonal Adjustments
 Managed a project involving the analysis of benefit claimant data at Local Authority level to identify whether patterns of seasonality differ in predictable ways across Local Authorities. We used the X12-ARIMA filter method and panel data regression methods to analyse the seasonal components of the multiple time-series.
- **A UK Water Company**
Cost of Capital Analysis
 Estimated the cost of equity for UK water companies using Dividend Growth Models.
- **Thames Water, UK**
Review of a Reservoir Development Proposal
 Jointly led a workshop to review all aspects of a proposal to develop a major reservoir. Issues covered included the statement of needs, estimation of impacts and monetary valuation of these, estimation of scheme and system costs, optimisation of supply-demand plans considering all potential sources of yield and demand management possibilities, key elements of the land-use and regulatory cases required.
- **Scottish Water**
Comparative Efficiency Analysis
 Estimated the relative efficiency levels of UK water companies' operating expenditures using panel data regression models.

- **Scottish Water**
Forecasting National Construction Output Prices
 Derived medium-term econometric projections for the national Construction Output Price Index using an error correction model.
- **Anglian Water, UK**
Macroeconomic Forecasts and Scenarios
 Developed internally consistent and credible forecast scenarios for a number of economic variables including GDP, RPI, interest rates, construction prices and industrial water demand.
- **Water UK (UK Water Industry Trade Body)**
General Efficiency Analysis
 Produced medium-term forecasts for opex and capex input prices as an input into an analysis of the scope for efficiency in UK water and sewerage industry over the coming price review period.
- **Scottish Water**
Financial Risk Model
 Identified and quantified Scottish Water's financial risk exposures as an input into the development of a model to take account of the impact of risk exposures on the company's financial position.
- **Scottish Water**
Demand Forecasting
 Advised Scottish Water on best practice methods for water demand estimation and forecasting.
- **A Group of UK Water Companies**
Financial Risk Model
 Assisted with the development of a financial risk model to take account of water company risk exposures and the resulting impact on financial indicators through the use of Monte Carlo analysis. The work also involved identifying and quantifying the risks facing water companies ahead of the periodic review.
- **Water UK**
Estimating the Cost of Capital for UK Water Companies
 Analysed recent evidence on the cost of capital for UK water companies using CAPM and DGM methodologies.
- **Strategic Rail Authority, UK**
Estimating Long-Term Fare Elasticities of Rail Demand
 Constructed models of demand for four segments of the UK rail passenger market. Estimated cointegration models using panel data, with fixed effects estimators and with an error correction mechanism.
- **UK Water Industry Research**
The Impact of Household Metering on Consumption, Further Analysis
 Managed a project involving the estimation of the effects of metering on household water consumption in various weather conditions and over time using a panel dataset. Also, using company information on metering promotions, estimated the impact of publicity on the propensity of households to opt to pay for water and sewerage services on a measured basis.
- **A European Telecommunications Regulator**
Estimating the Cost of Capital for the Telecommunications Industry
 Estimated the cost of capital for termination and origination fixed line telecommunication services.
- **Water UK**
Estimating the Cost of Capital for UK Water Companies
 Analysed evidence on the CAPM beta for UK water companies as part of NERA's report for Water UK for the 2004 periodic review.
- **A UK Water Company**
Review of Tariffs for Bulk Supply and Network Access
 Reviewed estimation methods and issues with respect to the client's proposals to base their bulk

supply charges on Long Run Marginal Cost and their network access charges on the Efficient Component Pricing Rule.

- **Two UK Water Companies**
The Impact of Household Metering on Consumption
Estimated the effects of metering on household water consumption using panel datasets. Also estimated a model of the propensity of households to opt to pay for water and sewerage services on a measured basis.
- **A UK Water Company**
Forecasting Industrial Water Demand
Quantitatively analysed a panel dataset to derive regional and sectoral forecasts for non-residential water use. Estimated dynamic demand model using the Arrelano-Bond GMM estimator.
- **A UK Water Company**
Forecasting National Construction Output Prices
Derived medium-term projections for the national Construction Output Price Index using macroeconomic and construction industry data sources.
- **UK Water Industry Research**
The Impact of Household Metering on Consumption
Estimated the effects of metering on household water consumption using panel datasets with a random effects estimator. Also developed and estimated a complementary log-log discrete choice model of the propensity of households to opt to pay for water and sewerage services on a measured basis.
- **A UK Electricity Distribution Company**
Cost of Capital Analysis
Quantitatively assessed the reliability of recent estimates of the CAPM Beta for UK Utilities.

Publications and Working Papers

The Social Value of the Post Office Network, Report to Postcomm, 5 August 2009, (with Stuart Holder, Kenneth Train, Orjan Sandewall, Helen Webb, Rob Sheldon and Alison Lawrence)

CRP Project 4d: Public Preferences for WFD Outcomes [Prioritisation], Final Report for DEFRA, April 2008, (with Accent Market Research)

The Benefits of Water Framework Directive Programmes of Measures in England and Wales, A Final Report to DEFRA re CRP Project 4b/c, 6 November 2007, (with Bill Baker, Sarah Butler, Yves Gueron, Rob Sheldon and Jo East)

Estimating Customers' Willingness To Pay For Service Quality: The Example Of Water Service Reliability In London, in Voll, S.P. and M.J.King (eds) *The Line in the Sand: The Shifting Boundary Between Markets and Regulation in Network Industries*, 27 August 2007 (with Bill Baker)

Report on Screening of Water Pricing Policies, Cost Recovery Mechanisms and Economic Instruments for Inclusion in Programmes of Measures and in Relation to Article 9 of the Water Framework Directive, May 2006, (with Bill Baker, Susanne Leitterstorf and Anna Navidski)

Financial and Strategic Review of Northern Ireland Water Service, Report of external advisors to the DRD, 9 February 2006, (UBS, RBS, NERA, Halcrow, and Deloitte)

The Demand for Long Distance Travel in Great Britain: Some New Evidence, City University Working Paper, 2005, (with Dimitrios Asteriou, John Cubbin, Ian Jones, Daniel Paredes and Jan Peter Van der Veer)

Review of Seasonal Adjustments, A Report for Office of the Deputy Prime Minister, 20 December 2004, (with Edward Bramley-Harker, Gordon Hughes, Zava Aydemir and Fiorenzo Bovenzi)

Estimating Opex and Capex Efficiency, A Report for Water UK, 1 July 2004, (with Bill Baker, James Grayburn and Anna Navidski)

Research on Long-Term Fare Elasticities, A Report for the Strategic Rail Authority, 1 November 2003, (with Dimitrios Asteriou, John Cubbin, Ian Jones, Daniel Paredes and Jan Peter Van der Veer)

A Framework Methodology for Estimating the Impact of Household Metering on Consumption - Further Analysis, UKWIR Report Ref. No. 04/WR/01/6, 2004, (with Bill Baker and Anna Navidski)

A Framework Methodology for Estimating the Impact of Household Metering on Consumption, UK Water Industry Research, Report Ref. No. 03/WR/01/4, 2003, (with Bill Baker, Susanne Toft and Tim Miller)

UK Water Cost of Capital, A Report for Water UK, 31 July 2003, (with Richard Hern and Susanne Toft)

Incentive Pay and Product Market Competition, CMPO Working Paper 00/028, 2000, (with Prof. S.Burgess)

Incentives in organisations: A selective overview of the literature with application to the public sector, CMPO Working Paper 99/016, 1999, (with Prof. S.Burgess)

The use of incentive schemes in the public and private sectors: Evidence from British establishments, CMPO Working Paper 99/015, 1999, (with Prof. S.Burgess)

'Incentive pay for teachers', *Market and Public Organisation*, Issue 1, 1999, (with Prof. S.Burgess)