

# R I S K   A N D   S U S T A I N A B L E M A N A G E M E N T   G R O U P

*Schools of Economics and Political Science, University of  
Queensland*

## ANNUAL REPORT 2004



---

School of Economics, The University of Queensland, Brisbane, Queensland 4072

• telephone: +61 7 3346 9646 • fax: +61 7 3365 7299 • email [j.quiggin@uq.edu.au](mailto:j.quiggin@uq.edu.au)

<http://www.uq.edu.au/economics/rsmg/index.htm>

# Table of Contents

Foreword	3
Acknowledgements	3
Scope	3
The Risk and Sustainable Management Group	1
Establishment	1
Aims	1
Highlights of 2004	2
A flying start	2
Honours and awards	2
Communication	2
Staff	4
John Quiggin: Federation Fellow	4
Tyron Venn: Post Doctoral Research Fellow	4
David Adamson: Research Officer	4
Thilak Mallawaarachchi: Senior Research Fellow (20 per cent appointment)	5
Research Assistants	5
Murray–Darling Basin Program	6
Objective	6
Project: Murray–Darling Basin Model	6
Project: Specific Resources	6
Project: Institutions and Property Rights	7
Project: The Precautionary Principle	7
Risk & Uncertainty Program	8
Objectives	8
Project: Unforeseen Contingencies	8
Project: State-Contingent Production	8

Australian Public Policy Program	9
Objectives	9
Project: Risk and Public Policy	9
Project: Microeconomic Reform	9
List of publications	10
Book chapters	10
Journal articles: refereed	10
Conference papers and presentations	11
Working papers	14
Reports and Submissions	15
Community service, outreach and media	17
Community service and outreach	17
Refereeing and Editorial Boards	17
Media Interviews	18
Research Grant: Federation Fellowship FF0348232	21
Title	21
Project Summary	21
Project Objectives	21
Objectives for 2004	21
Progress for 2004	22
Objectives for 2005	22
Research Grant: Discovery Project DP0342974	23
Title	23
Project Summary	23
Project Objectives	23
Objectives for 2004	23
Progress for 2004	23
Objectives for 2005	23

## Foreword

The problems of sustainable management of environmental resources are among the most pressing we face, but they are complicated by incomplete knowledge and by the uncertainty inherent in natural processes. The research reported here is aimed at improving our understanding of all aspects of this process, from fundamental issues regarding uncertainty to the policy problems involved in developing a sustainable system of water entitlements for the Murray–Darling Basin.

### **Acknowledgements**

Establishing a new research group, even a relatively small one, is always a complex and time-consuming task. It has been made a lot easier by the enthusiasm and energy of the members of the team. In addition, the University of Queensland has provided a very supportive environment for research. The assistance of the Schools of Economics and of Political Science and International Studies, the Faculties of Business, Economics and Law and of Social and Behavioral Sciences, the Office of Research and Postgraduate Studies and the Vice-Chancellor has been particularly valuable.

Numerous private and government bodies engaged in research have provided helpful assistance. Particular thanks go the Murray–Darling Basin Commission for provision of data, advice and permission to use images in this report.

Above all, the Group thanks the Australian Research Council and the Australian government for the generous financial support given to the research reported here.

### **Scope**

This report covers the work associated with John Quiggin’s Federation Fellowship project FF0348232 since August 2003, leading up to the establishment of the Risk and Sustainable Management Group in 2004, as well the work of the Group during 2004. It includes reports on Discovery Project DP0342974.



# The Risk and Sustainable Management Group

## Establishment

The Risk and Sustainable Management Group was formally established in May 2004, as a joint initiative of the School of Economics and the School of Political Science and International Studies in the University of Queensland. Funding has been provided by the Australian Research Council and the University of Queensland.

Work towards the establishment of the Group began in August 2003, when Professor John Quiggin took up an Australian Research Council Federation Fellowship to work on the project 'Sustainable reform of the Murray–Darling system: Property rights, uncertainty and institutions'. The Group also encompasses Professor Quiggin's ARC Discovery Project DP0342974 'Risk and Australian Public Policy'.<sup>1</sup>

## Aims

The aim of the Federation Fellowship project, and the core aim of the Risk and Sustainable Management Group, is to use recent developments in the analysis of property rights and the theory of choice and production under uncertainty to provide a rigorous basis for the use of the precautionary principle in the management of complex economic–ecological systems. These developments will be applied to the design, modelling and evaluation of policies designed to promote ecologically, economically, and socially sustainable reform of the Murray–Darling system.

The aim of the Discovery Project is to formulate fundamentally new approaches to the theory of risk and uncertainty and to analyse their role in the design and management of complex projects and policy initiatives. The results will be applied to the central economic policy choices facing Australia; those connected with globalisation and microeconomic reform.

More generally, the aim of the Group is to show how the latest advances in economic theory can help to illuminate the major issues in the Australian public debate, from the role of government and the market to the assessment of standards of living, and to bridge the gap between economics and other social sciences.

To meet these objectives, the work of the Group has been divided into three programs:

- Murray–Darling Basin Program
- Risk and Uncertainty Program
- Australian Public Policy Program

Each program encompasses a number of research projects.

---

<sup>1</sup> Although the Group was not formally established until 2004, this Report covers all the activities associated with the Group since the commencement of the associated Federation Fellowship in August 2003.

# Highlights of 2004

## A flying start

After less than a year of full operation, the Risk and Sustainable Management Group has already established itself as one of the most productive and influential economics research groups in Australia, despite its small size. The Group's research output, with over fifty academic publications, including articles in leading theoretical and field journals such as the *Journal of Economic Theory* and the *Australian Journal of Agricultural and Resource Economics*, bears favourable comparison with much larger research groups and even with medium-sized departments and schools of economics.

The Group's work has ranged from abstract economic theory to direct contributions to the policy process, such as submissions to public and parliamentary inquiries. The central focus has been the aim to develop an improved understanding of the problems of policymaking under uncertainty, and to apply that understanding to current policy problems, most notably those of the Murray–Darling River system and the people who live and work there.

## Honours and awards

During 2003 and 2004, the Group's leader, Professor John Quiggin, received extensive recognition, including:

- Fellow, American Agricultural Economics Association (second of only three Australians to be elected a Fellow of the AAEA), 2003;
- Distinguished Fellow, Australian Agricultural and Resource Economics Society, 2004;
- Australian Citation Laureate for Economics, based on Thompson ISI Social Science Citations Index, 2004;
- Top ranking in the 'Hall of Fame' for Australian economists based on research output, published by Sinha, Dipendra and Joseph Macri, (2004) "Rankings of economists in teaching economics departments in Australia, 1988–2000." *Economics Bulletin*, Vol. 1, No. 4 pp. 1–19.

As these awards indicate, Professor Quiggin is widely regarded as Australia's most productive and highly-cited research economist.

## Communication

An important object of the Group has been to make current research widely available as rapidly as possible. A working paper series has been established, and registered with RePeC, the main online repository for working papers in economics. In the sixteen months in which the project has

been funded, twenty-six working papers have been published. A complete set of papers is available at

<http://www.uq.edu.au/economics/rsmg/publications.htm>

The Group has also been active in public presentations, conferences, research seminars and contributions to print and electronic media.



Drought



Groundwater



Barmah-Millewa Wetlands



## Staff

### **John Quiggin: Federation Fellow**

John Quiggin is a Federation Fellow in Economics and Political Science at the University of Queensland. Professor Quiggin is prominent both as a research economist and as a commentator on Australian economic policy. He has published over 700 research articles, books and reports in fields including environmental economics, risk analysis, production economics, and the theory of economic growth. He has also written on policy topics including unemployment policy, micro-economic reform, privatisation, competitive tendering and the management of the Murray–Darling river system.

Professor Quiggin has been an active contributor to Australian public debate in a wide range of media. He is a regular columnist for the *Australian Financial Review*, to which he also contributes review and feature articles. He frequently comments on policy issues for radio and TV. He was one of the first Australian academics to present publications on a website (now at <http://www.uq.edu.au/economics/johnquiggin>). In 2002, he commenced publication of a weblog (now at <http://johnquiggin.com>) providing daily comments on a wide range of topics.

### **Tyron Venn: Post Doctoral Research Fellow**

Fields of research include natural resource and environmental economics, development economics and forestry science. Research interests include the economics of forestry, market and non-market valuation of ecosystem services, socio-economic evaluation of the management of natural resources, the employment of operations research, multi-criteria analysis and geographical information systems in land use planning, decision support and policy analysis, the property rights of indigenous Australians to natural resources, and modelling forest growth and yield.



John Quiggin



Tyron Venn



David Adamson



Thilak Mallawaarachchi

### **David Adamson: Research Officer**

Areas of expertise include: cost benefit analysis of research and development programs, impact assessment of agricultural pest management issues, quarantine risk analysis and MS Excel model development.

### **Thilak Mallawaarachchi: Senior Research Fellow (20 per cent appointment)**

Thilak Mallawaarachchi, Ph.D., is working part-time on this project on secondment from his full-time position as a Senior Policy Officer at the Natural Resource Management Division of the Department of Agriculture, Fisheries and Forestry. His research encompasses economic, environmental and social aspects of resource management and focuses on using integrated modelling tools that link scientific data with economic frameworks to facilitate learning and problem solving. He received the Australian Agricultural and Resource Economics Society Ph.D award in 2001 for bioeconomic modelling combining mathematical programming and choice modelling. He has published widely on various resource policy issues including water, land use planning, land degradation and the use of choice modelling and geographical information systems for resource policy.

### **Research Assistants**

Nancy Wallace: Areas of expertise: editorial and bibliographic, document management, research administration and reporting.

James Patterson: Part-time summer internship, data collection, analysis and entry.

# Murray–Darling Basin Program

## Objective

The objective of this research program is to apply new developments in economic theory to the design, modelling and evaluation of policies designed to promote ecologically, economically, and socially sustainable reform of the Murray–Darling system.

## Project: Murray–Darling Basin Model

The main objective for 2004 was to develop a simulation model of land and water use for the Murray–Darling Basin. This development extends previous work in this area through the modelling of alternative water use technologies and the inclusion of the Darling Basin.

The modelling component of the project has proceeded on schedule. The major tasks have been:

- implementing the theoretical design for the model using Excel Solver and GAMS ;
- Using gross margin data to represent a wide range of agricultural land uses;
- Obtaining and reconciling data on existing water flows, and modelling changes in flows under alternative land uses.



Irrigated rice production



Centre pivot spray



Salinity damage

## Project: Specific Resources

Although the main focus of attention has been sustainable management of irrigation water, other issues such as groundwater and tree planting and clearance are crucial, and arise in contexts extending beyond the Murray–Darling Basin.

Any complete analysis of water resources in the Murray–Darling Basin must take account of both surface flows of water and groundwater, and of the interactions between the two. Groundwater is also a crucial resource in other sensitive systems such as the Great Artesian Basin. Research in 2004 focused on the problems of Great Artesian Basin and on modelling reflow of salt and irrigation water in the Murray–Darling system.

In addition, research in this project has dealt with issues of forestry and tree clearing, with a particular focus on the possible development of a timber industry by the Wik people on Cape York Peninsula.

### **Project: Institutions and Property Rights**

In the policy component of the project, the main focus has been on the design of water rights in the presence of uncertainty. The aim has been to use concepts of state-contingent production to model alternative systems of property rights. Research in 2004 has dealt with alternative designs for water rights systems in the Murray–Darling Basin and on possible ways of dealing with uncertainty.

### **Project: The Precautionary Principle**

The precautionary principle, presented as a guide to environmental policy decisions in the presence of uncertainty, has been the subject of vigorous debate. However, the principle has generally not been discussed in relation to formal theories of choice under uncertainty developed as generalisations of the expected utility model. The aim of this project, is to derive a formal basis for the precautionary principle, based on an incompleteness hypothesis regarding formal models of choice under uncertainty. The incompleteness hypothesis states that estimates derived from formal models of choice under uncertainty will generally be over-optimistic and that the errors will be greater, the less well-understood is the problem in question.

# Risk & Uncertainty Program

## Objectives

The aim of this project is to develop fundamentally new approaches to the theory of risk and uncertainty and their role in the design and management of complex projects and policy initiatives. The results will be applied to the issues of sustainable management of the Murray–Darling Basin and Australian public policy, as described under those programs.

## Project: Unforeseen Contingencies

The main objectives of theoretical research in the project were to develop models capable of representing choice under uncertainty in the presence of unforeseen contingencies, and to apply these models to derive an improved understanding of the ‘precautionary principle’, commonly advocated as a guide to decisionmaking in relation to environmental problems where consequences of alternative courses of action are not fully understood. Work in this program has been undertaken jointly with Professor Simon Grant of Rice University, Texas.

Substantial progress has been made in relation to the general representation of unforeseen contingencies. More significantly, a general formulation of the precautionary principle has been put forward, based on the idea that, in situations involving incomplete understanding of a problem, formal decision-making procedures tend to be biased in favour of options where the risks are least well understood.

## Project: State-Contingent Production

This project continues a long-standing collaboration with Professor Robert G. Chambers of the University of Maryland, College Park. The central idea is to represent production under uncertainty using the representation of uncertain outputs as state-contingent production bundles, as first proposed by Arrow and Debreu in their Nobel prize-winning general equilibrium model. This approach can be integrated with modern methods of production theory, such as the application of duality theory.

Areas of application have included drought policy, agency theory and finance theory. The current focus is on empirical estimation and on the integration of production and finance theory.

# Australian Public Policy Program

## **Objectives**

The aim of this program is to show how the latest advances in economic theory can help to illuminate the major issues in the Australian public debate, from the role of government and the market to the assessment of standards of living. The project will also help to bridge the gap between economics and other social sciences.

## **Project: Risk and Public Policy**

Risk plays a central role in public policy today. The aim of this project is to examine the role of risk and risk management in policy areas ranging from criteria for public investment to reform of the criminal justice system.

## **Project: Microeconomic Reform**

Microeconomic reform has played a central role in Australian public policy for more than two decades. The aim of this project is to provide a critical analysis of the assumptions underlying microeconomic reform, the progress of microeconomic reform in particular sectors of the economy and the effects of microeconomic reform on productivity, employment, and living standards.

## List of publications

### Book chapters

- Quiggin, John (2004), 'Economic policy' in Manne, R., (ed.) *The Howard Years*, Black Inc. Agenda, Melbourne, pp. 169–190.
- Quiggin, John (2004), 'Electricity privatisation in Victoria: fiscal and economic impacts' in Hodge G., Sands V., Hayward D. and Scott D. (eds) *Power Progress: An Audit of Australia's Electricity Reform Experiment*, Australian Scholarly Publishing, Melbourne, pp. 109–123.
- Quiggin, John (2004) 'The economic policy debate' in Boreham, P., Stokes, G. and Hall, R. (eds), *The Politics of Australian Society: Political Issues for the New Century* (2nd edn), Pearson–Longman, Sydney, pp. 263–277.
- Quiggin, John (2004) 'The Australian economy in the 21st century' in Crompton, P. (ed.) *The Politics of Australian Macroeconomic Policy Debates: Contributions from the Shann Memorial Lectures 1991–2000*, University of Western Australia, Crawley, WA, pp. 277–291.

### Journal articles: refereed

- Bleichrodt, H., Diecidue, E., and Quiggin, J. (2004), 'Equity weights in the allocation of health care: the rank-dependent QALY model', *Journal of Health Economics*, 23(1), 157–171.
- Chambers, R. G., Fare, Rolf and Quiggin, J. (2004), 'Jointly radial and translation homothetic preferences: generalized constant risk aversion', *Economic Theory*, 23(3), 689–699.
- Chambers, R.G. and Quiggin, J. (2004), 'Technological and financial approaches to risk management in agriculture: an integrated approach', *Australian Journal of Agricultural and Resource Economics*, 48(2), 199–223.
- Chapman, B., Freiburg, A., Quiggin, J. and Tait, D. (2004), 'Using the tax system to collect fines', *Australian Journal of Public Administration*, 63(3), 20–32.
- Grant, Simon and Quiggin, John (2004), 'Noise trader risk and the welfare effects of privatization', *Economics Bulletin*, 5(9), 1–8.
- Quiggin, J. and Chambers, R.G. (2004), 'Drought policy: a graphical analysis', *Australian Journal of Agricultural and Resource Economics*, 48(2), 225–51.

- Quiggin, John and Chambers, R.G. (2004), 'Invariant risk attitudes', *Journal of Economic Theory*, 117(1), 96–118.
- Quiggin, John (2004), 'Research and teaching: Complements or substitutes?', *Australasian Journal of Economics Education*, 1(1), 18–29.
- Quiggin, John (2004), 'Risk, PPPs and the Public Sector Comparator', *Australian Accounting Review*, 14(2), 51–61.
- Quiggin, John (2004), 'Looking back on microeconomic reform: a sceptical viewpoint', *Economics and Labour Relations Review*, 15(1), 1–25.
- Quiggin, J. (2004) 'The Unsustainability of U.S. Trade Deficits', *The Economists' Voice*, 1(3), Article 2. <http://www.bepress.com/ev/vol1/iss3/art2>
- Tan, Poh-Ling and Quiggin, John (2004) 'Sustainable management of the Great Artesian Basin: an analysis based on law and environmental economics', *The Australasian Journal of Natural Resources Law and Policy*, 9 (2), 255-303.
- Venn, T., McGavin, R. and Leggate, W. (2004), 'Costs of portable sawmilling timbers from the Acacia woodlands of western Queensland, Australia', *Small-Scale Forest Economics Management and Policy*, 3(2), 161–75.
- Venn, T. (2004), 'Visions and realities for a Wik forestry industry on Cape York Peninsula, Australia', *Small-Scale Forest Economics Management and Policy*, 3(3): 431-51.

### **Conference papers and presentations**

- Quiggin, John (2004), 'Private–public partnerships', Paper presented to the Public Policy Network Conference 'Public Policy in Transition' hosted by Queensland University of Technology, Brisbane, 29 January.
- Quiggin, John (2004), 'Conjectures, refutations and discoveries: incorporating new knowledge in models of belief and choice under uncertainty', Paper presented at the 22nd Australian Economic Theory Workshop, University of Melbourne, Melbourne, 12 February.
- Quiggin, John. (2004), 'The incompleteness hypothesis and the precautionary principle', Paper presented at the 48th Annual Conference of the Australian Agricultural and Resource Economics Society, Melbourne, 11–13 February.



- Quiggin, John (2004), 'On the US Free Trade Agreement', Paper presented to a conference on 'Evaluating Free Trade and Beyond' hosted by the School of International Business at the Queensland University of Technology, Brisbane, 23 February.
- Quiggin, John (2004), 'The electricity crisis: what can be done?' Presentation to a public forum held by the Don Dunstan Foundation, Adelaide, 20th April.
- Quiggin, John (2004), 'The recent Free Trade Agreement between the US and Australia', Lecture presented to the Australian Institute of International Affairs, Brisbane, 28th April.
- Quiggin, John and Grant, Simon (2004), 'Conjectures, refutations and discoveries: incorporating new knowledge in models of belief and decision under uncertainty', Paper presented at the 11th International Conference on the Foundations and Applications of Utility, Risk and Decision Theory (FUR XI-Paris), under the joint auspices of the Ecole Nationale Supérieure d'Arts et Métiers (ENSAM) and the Ecole Spéciale des Travaux Publics (ESTP), Paris, 2 July.
- Quiggin, John (2004), 'Infrastructure bonds', Presentation to the Property Council, Brisbane, 4th August.
- Quiggin, John (2004), 'Research funding and commercialisation', Presentation to a public forum on 'The future of University Research in Australia', hosted by the UQ Research Staff Committee of the National Tertiary Education Union, University of Queensland, Brisbane, 5 August.
- Quiggin, John (2004), 'Innovative taxation arrangements', Presentation to the Financing Development Colloquium sponsored by the Foundation for Development Cooperation, Gold Coast, 14 August.
- Quiggin, John (2004), 'The pros and cons of the 2004-05 Queensland state budget', Presentation to the Brisbane Institute, Brisbane, 31 August.
- Quiggin, John (2004), 'How should we pay for pharmaceuticals?', Presentation to the ACT Branch of the Economics Society of Australia, Canberra, 2 September.
- Quiggin, John (2004), 'Discount rates', Presentation to a symposium on Cost-Benefit Analysis sponsored jointly by the ACT Branch of the Economic Society of Australia and the Australian Public Service Commission (APSC), Canberra, 3 September.
- Quiggin, John (2004), 'The equity premium: explanations and implications', Presentation to the NSW Branch of the Economics Society of Australia, Sydney, 8 September.

- Quiggin, John (2004), 'Infrastructure financing: options and reality', Presentation to a workshop on Smart Transport and Property 2004: Leveraging Transport Infrastructure for Property and Land Use Development, hosted by the UQ Centre for Transport Strategy and Transport Roundtable Australasia Pty Ltd, Customs House, Brisbane, 4 November.
- Quiggin, John (2004), 'Government as a manager of risk', Keynote address at the Academy of Social Sciences symposium, Canberra, 8 November.
- Quiggin, John (2004), 'Climate change and the precautionary principle', Presentation to the NSW Branch of the Australian Agricultural and Resource Economics Society, Sydney, 8 December.
- Quiggin, John (2004), 'Priorities for policy and research', Presentation at a National Water Initiative policy and modelling workshop jointly hosted by ABARE and the Productivity Commission, Canberra, 24 November.

### **Book Reviews**

- Quiggin, John (2004), 'Review of Shaun Goldfinch's *Remaking New Zealand and Australian Economic Policy: Ideas, Institutions and Policy Communities*', in *Governance: An International Journal of Policy, Administration and Institutions*, 17(2), 308–10.
- Quiggin, John (2004), 'On company business', Review of John Mickelthwait and Adrian Wooldridge's *The Company: A Short History of a Revolutionary Idea*, in *Australian Financial Review*, 31 December–4 January, Review p. 8.
- Quiggin, John (2004), 'How democracies get out of bad wars', Review of Gil Merom's *How Democracies Lose Small Wars*, Cambridge University Press, in *Australian Financial Review*, 18 June, Review pp. 4–5.
- Quiggin, John (2004), 'Globalisation and other shibboleths', Review of Doug Henwood's *After the New Economy*, Scribe Publications, in *Australian Financial Review*, 5 November, Review p. 11.
- Quiggin, John (2004), 'The magic in science', Review of Susanna Clarke's *Jonathan Strange and Mr Norrell* and Mieville China's *Iron Council*, in *Australian Financial Review*, 17 December, Review p. 8.

## Working papers

### *Murray–Darling Program*

[ISSN: 1832-4266]

- Quiggin, J. (2004), 'Discounting and policy options for sustainable management of the Murray–Darling River System', Risk and Sustainable Management Group, University of Queensland, WP1M04, February, 13 pages.
- Freebairn, J. and Quiggin, J. (2004), 'Water rights for variable supplies', Risk and Sustainable Management Group, University of Queensland, WP2M04, June, 19 pages.
- Quiggin, J. and Tan, P.-L. (2004), 'Sustainable management of the Great Artesian Basin: an analysis based on environmental economics and law', Risk and Sustainable Management Group, University of Queensland, WP3M04, June, 48 pages.
- Venn, T. (2004), 'Optimal Timber Utilisation Strategies for Wik People on Cape York Peninsula', Risk and Sustainable Management Group, University of Queensland, WP4M04, 25 pages.
- Venn, T., McGavin, R. and Leggate, W. (2004), 'Portable Sawmilling Costs for Landholders in Western Queensland', Risk and Sustainable Management Group, University of Queensland, WP5M04, 15 pages.
- Harrison, S., Emtage, N., Herbohn, J., and Venn, T. (2004), 'Designing, Developing and Testing Financial Models for Non-industrial Private Forestry', Risk and Sustainable Management Group, University of Queensland, WP6M04, 25 pages.
- Venn, T. (2004), 'A Wik Forestry Industry on Cape York Peninsula: Visions and Realities', Risk and Sustainable Management Group, University of Queensland, WP7M04, 30 pages.

### *Risk and Uncertainty Program*

[ISSN: 1832-4258]

- Chambers, R.G. and Quiggin, J. (2004), 'Output price subsidies in a stochastic world', Risk and Sustainable Management Group, University of Queensland, WP1R04, January, 16 pages.
- Quiggin, J. and Chambers, R.G. (2004), 'Supermodularity and risk aversion', Risk and Sustainable Management Group, University of Queensland, WP2R04, March, 18 pages.
- Chambers, R.G. and Quiggin, J. (2004), 'Linear-risk-tolerant, invariant risk preferences', Risk and Sustainable Management Group, University of Queensland, WP3R04, April, 10 pages.
- Grant, S. and Quiggin, J. (2004), 'Increasing uncertainty: a definition', Risk and Sustainable Management Group, University of Queensland, WP4R04, May, 31 pages.

- Quiggin, J. and Chambers, R.G. (2004), 'Supermodularity and the comparative statics of risk', Risk and Sustainable Management Group, University of Queensland, WP5R04, June, 16 pages.
- Racionero, M. and Quiggin, J. (2004), 'Fixed wages and bonuses in agency contracts: the case of a continuous state space', Risk and Sustainable Management Group, University of Queensland, WP6R04, June, 14 pages.
- Menezes, F. and Quiggin, J. (2004), 'Games without rules', Risk and Sustainable Management Group, University of Queensland, WP7R04, July, 25 pages.
- Grant, S. and Quiggin, J. (2004), 'The risk premium for equity: implications for resource allocation, welfare and policy', Risk and Sustainable Management Group, University of Queensland, WP8R04, August, 24 pages.
- Quiggin, J. and Chambers, R.G. (2004), 'Capital market equilibrium with moral hazard and flexible technology', Risk and Sustainable Management Group, University of Queensland, WP9R04, September, 7 pages.

*Australian Public Policy Program*

[ISSN: 1832-424X]

- Quiggin, J. (2004), 'The Y2K scare: causes, costs and cures', Risk and Sustainable Management Group, University of Queensland, WP1P04, February, 21 pages.
- Quiggin, J. (2004), 'Economic evaluation of the proposed Free Trade Agreement between Australia and the US', Risk and Sustainable Management Group, University of Queensland, WP2P04. April, 15 pages.
- Bell, S. and Quiggin, J. (2004), 'Asset price instability and policy responses: the legacy of liberalisation', Risk and Sustainable Management Group, University of Queensland, WP3P04, June, 27 pages.

## **Reports and Submissions**

Quiggin, John (2004), 'Risk, discounting and the evaluation of public investment projects', Report for the Bureau of Transport and Resource Economics, Canberra.

Quiggin, John (2004), 'Economic evaluation of the proposed Free Trade Agreement between Australia and the United States', Submission to the Joint Standing Committee on Treaties, Parliament of Australia, Inquiry into the proposed Free Trade Agreement between Australia and the United States, April.

- Attended a round table discussion with the Senate Select Committee on the Free Trade Agreement between Australia and the United States of America , 5 May 2004, Parliament House, Can-

berra. (The roundtable will be recorded by Hansard, and a transcript will be incorporated into the proceedings of the inquiry.)

## Community service, outreach and media

Entries in this section are for Professor John Quiggin, except where otherwise noted.

### Community service and outreach

- Member, Queensland Competition Authority
- Academic Advisory Committee, Prime Minister's Home Ownership Task Force, Menzies Research Centre, Canberra (Member).
- Discussant at the Business, Work and Ageing: Valuing Diversity Forum held by the Queensland University of Technology and the Queensland Government, Brisbane, 28 January 2004.
- Attended the Australian Agricultural and Resource Economics Society Water Policy Workshop on 'Water: The New Reform Agenda', Melbourne, 10 February 2004.
- Panellist at the launch of *The Howard Years* (ed. Robert Manne) at the Avid Reader Event organised by Black Inc Publishers, Brisbane, 19 February 2004.
- Discussant at a QUT Executive Briefing by Mr Stephen Deady, Dept of Foreign Affairs and Trade, Canberra on 'Negotiating with Washington: Australia's Free Trade Agreement with the United States', QUT, Brisbane, 12 March 2004.
- Interview with Company Director on 'Queensland's growth strategy', 19 March 2004.
- Discussant for the Panel Discussion following the presentation of the 2004 Australian Citation Laureate Awards at the Thomson ISI 'Honouring Excellence in Australian Research' event, National Press Club, Canberra, 24 March 2004.

### Refereeing and Editorial Boards

Editorial Boards: *Journal of Risk and Uncertainty*; *Australian Economic Papers*; *Journal of Economic and Social Policy*; *Australian Journal of Agricultural and Resource Economics*; *Economic and Labour Relations Review*

Refereeing: *Australian Accounting Review*, *Australian Economic Review*, *Australian Journal of Agricultural and Resource Economics*, *Australian Journal of Politics and History*, *Australian Journal of Public Administration*, *British Journal of Political Science*, *Economics Bulletin*, *Economic Papers*, *Economic Record*, *European Economic Review*, *Health Economics Journal*, *Journal of Risk and Uncertainty*, *Journal of Economic and Social Policy*, *Journal of Health Economics*, *Papers in Regional Science*, *Regional Science and Urban Economics*.

## Media Interviews

- ABC Radio National (Perspective): 5 minute presentation on 'Older workers and superannuation', 1 March 2004.
- Channel 10 (TTN program) 'Australia-US Free Trade Agreement', 12 March 2004, screened 23rd March 2004.
- Interview with ABC Radio National (Perspective). Five minute presentation about 'Older workers and superannuation', 1 March 2004.
- Interview with Channel 10's TTN program on 'Australia-US Free Trade Agreement', 23 March 2004.
- Interview with ABC TV (7.30 Report) on 'Privatisation of Telstra', 15 April 2004.
- Interview with ABC TV (Business Today) on 'Public-Private Partnerships', 3 May 2004.
- Appeared on SBS TV Insight program on tax called 'The Money or the Box?' , 3 May 2004.
- Interview with ABC Radio National (Life Matters) about the Federal Budget, 12 May 2004.
- Interview with NewSpace (UQ School of Journalism and Communication's web-based news operation) about the Federal budget, 12 May 2004.
- Interview with Christian Kerr for a feature on political blogs for the relaunch issue of *Internet.au* magazine, 5th August 2004.
- Interview with Sharon Aris, *Choice Magazine* (Australian Consumers Association) on electricity privitisation and its effect on consumers (price and supply), 10 September 2004.
- Interview with ABC Radio (WA Country Hour) on National Competition Policy, 23 September 2004.
- Interview with Western Suburbs news about Economists' Hall of Fame, 8th October 2004.
- Interview with Win News (Canberra) about 'Risk and government', 8th November 2004.

## Newspaper articles

- Quiggin, J. (2004), 'Bonds the key to balance', *Australian Financial Review*, 15 January, p. 46.
- Quiggin, J. (2004), 'States schooled for success', *Australian Financial Review*, 29 January, p. 54.
- Quiggin, J. (2004), 'Merger is the only chance', *Australian Financial Review*, 12 February, p. 70.

- Quiggin, J. (2004), 'Health, education the key', *Australian Financial Review*, 26 February, p. 70.
- Quiggin, J. (2004), 'Don't just stop at hospitals', *Australian Financial Review*, 11 March, p. 78.
- Quiggin, J. (2004), 'Older workers forced out', *Australian Financial Review*, 25 March, p. 78.
- Quiggin, J. (2004), 'Don't believe in miracles', *Australian Financial Review*, 22 April, p. 62.
- Quiggin, J. (2004), 'Downside of the FTA', *Australian Financial Review*, 6 May, p. 70.
- Quiggin, J. (2004), 'Creep claques silly figures', *Australian Financial Review*, 20 May, p. 70.
- Quiggin, J. (2004), 'Watershed solution needed', *Australian Financial Review*, 3 June, p. 62.
- Quiggin, J. (2004), 'Jobless still cast shadow', *Australian Financial Review*, 17 June, p. 70.
- Quiggin, J. (2004), 'Fine fix for taxing issue', *Australian Financial Review*, 1 July, p. 62.
- Quiggin, J. (2004), 'Latham's next great leap', *Australian Financial Review*, 15 July, p. 62.
- Quiggin, J. (2004), 'Don't fear a Greens' Senate', *Australian Financial Review*, 29 July, p. 62.
- Quiggin, J. (2004), 'Doubters warm to detail', *Australian Financial Review*, 12 August, p. 62.
- Quiggin, J. (2004), 'The myth of convergence: on how the rise of the internet has liberated text', *Australian Financial Review*, 13 August, Review p.4, p.11.
- Quiggin, J. (2004), 'Labor must stand firm', *Australian Financial Review*, 26 August, p. 62.
- Quiggin, J. (2004), 'Demonising the Greens', *Australian Financial Review*, 9 September, p. 62.
- Quiggin, J. (2004), 'An exercise in risk management: on what to be scared of and what to do about it', *Australian Financial Review*, 10 September, Review pp. 8–9.
- Quiggin, J. (2004), 'Time to recast health roles', *Australian Financial Review*, 23 September, p. 62.
- Quiggin, J. (2004), '"Tax and spend" is back', *Australian Financial Review*, 7 October, p. 70.
- Quiggin, J. (2004), 'Economic Briefing: Productivity's miraculous mirage', *Australian Financial Review*, 18 October, p. 23.
- Quiggin, J. (2004), 'T3 must focus on public', *Australian Financial Review*, 21 October, p. 70.
- Quiggin, J. (2004), 'Tough one for the winner', *Australian Financial Review*, 4 November, p. 78.



- Quiggin, J. (2004), 'And now for the hard bit' (Ran in earlier edition as 'Tough one for the winner'), *Australian Financial Review*, 4 November, p. 78 .
- Quiggin, J. (2004), 'No reserve for rainy days', *Australian Financial Review*, 18 November, p. 70.
- Quiggin, J. (2004), 'Economic Briefing: US productivity's underbelly', *Australian Financial Review*, 29 November, p. 23.
- Quiggin, J. (2004), 'Kyoto must be ratified now', *Australian Financial Review*, 2 December, p. 62.
- Quiggin, J. (2004), 'Hard partnership lessons', *Australian Financial Review*, 16 December, p. 46.

# Research Grant: Federation Fellowship FF0348232

## **Title**

Sustainable reform of the Murray–Darling system: Property rights, uncertainty and institutions

## **Project Summary**

The project will develop tools for the modelling of uncertainty in the absence of probabilities and with imperfect knowledge about possible events. It will also formalise and assess the precautionary principle for the sustainable management of complex systems. Finally, the project will apply these tools to analyse and improve policies for the reform of property rights, institutions and land and water management in the Murray–Darling system. The project will assist in the formulation of sustainable responses to problems of drought and irrigation-related salinity in the Murray–Darling system.

## **Project Objectives**

The aim of this project is to use recent developments in the analysis of property rights and the theory of choice and production under uncertainty to provide a rigorous basis for the use of the precautionary principle in the management of complex economic–ecological systems. These developments will be applied to the design, modelling and evaluation of policies designed to promote ecologically, economically, and socially sustainable reform of the Murray–Darling system.

## **Objectives for 2004**

The main objectives of theoretical research in the project were to develop models capable of representing choice under uncertainty in the presence of unforeseen contingencies, and to apply these models to derive an improved understanding of the ‘precautionary principle’, commonly advocated as a guide to decisionmaking in relation to environmental problems where consequences of alternative courses of action are not fully understood. For the period covered by the report, the object was to undertake preliminary investigation of the theoretical issues.

In the modelling component, the main objective for the period covered by the report was to develop a simulation model of land and water use for the Murray–Darling Basin. This development extends previous work in this area through the modelling of alternative water use technologies and the inclusion of the Darling Basin.

In the policy component of the project, the main focus has been on the design of water rights in the presence of uncertainty. The aim has been to use concepts of state-contingent production to model alternative systems of property rights.

## **Progress for 2004**

Substantial progress has been made in relation to the general representation of unforeseen contingencies. More significantly, a general formulation of the precautionary principle has been put forward, based on the idea that, in situations involving incomplete understanding of a problem, formal decision-making procedures tend to be biased in favour of options where the risks are least well understood.

The modelling component of the project has proceeded as planned. The major tasks have been:

- (i) implementing the theoretical design for the model using Excel Solver and GAMS ;
- (ii) Using gross margin data to represent a wide range of agricultural land uses;
- (iii) Obtaining and reconciling data on existing water flows, and modelling changes in flows under alternative land uses.

Progress in the theoretical component of the project has exceeded expectations. The policy component of the project has proceeded successfully. In addition to the core area of irrigation water rights, applications have extended to artesian water, drought policy and forestry issues.

At this stage, much of the output of the project has taken the form of working papers. A working paper series has been established, and registered with RePeC the main online repository for working papers in economics. In the sixteen months in which the project has been funded, twenty-six working papers have been published. A complete set of papers is available at

<http://www.uq.edu.au/economics/rsmg/publications.htm>

## **Objectives for 2005**

The main theoretical objective is to formalise the analysis of choice in the presence of unforeseen contingencies and to apply the resulting insights to refine the formulation of the precautionary principle.

The main modelling objective is to incorporate uncertainty and state-contingent production in the model, which is currently deterministic. In addition, it is planned to extend the use of geographical information system (GIS) methods, in combination with linear and nonlinear programming simulation models.

The main policy objective is to relate the theoretical and modelling treatment of uncertainty to the policy goals set out in the National Water Initiative, agreed by state and Commonwealth governments in 2004.

# Research Grant: Discovery Project DP0342974

## **Title**

Risk and Australian public policy

## **Project Summary**

This project will develop fundamentally new approaches to the theory of risk and uncertainty and their role in the design and management of complex projects and policy initiatives. The results will be applied to the central economic policy choices facing Australia; those connected with globalisation and microeconomic reform.

This project will show how the latest advances in economic theory can help to illuminate the major issues in the Australian public debate, from the role of government and the market to the assessment of standards of living. The project will also help to bridge the gap between economics and other social sciences.

## **Project Objectives**

Develop fundamentally new approaches to the theory of risk and uncertainty.

Analyse the role of risk in Australian public policy.

Develop new techniques for the analysis of standards of living.

## **Objectives for 2004**

Develop new tools for the analysis of choice under uncertainty in the presence of unforeseen contingencies.

Analyse the role of risk and uncertainty in Australian public policy.

## **Progress for 2004**

The project has been highly successful. Output of journal articles and book chapters has exceeded previous high levels, and my work has been recognised by a number of honours and awards. Substantial progress has been made in clarifying the conceptual foundations of the uncertainty principle.

## **Objectives for 2005**

Formalise modelling of choice under uncertainty in the presence of unforeseen contingencies.

Continue analysis of Australian public policy issues in relation to risk and uncertainty.