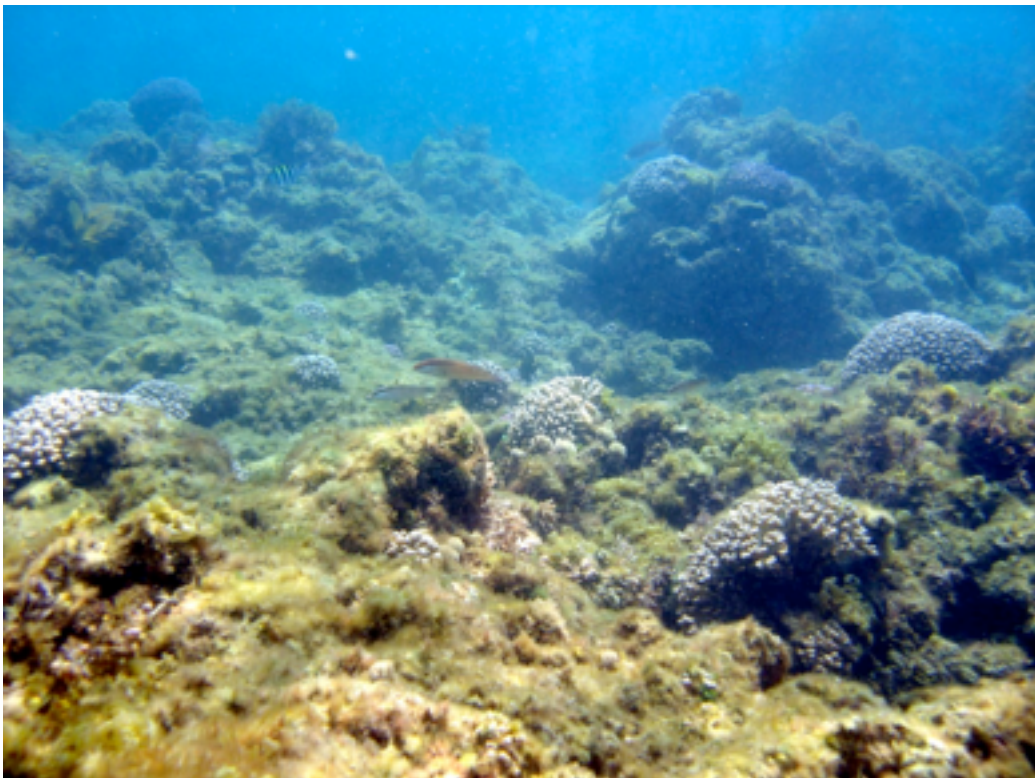


Risk and Sustainable Management Group
Schools of Economics and Political Science,
University of Queensland

ANNUAL REPORT 2008



Coral Reef affected by bleaching. Source: Ove Hoegh-Guldberg, University of Queensland.

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Foreword

The problems of climate change and the Murray–Darling Basin have remained central to Australian public policy debate in 2008. The proposed Carbon Pollution Reduction Scheme has focused attention on issues surrounding the design and implementation of emissions trading schemes. Severe drought and record low inflows have continued in the Murray–Darling Basin. The Risk and Sustainable Management Group has sought to respond to these issues both by contributing to the immediate debate over climate policy and by the development of improved models and theoretical frameworks within which a sustainable long-term response to climate change may be formulated.

Acknowledgements

Our central achievements in 2008 have been the successful completion of the Australian Research Council Federation Fellowship project under which the Group was funded, and the award of a second Federation Fellowship, which commenced on 31 December 2007. Primary credit for these achievements must go to the enthusiasm and energy of the members of the team.

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.

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

Highlights of 2008

In 2008 Professor John Quiggin began his second Fellowship under the Federation Fellowships scheme. Professor Quiggin was the only economist to receive two Fellowships under the scheme, which has now replaced by the Australian Laureate Fellowships scheme. The Fellowship project, entitled *Climate change: adaptation and resilience in the face of uncertainty* deals with issues of crucial concern to Australia's Future. Under the Fellowship, the Risk and Sustainable Management Group (RSMG) continues to receive funding from the University of Queensland, while Professor Quiggin's work is supported by the Australian Research Council.

The Garnaut Climate Change Review provided the central focus for the Group's activities in 2008. A central concern of the modelling undertaken for the Review was the impact of climate change on Australian agriculture. Evidence of the adverse effects of climate change have already become apparent in the Murray–Darling Basin, where a long and severe drought has greatly reduced inflows to the system.

The RSMG model of irrigated agriculture in the Basin provided a vital input to the work of the Garnaut Review. Our modelling showed that under plausible projections of the consequences of 'business as usual' climate policies, irrigated agriculture would cease to be feasible in most catchments in the Murray–Darling Basin by the second half of this century. However, given global mitigation sufficient to stabilise atmospheric concentrations of carbon dioxide (including carbon dioxide equivalents of other greenhouse gases) and appropriate policy settings to promote adaptation, the value of agricultural output could be sustained.

Work on the Garnaut Review was associated with a general shift of focus towards climate change issues, as the Group commenced work on a range of reports and studies assisting private and government organisations in the task of managing climate change. The shift was also reflected in the orientation of the Group's published research, which included journal articles and conference papers on many aspects of climate change. In addition, the Group commenced work on the impact of climate change on coral reefs, in collaboration with Ove Hoegh-Guldberg (UQ) and Terry Hughes (JCU).

The Risk and Sustainable Management Group

Establishment

The Risk and Sustainable Management Group (RSMG) was formally established in May 2004, as a joint initiative of the School of Economics and the School of Political Science and International Studies at 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'.

In 2008, Professor Quiggin began a second Federation Fellowship for the project 'Climate change: adaptation and resilience in the face of uncertainty'. The Fellowship will run until the end of 2012.

Aims

The central 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 in the presence of climate change.

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.

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. Among over 1000 publications, he has published five books and more than 300 journal articles and book chapters 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, microeconomic reform, privatisation, competitive tendering and the management of the Murray–Darling Basin.



David Adamson: Research Officer

David Adamson takes primary responsibility for the coding and maintenance of the Excel version of the Murray–Darling Model. His 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.



Liam Wagner: Post Doctoral Research Fellow

Liam Wagner joined the Group as a Postdoctoral Research Fellow in September 2007. Dr Wagner was awarded his PhD in mathematics from the University of Queensland in May 2008. He has previously worked as a trader/analyst in the energy industry, providing advice on risk management and emissions trading, while also trading for an Open Cycle Gas Turbine power station. His current research interests include: maintenance of the GAMS version of the Murray–Darling Basin model; analysis of the National Emissions Trading Scheme; and modelling the impact of climate change on the Snowy Hydro Scheme.



Peggy Schrobback: Research Assistant

Peggy Schrobback joined the team in November 2007. From her prior work in the development sector, she brings extensive experience in agriculture and resource management. Her main focus in our team is on modelling the impact of climate change on biodiversity and farm production systems using different bio-economic valuation techniques. She is also involved in a project on the simulation of climate change scenarios for aquaculture production systems.



Sarah Chambers: Research Assistant

Sarah Chambers joined the team in early 2008. A UQ graduate, Sarah previously worked in the Queensland Department of Primary Industry. Sarah's work with the group has involved development of small-scale representations of environmental 'icon' sites in the Basin.

Nancy Wallace: Research Assistant

Nancy Wallace provides editorial and bibliographic services, document management, research administration and reporting.

Research outcomes

To meet its objectives, the work of the Group has been divided into four programs:

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

Each program encompasses a number of research projects.

Murray–Darling Basin Program

Objectives

The aim of this 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 Basin.

Project: Murray–Darling Basin

The Group's simulation model of land and water allocation in the Murray–Darling Basin has remained a central focus of our research. The model was applied to salinity mitigation, climate change, and the return of water to the Snowy River. Results were initially presented at the annual conference of the Australian Agricultural Economics Society in February 2008. Further results formed the basis of presentations, reports and newspaper articles. In addition, the model played a central role in the Group's contribution to the Garnaut Review of Climate Change.

Project: Institutions and property rights

In the policy component of the project, the main focus has been on the sustainability of water management. The project produced a journal article in the leading international journal *Environmental Politics* in 2008. A chapter on uncertainty, risk and water management was contributed to a book edited by Lin Crase and published by Resources for the Future Press.

Risk and Uncertainty Program

Objectives

The aim of this project is to develop fundamentally new approaches to the theory of risk and uncertainty and its 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 to analyses of 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 improve understanding of the ‘precautionary principle’.

Work in this project has been undertaken jointly with Professor Simon Grant of Rice University, Texas, Jeff Kline of Bond University, Professor Flavio Menezes of the University of Queensland and visiting postdoctoral student Yusuke Osaki. The project produced a journal article in *Economics Letters*, a book chapter and a working paper in 2008.

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 finance theory and analysis of risk aversion. In 2008, the collaboration expanded to include Professor Chris O’Donnell of the University of Queensland. The current focus is on empirical estimation on the integration of production and finance theory and on applications to comparisons of efficiency.

The project produced a journal article and a working paper in 2008.

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. Areas studied in 2008 included privatisation and international comparisons of economic performance. The project produced a journal articles and a working paper during 2008. In addition, Professor Quiggin published over 25 newspaper articles, and made more than 50 media appearances on policy topics relating to the project.

Project: Innovation in the information economy

This project addresses the changing nature of innovation in an economy in which the role of knowledge and information has been transformed by new technologies in computing and telecommunications, most notably the Internet. The project produced three journal articles, three book chapters and a number of other presentations in 2008. In addition, Professor Quiggin maintained his role as one of Australia's leading academic and political bloggers, and extended involvement in the use of social networking systems such as Facebook and Twitter to disseminate research and policy ideas.

Climate Change Program

Objectives

The Climate Change Program was a central focus of the work of the group in 2008. The aim of this program is to analyse issues related to mitigation of, and adaption to, climate change. A fundamental premise of our research is that mitigation and adaptation are not competing alternatives but are necessary complements. In the absence of effective mitigation, climate change will be so rapid and extensive that adaptation will be impossible. On the other hand, even with a substantial mitigation effort, significant climate change is inevitable, and adaption will therefore be necessary.

Project: Impacts and adaptation

This project is concerned with modelling impacts of climate change in Australia, and the possibilities for adaptation, with a particular focus on the Great Barrier Reef and the Murray–Darling Basin. The project produced a journal article, three conference papers and several other presentations, in addition to our contributions to the Garnaut Review and other policy projects. The Group commenced work on the impact of climate change on coral reefs and aquaculture, in collaboration with Ove Hoegh-Guldberg (UQ) and Terry Hughes (JCU).

Project: Climate change: theory and policy

This project is concerned with theoretical and policy aspects of climate change, including issues such as the choice of discount rates and the design of emissions trading schemes. The project produced three journal articles, two book chapters and a variety of submissions and reports

Communication

An important object of the Group has been to make current research widely available as rapidly as possible. In addition to journal articles and conference papers, a variety of methods have been used to reach the broadest possible audience.

Web Site

A website has been developed at:

<http://www.uq.edu.au/rsmg>.

It provides reprints of journal articles and working papers, annual reports, information on staff activities and useful links.

Working Papers

A working paper series has been established for each of the Programs listed above, and registered with RePeC, the main online repository for working papers in economics. More than fifty working papers are now available. A complete set of papers is available at:

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

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

Public Inquiries

It is important that research should be relevant to public policy. Members of the Group regularly make submissions to Parliamentary and other public inquiries. Although informed by research, views expressed in such submissions are those of the individual concerned.

Media

Professor Quiggin is a regular contributor to the *Australian Financial Review* and frequently writes on topics related to the work of the Group. In addition, he regularly provides comments on policy issues for radio, television, magazines and online publications.

List of publications

Book chapters

- Quiggin, J. (2008), 'Economists and uncertainty' in Bammer, G. and Smithson, M. (eds) *Uncertainty and Risk: Multidisciplinary Perspectives*, Earthscan, London, pp. 195–203.
- Quiggin, J. (2008), 'Employment and innovation in the information economy' in Hearn, G. and Rooney, D.(eds), *Knowledge Policy: Challenges for the 21st Century*, Edward Elgar, Cheltenham, pp. 175–187.
- Quiggin, J. (2008), 'Is creative capitalism illegal?' in Kinsley, M. (ed.) *Creative Capitalism: A Conversation with Bill Gates, Warren Buffet and other Economic Leaders*, Simon & Schuster, New York, pp. 77–79.
- Quiggin, J. (2008), 'Putting creativity back into creative capitalism' in Kinsley, M. (ed.) *Creative Capitalism: A Conversation with Bill Gates, Warren Buffet and other Economic Leaders*, Simon & Schuster, New York, pp. 284–86.
- Quiggin, J. (2008), 'Uncertainty, risk and water management in Australia' in Crase, L. (ed.) *Water Policy in Australia: The Impact of Change and Uncertainty*, Resources for the Future Press, Washington DC, pp. 61–73.

Journal articles: refereed

- Bell, S. and Quiggin, J. (2008), 'The limits of markets and the politics of water management in rural Australia', *Environmental Politics*, 17(5), 712–29.
- Bell, S. and Quiggin, J. (2008), 'Beyond stop/go?: Explaining Australia's long boom', *Journal of Australian Political Economy*, No. 61, 71–87.
- Chambers R. G. and Quiggin, J. (2008), 'Comparative statics for state-contingent technologies', *Journal of Economics*, 93, 203–214.
- Osaki, Y. and Quiggin, J. (2008), 'Stochastic dominance representation of optimistic belief: theory and applications', *Economics Letters*, 101, 275–278.
- Pezzey, J.C.V., Jotzo, F. and Quiggin, J. (2008), 'Fiddling while carbon burns: Why climate policy needs pervasive emission pricing as well as technology promotion', *Australian Journal of Agricultural and Resource Economics*, 52, 97–110.

- Quiggin, J. (2008), 'Managing the Murray–Darling Basin: some implications for climate change policy', *Economic Papers*, 27(2), 160–166.
- Quiggin, J. (2008), 'Stern and his critics on discounting and climate change: an editorial essay', *Climatic Change*, 89, 195–205 (published online 19 June, 2008), DOI: 10.1007/s10584-008-9434-9.
- Quiggin, J. (2008), 'Uncertainty and climate change policy', *Economic Analysis and Policy*, 38(2), 203–210.
- Quiggin, J. and Hunter, D. (2008), 'Money ruins everything', *Hastings Communications and Entertainment Law Journal (Comm/Ent)*, 30(2), 203–256.
- Quiggin, J. and Potts, J. (2008), 'Economics of non-market innovation and digital literacy', *Media International Australia*, 128, 144–150.

Journal articles: other

- Quiggin, J. (2008), 'Amateur content production, networked innovation and innovation policy', *Cultural Science*, 1(2),
<http://cultural-science.org/journal/index.php/culturalscience/article/view/14/53>.
- Quiggin, J. (2008), 'Water falls: warming to resource management', *Outcomes: Results of Research in the Real World*, Australian Research Council, 43–44.
- Quiggin, J. (2008), 'The price we have to pay', *Sustainability: Australia's Future*, Palamedia, 22–23. <http://www.palamedia.com.au/sustainability-australia-s-future/?PHPSESSID=6878a1f5c9d0ccdd446abc478e9bb80d>
- Quiggin, J. (2008), 'John Quiggin's Blog', *Building An Australian Commons, Creative Commons Case Studies, Volume 1*, Rachel Cobcroft (ed.), Australian Research Council Centre of Excellence for Creative Industries and Innovation, 152–154. <http://creativecommons.org.au/casestudiesvol1>

Reports and submissions to public inquiries

- Mallawaarachchi, T., Hone, S., Adamson, D., Yainshet, A., Oliver, M., Kokic, P., Quiggin, J. and Gooday, P. (2008), *Reduced Water Availability: Impacts on Agricultural Activities and Regional Economies in the Murray–Darling Basin*, ABARE client report prepared for the Murray–Darling Basin Commission, July.
- Adamson, D. and Quiggin, J. (2008), *Climate Change and Irrigation in Renmark*, Report prepared for ARUP as part of the Renmark Irrigation Trust Irrigation Modernisation Proposal, Risk and Sustainable Management Group, University of Queensland, Brisbane.
- Menezes, F., Quiggin, J. and Wagner, L. (2008), *The role of compensation and adjustment assistance in the introduction of an emissions trading scheme for Australia: response to the Green Paper*, Submission To Carbon Pollution Reduction Scheme Inquiry University of Queensland, Brisbane.

Conference proceedings

- Quiggin, John (2007), 'Internet and innovation', in Fitzgerald B. (ed.) *Open Content Licensing: Cultivating the Creative Commons*, Sydney University Press, Sydney, pp. 150–155.

Conference papers

- Schrobback, P., Adamson, D. and Quiggin, J. (2008), 'The options for salinity mitigation in the Murray Darling Basin', Paper presented at the 52nd Annual Conference of the Australian Agricultural and Resource Economics Society, Canberra, 7 February.
- Wagner, L., Adamson, D. and Quiggin, J. (2008), 'Opportunity costs for restoring environmental flows to the Snowy River', Paper presented at the 52nd Annual Conference of the Australian Agricultural and Resource Economics Society, Canberra, 7 February.
- Adamson, D. Mallawaarachchi, T. and Quiggin, J. (2008), ' Long run impacts of climate change for irrigators in the Murray Darling Basin under increased uncertainty: a variable by variable approach', Paper presented at the 52nd Annual Conference of the Australian Agricultural and Resource Economics Society, Canberra, 8 February.
- Quiggin, J. (2008), 'Distributing the costs of climate change: discounting and intergenerational equity' Paper presented at a conference on 'Climate Change and Social

Justice', Social Justice Initiative, Centre for Applied Philosophy and Public Ethics, School of Philosophy, University of Melbourne, Melbourne, 3 April.

- Quiggin, J. (2008), 'Prices, water restrictions and water supply in an era of urban water shortages,' Paper presented at Australian Water Association conference on 'Urban Water Reform: Governance and Structures in a Challenging Climate', Brisbane, 19 June.
- Horowitz, J. and Quiggin, J. (2008), 'Environmental decisions without benefit-cost analysis: a ranking-based alternative', Paper presented to the 2008 Benefit-Cost Analysis Conference on 'Advancing Social Policy-Making Through Benefit-Cost Analysis: Challenges and Opportunities', Washington DC, 24–25 June.
- Quiggin, J. (2008), 'Amateur content production and innovation policy', Keynote address to the CCI International Conference on 'Creating value: between commerce and commons' hosted by the ARC Centre of Excellence for Creative Industries and Innovation, Queensland University of Technology, Brisbane, 25–27 June.
- Quiggin, J. (2008), 'The impact of climate change on the Australian economy with special reference to agriculture', Presentation at the Symposium on 'Challenges and opportunities for agriculture in a changing carbon economy' hosted by the Australian Institute of Agricultural Science and Technology (Queensland Division) and Commonwealth Bank Agribusiness, Brisbane, 3 September.
- Quiggin, J. (2008), 'Discounting, risk and equity in one easy lesson: What utility theory can (and can't) tell us about climate change?' Invited keynote presentation at the 37th Australian Conference of Economists (ACE08) hosted by The Economic Society of Australia, Gold Coast, 30 September.
- Quiggin, J. (2008), 'Infrastructure financing after the financial crisis', Video presentation to the 32nd Annual ANZRSI Conference National Conference on 'People, Place and Space: Rethinking Regional Policy Agendas' sponsored by Australia and New Zealand Regional Science Association International and ARC Research Network in Spatially Integrated Social Science, Adelaide, 2 December.
- Quiggin, J. (2008), 'The end of economic liberalism', Keynote presentation to the Second Annual Interdisciplinary Social Sciences Conference on 'Economics and Democracy' hosted by the Research School of Social Sciences, Australian National University, Canberra, 10 December.

Presentations

- Quiggin, J. (2008), 'The costs of climate change', Presentation to the Academy of Arts and Science, Brisbane, 6 March.
- Quiggin, J. (2008), 'What is to be done? An exploration of the current political economy of Australia', Presentation to the National Tertiary Education Union (NTEU) (Qld branch)/ Worklife Forum, Brisbane, 13 March.
- Adamson, D., Schrobback, P. and Quiggin, J. (2008), 'Options for managing salinity in the Murray–Darling Basin under reduced rainfall', Presentation to the 2nd International Salinity Forum on 'Salinity, Water and Society: Global Issues, Local Action', Adelaide, 1 April.
- Quiggin, J. (2008), 'Adaptation and mitigation: the economics of climate change', Videopresentation to the Australian Agricultural and Resource Economics Society National Symposium on 'Climate, Water and Adaptive Responses', Adelaide, 23 May.
- Quiggin, J. (2008), 'Biodiversity–Economic Trade-offs: the case of the Murray–Darling Basin', Presentation to The Ecology Centre, School of Integrative Biology, Australian Centre of Excellence for Risk Analysis, University of Queensland, Brisbane, 27 June.
- Adamson, David (2008), 'Climate change implications for irrigation in Renmark', Renmark Irrigation Trust, Renmark, 2 September.
- Quiggin, J. (2008) Presentation to CS Energy on 'Climate change: Australia and the rest of the world in the year 2020', Brisbane, 15 September.
- Quiggin, J. (2008) Presentation on 'Climate change and the Murray–Darling Basin' for the Research Week Federation Fellow's Public Lecture, University of Queensland, Brisbane, 24 September.
- Quiggin, J. (2008) Presentation on 'The current financial crisis in the United States: What impact will a damaged US economy have on sustainable development?' to a sustainability discussion group in the Advanced Water Management Centre, University of Queensland, Brisbane, 18 November.

Seminars

- Quiggin, J. (2008), 'Market interactions and market outcomes: a choice-based approach', Department of Economics, Rice University, Houston, 11 January.

- Quiggin, J. (2008), 'Market interactions and market outcomes: a choice-based approach', Department of Economics, University of Arizona, Tucson, 16 January.
- Quiggin, J. (2008), 'Awareness and discovery', Department of Economics, University of California, San Diego La Jolla, CA, 22 January.
- Quiggin, J. (2008), 'Market interactions and market outcomes: a choice-based approach', Social Science Faculty, California Institute of Technology (CalTech), 24 January.
- Quiggin, J. (2008), 'The evolution of awareness', Department of Economics, University of Melbourne, Melbourne, 1 April.
- Quiggin, J. (2008), 'Discounting and the Stern Review', Department of Economics, Monash University, Melbourne, 2 April.
- Quiggin, J. (2008), 'Discounting and intergenerational equity', Economics Program Seminar Series (via videoconference), Research School of Social Sciences, Australian National University, Canberra, 29 April.
- Quiggin, J. (2008), 'Discounting and intergenerational equity', Department of Economics and Finance Seminar Series (via videoconference), School of Business, La Trobe University, Melbourne, 6 June.
- Quiggin, J. (2008), 'The grandfather clause: evaluating free permits for carbon emissions', Economic Society of Australia (NSW Branch Council), Sydney, 13 August.
- Quiggin, J. (2008), 'Discounting, risk and equity in one easy lesson: What utility theory can (and can't) tell us about climate change?', Joint seminar to the School of Economics, College of Business and Economics and the Economics Program of the Research School of Social Science, Australian National University, Canberra, 9 October.

Workshops

- Quiggin, J. (2008), 'Market interactions and market outcomes: a unified approach', Paper presented at the 26th Australasian Economic Theory Workshop, School of Business, Bond University, Gold Coast, 9–10 February.
- Quiggin, J. (2008), 'Economic growth models: major developmental implications for the Philippines', Participation in a workshop for 16 Development Planners and Policy Makers from Mindanao in the Philippines on sponsored by the Asian Development Bank and hosted by the Australian Centre for Peace and Conflict Studies, University of Queensland, Brisbane, 10 March.

- Quiggin, J. (2008), 'Resilience and the precautionary principle', Presentation (via video conference) for a workshop on 'Resilience', University of Sydney, Sydney, 4 April.
- Quiggin, J. (2008), 'The economics of adaptation', Paper presented to the Roundtable on the Economics of Adaptation, Federal Department of Climate Change, Canberra, 27 August.
- Quiggin, J. (2008), 'The great risk shift and the great financial crisis', Presentation to the Academy of the Social Sciences in Australia Workshop on 'The Great Risk Shift? Examining the Institutionalisation of Individualism in Australia', Brisbane, 2 December.

Working papers

Risk and Uncertainty Program [ISSN: 1832-4258]

- Chambers, R. and Quiggin, J. (2008), 'Generalized invariant preferences: two parameter representations of preferences', Risk and Uncertainty Program Working Paper RO8-1, Risk and Sustainable Management Group, University of Queensland, Brisbane, 11 February (29 pages).
- Grant, S. and Quiggin, J. (2008), 'Bounded rationality and small worlds', Risk and Uncertainty Program Working Paper RO8-2, Risk and Sustainable Management Group, University of Queensland, Brisbane, 9 June. (15 pages).

Australian Public Policy Program [ISSN: 1832-424X]

- Quiggin, J. (2008), 'Amateur content production, networked innovation and innovation policy', Australian Public Policy Program Working Paper PO8-1, Risk and Sustainable Management Group, University of Queensland, Brisbane. 1 October. (18 pages)
- Bell, S. and Quiggin, J. (2008), 'Unemployment policy: unemployment, underemployment and labour market insecurity', Australian Public Policy Program Working Paper PO8-2, Risk and Sustainable Management Group, University of Queensland, Brisbane. 1 December. (13 pages)

Climate Change Program [ISSN: 1835-7245]

- Quiggin, J. (2008), 'Equity between overlapping generations', Climate Change Program Working Paper CO8-1, Risk and Sustainable Management Group, University of Queensland, Brisbane. 1 June. (7 pages)
- Quiggin, J. (2008), 'Uncertainty and climate change policy', Climate Change Program Working Paper CO8-2, Risk and Sustainable Management Group, University of Queensland, Brisbane. 1 August. (16 pages)

- Quiggin, J. (2008), 'The impact of climate change on agriculture', Climate Change Program Working Paper CO8-3, Risk and Sustainable Management Group, University of Queensland, Brisbane. 18 August. (8 pages)

Community service, outreach and media

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

Community service and outreach

- Meeting with Tom Hatton, Director, Water for a Healthy Country Flagship, CSIRO, 4 February 2008 (David Adamson).
- Meeting with Philip Glyde, Executive Director, ABARE, about the *Garnaut Climate Change Review*, 20 February 2008.
- Meeting with Matt Clark, Queensland Treasury about the *Garnaut Climate Change Review*, 21 February 2008.
- Presentation on 'What is to be done?: an exploration of the current political economy of Australia: two perspectives' to the National Tertiary Education Union (NTEU) (Qld branch)/Worklife Forum, Brisbane, 13 March 2008.
- Meeting with the Australian Biosecurity CRC for Emerging Infectious Diseases (ABCRC), Project Development Team Meeting, 27 March 2008.
- Attended the Queensland 2020 Forum on 'Future strategic challenges for Queensland', Brisbane, 13 April 2008.
- Attended a CEDA Lunchtime Forum on 'The forthcoming Emissions Trading Scheme in Australia', Brisbane, 14 April 2008.
- Participated in the panel on 'Sustainability and climate change' at the Australia 2020 Summit, Canberra, 19–20 April 2008.
- Attended a 'follow-up' Queensland 2020 Forum, Brisbane, 15 May 2008.
- Presentation on 'Economics: Is it really a dismal science?' to Mind Ventures: Learning and Leisure for Mature-age People, Brisbane, 17 May 2008.
- Presentation on 'Biodiversity–Economic Trade-offs: the case of the Murray–Darling Basin' to The Ecology Centre, School of Integrative Biology, Australian Centre of Excellence for Risk Analysis, University of Queensland, Brisbane, 27 June 2008.
- Participated in a taped interview for a case study for ANZSOG on the 'Economics of climate change', with Prof. Ross Guest, Economics, Griffith Business School, Griffith University, Brisbane, 7 July 2008.

- Keynote presentation on '2020 Summit — Economists can save the planet' to the UQ Economics Schools Day, University of Queensland, Brisbane, 17 July 2008.
- Presentation on 'Implications for nurses of the 2008 Queensland budget' to the Queensland Nurses' Union Annual Delegate Conference, Brisbane, 19 July 2008.
- Launch of the Risk and Sustainable Management Group's *Annual Report, 2007*, 7 August 2008.
- Participated in a Left Renewal roundtable on 'Just Transitions to a Sustainable Society' organised by the Search Foundation and supported by the Brisbane Workers' Community Centre, Brisbane, 23 August 2008.
- Participated in a panel on 'Buyers beware: the complex market of cyber space' at the Melbourne Writers' Festival, Melbourne, 29 August 2008.
- Participated in a panel on 'Parched: the politics of water' at the Melbourne Writers' Festival, Melbourne, 30 August 2008.
- Presentation on 'Climate change in the Asia Pacific region' to the 'Make Poverty History Climate Change Forum' sponsored by Oxfam Australia, Brisbane, 9 September 2008.
- Participated in the 'Barriers to Infrastructure Development' Finance Working Group for 'Infrastructure 21: From Incrementalism to Transformational Change', an infrastructure summit organised by the Australian Davos Connection, Brisbane, 6–7 October 2008.
- Presentation of a guest lecture on 'Welfare Economics' as part of a short course on Economic Policy Analysis for the benefit of young policy analysts at Treasury, Federal Treasury, Canberra, 10 October 2008.
- Presented a seminar on 'Carbon taxes versus emissions trading' at a Lunchtime Seminar Series, Department of Main Roads, Brisbane, 20 October 2008.
- Presentation on 'The financial crisis and what it means for you' to the 2008 BrisScience Lecture Series, Brisbane, 3 November 2008.
- Presentation (by David Adamson) to the Water Economics, Strategic Water Initiatives at Department of Natural Resources and Water, Brisbane, 5 November 2008.

- Participated in a panel discussion at a CEDA Lunchtime Forum on ‘The impact of emissions trading’, Brisbane, 17 November 2008.
- Participated in a forum on ‘The human dimension of climate change: social science perspectives’, sponsored by the Institute for Social Science Research and School of Psychology, University of Queensland, Brisbane, 20 November 2008.
- Presentation on ‘The economics of climate change’ to a meeting of Qskeptics, Brisbane, 24 November 2008.

Guest lectures

- Presentation of a guest lecture on ‘New Media’ for Introduction to Mass Communication and New Media (COMU 1020), School of Journalism and Mass Communication, School of Journalism and Communication), 18 March 2008.
- Presentation of guest lecture on ‘The economics of higher education’, Public Finance (ECON3450), School of Economics, University of Queensland, Brisbane, 17 April 2008.
- Presentation of guest lecture on ‘The economics of higher education’, Economics of Social Issues (ECON1120), School of Economics, University of Queensland, Brisbane, 23 April 2008.
- Presentation of guest lecture on ‘Critical concepts in sustainability’, Natural Resource Economics (ECON6710), School of Economics, University of Queensland, Brisbane, 1 May 2008.
- Presentation of a guest lecture on ‘Public–private partnerships’ for a course on ‘Designing Public Policies and Programs’ offered by the Australian and New Zealand School of Government, Brisbane, 24 June 2008.
- Presentation of a guest lecture on ‘Markets as a form of governance’ to POLS7101 Dynamics of Government, School of Political Science and International Studies at the University of Queensland, 15 September.

Editorial Boards

Economic Theory; 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; Environmental and Resource Economics,

Australian Financial Review

- 'Musical background beef', 3 January 2008, p. 46.
- 'Learn from Iraq disaster', 17 January 2008, p. 54.
- 'America bushwhacked', 31 January 2008, p. 62.
- 'The flip side to the flop', 14 February 2008, p. 78.
- 'Seize the day for the basin', 28 February 2008, p. 78.
- 'Tax breaks must be axed', 13 March 2008, p. 78.
- 'Libs need services rethink', 27 March 2008, p. 78.
- 'Balancing promises and risks', 10 April 2008, p. 78.
- 'Promises a core responsibility', 8 May 2008, p. 70.
- 'Don't sell water down the river', 22 May 2008, p. 78.
- 'Dump the GST on food', 5 June 2008, p. 78.
- 'The power of persuasion', 19 June 2008, p. 70.
- 'Reserve status under threat', 3 July 2008, p. 62.
- 'Free riders not welcome', 17 July 2008, p. 70.
- 'Win or lose in second half', 31 July 2008, p. 70.
- 'Flow-on effects of neglect', 14 August 2008, p. 78.
- 'Right climate for snap poll', 28 August 2008, p. 70.
- 'Free-market facade cracks', 11 September 2008, p. 70.
- 'Guilty must bear the costs', 25 September 2008, p. 78.
- 'Project funding shake-up', 9 October 2008, p. 78.
- 'Don't lose emissions plot', 23 October 2008, p. 78.
- 'Stepping into a maelstrom', 6 November 2008, p. 78.

- 'Fallout can be mitigated', 20 November 2008, p. 70.
- 'Let banks be banks again', 4 December 2008, p. 62.
- 'Rudd misread the weather', 18 December 2008, p. 54.

Media Interviews

- *Brisbane Times*, 'Murray–Darling', 15 February.
- *The Australian*, 'Macro policy', 19 February.
- ABC Radio (Brisbane), 'Infrastructure: Public–Private Partnerships (PPPs)', 19 February.
- *Queensland Business Review*, 'Queensland budget', 21 February.
- *Sunday Mail*, 'Interest rates', 27 February.
- ABC Radio (Murray–Goulburn), 'Privatisation', 27 February.
- ABC TV (Northern Territory), 'Public–Private Partnerships (PPPs)', 28 February.
- ABC Radio National (PM), 'Interest rates', 5 March.
- ABC Radio (Brisbane), 'Queensland Academy of Arts and Science talk on climate change', 6 March.
- ABC Radio (Mackay), 'Inflation', 11 March.
- *Sydney Morning Herald*, '2020 Summit', 28 March.
- *Herald Sun*, 'Electricity infrastructure', 7 April.
- *The Age*, '2020 Summit', 7 April.
- *Australian Financial Review*, 'Food prices and inflation', 8 April.
- *West Australian*, 'Economic costs of cane toads', 22 April.
- *Sun-Herald*, 'The achievements of the Queensland Office of Climate Change since its inception in October 2007', 24 April.
- ABC Radio (PM), 'Economic growth targets on the Sunshine Coast', 24 April.
- *Sunday Mail*, 'Food prices and drought', 24 April.

- ABC Radio (PM), 'Privatisation', 7 May.
- ABC Radio (Inside Business), 'Bankruptcy of the Adelaide–Darwin railway link', 19 May.
- ABC Radio (Rockhampton), 'Oil prices', 21 May.
- *Courier Mail*, 'Oil prices', 21 May.
- *Brisbane Times*, 'Brisbane City Council budget', 26 May.
- ABC Radio (Gold Coast), 'Oil prices and the Australian dollar', 27 May.
- Channel 10 (TTN), 'Oil and fuel', 30 May.
- ABC TV (Lateline), 'Fuel prices', 2 June.
- ABC Radio (Rockhampton), 'Queensland state budget', 3 June.
- Bloomberg (Singapore), 'World food crisis', 3 June.
- *Australian Financial Review*, 'Petrol emissions trading', 24 June.
- *Sydney Morning Herald*, 'The Australian macroeconomy', 1 July.
- *Sunday Age*, 'The Garnaut Review', 2 July.
- National Public Radio (Los Angeles), 'The challenges facing the Australian economy', 2 July.
- *Australian Financial Review*, 'Emissions trading', 15 July.
- *Courier Mail*, 'Petrol prices', 16 July.
- ABC Radio (Townsville), 'Emissions trading and the Great Barrier Reef', 16 July.
- The Wire (Radio Current Affairs), 'Green paper on emissions trading', 16 July.
- ABC (Radio Australia), 'Emissions trading', 19 July.
- *Quest Newspapers*, 'The easing of water restrictions', 25 July.
- *Sunday Age*, 'Fuel efficiency', 31 July.
- *The Age*, 'Water trading', 1 August.
- *The Age*, 'The reregulation of US financial markets', 1 August.

- *The Age*, 'Urban–rural water trade', 5 August.
- Community Radio Station (Sydney): 'Queensland Liberal–National Party merger and the implications for Federal politics', 6 August.
- *Canberra Times*, 'The state of the Australian economy', 6 August.
- *Westside News*, 'Make Poverty History and climate change', 26 August.
- crikey.com.au, 'Interest rates', 2 September.
- ABC (Asia–Pacific News Hour): 'Water', 3 September.
- *Australian Financial Review*: 'Foreign investment and foreign debt', 16 September.
- *Australian Financial Review*: 'Current financial crisis and carbon emissions trading schemes', 18 September.
- Channel 7 TV: 'The impact of the global credit crisis on the Queensland economy', 22 September.
- 4ZZZ News (Brisbane Line): 'The economy', 25 September.
- ABC Radio (Brisbane): 'The Wall Street financial crisis', 26 September.
- Channel 10 TV: 'The international financial crisis', 30 September.
- ABC Radio (Rockhampton): 'The effect of the international financial crisis on agriculture and mining in Queensland', 2 October.
- ABC Radio (Sydney): 'The world financial crisis: Was Marx right?', 9 October.
- ABC News Radio: 'The world financial crisis: Was Marx right?', 9 October.
- ABC Radio (Lateline): 'Will the economic slowdown be good for climate change?', 13 October.
- 4ZZZ News (Brisbane Line): 'Carbon offsets for music festivals', 14 October.
- *Australian Financial Review*: 'Fiscal stimulus and climate change', 14 October.
- *Courier Mail*: 'Australian economic stimulus package', 14 October.
- ABC Radio (Brisbane): 'The economic crisis', 14 October.

- ABC Radio (Drive Time): 'The fiscal stimulus', 14 October.
- Channel 7 TV: 'The First Home Owners' Grant', 15 October.
- National Community Radio (Adelaide) (The Wire): 'The Australian bail-out package', 15 October.
- ABC Radio (Gold Coast): 'Will there be a recession?', 16 October.
- ABC Radio (Brisbane), 'The financial crisis and deposit guarantees', 21 October.
- Crikey: 'Inflation', 22 October.
- ABC Radio (Wide Bay): 'Future of capitalism', 22 October.
- ABC Radio Queensland 612 AM: 'Inflation"', 22 October.
- ABC Radio (Late Night Live): 'The financial crisis and the environment', 29 October.
- ABC Radio Queensland 612 : 'Is there a recession: implications for families', 30 October.
- *The Age*: 'The unintended consequences of deposit guarantees', 31 October.
- *The Australian*: 'Treasury modelling of emissions cuts', 31 October.
- *Queensland Times*: 'The Federal government's adoption of an emissions trading scheme and its impact on families', 31 October.
- *Australian Financial Review*: 'The emissions trading scheme and the price of petrol', 28 November.
- ABC Radio (Longreach): 'The State budget deficit and interest rate cuts', 3 December.

Research Grant: Federation Fellowship FF0776177

Climate change: adaptation and resilience in the face of uncertainty

Project Objectives

The aim of the project is to analyse options for adaptation to climate change in Australia, and in particular, the role and management of uncertainty. The focus will be on crucial, highly vulnerable natural assets, particularly the Murray–Darling Basin and the Great Barrier Reef. The central theoretical objective will be an improved understanding of the concepts of resilience and adaptive management and their application to the problems of adaptation to, and mitigation of, climate change. The project will yield policy recommendations for the design of property rights and emissions trading systems.

Progress for 2008

During the first half of 2008, the project was largely focused on contributions to the Garnaut Review of Climate Change. The Review's projections of the impacts of climate change on agriculture and of possibilities for adaptation were largely based on RSMG modelling of the Murray–Darling Basin. Our major finding was that an increase in the frequency of drought is likely to produce substantial reductions in the productivity of irrigated agriculture. A submission to the inquiry into the Carbon Pollution Reduction Scheme was also prepared, focusing on the general undesirability of providing free permits to emitters.

The focus of the project on immediate policy issues was, to some extent, achieved at the expense of longer-term work on the theory of choice under uncertainty, and on improving the stability and performance of the model. It is planned to focus on these areas in 2009.

ARC Linkage Project LP0883650

Assessing the impacts of proposed carbon trading and tax schemes on the Australian economy: the electricity industry and the overall economy

Project Summary

Because of growing international concerns about global warming, Australia is considering both carbon taxation and tradeable quota schemes. In this project we seek to address two key research questions: First, what are the likely medium and long term impacts of different carbon abatement policies on electricity supply and demand and how will the power generation industry respond? Second, what are the likely medium and long term impacts upon the economy, and its industries and regions, more generally? Currently, research on these questions remains very limited so we expect to produce findings of international significance.

Progress for 2008

An extensive study of the interaction between the allocation of free permits and the likely demand and supply response of electricity producers and consumers was undertaken.

ARC Discovery Project DP0877836

State-contingent analysis of productivity, efficiency and innovation.

Project Summary

A major problem in productivity analysis is the need to distinguish outcomes that reflect genuine changes in productive performance from those that reflect stochastic shocks, such as interruptions to production or short-term fluctuations in demand. Failure to make this distinction is a serious shortcoming of standard approaches to productivity measurement. We aim to implement an alternative state-contingent approach that explicitly recognises the way uncertainty affects producer choices. The state-contingent approach is consistent with the broader economic literature on general equilibrium and finance, and is expected to yield much improved estimates of productivity growth, rates of innovation and changes in efficiency.

Project Objectives

The overall objective of the project is to develop integrated theoretical and empirical models representing multi-output state-contingent production sets as Arrow–Debreu technologies.

Progress for 2008

Achievements in 2008 included:

- development of sampling theory methods for estimating state-allocable technologies in cases where a) realised outputs, realised states of Nature and input allocations to different states of Nature are all known, and b) realised outputs, realised states of Nature, input prices and risk neutral probabilities are all known.
- partial development of Bayesian methodology for estimating state-allocable technologies when only realised outputs, realised states of nature and input prices are known.
- application of sampling theory estimation methods to a European data set. A paper entitled “Uncertainty and Technical Efficiency in Finnish Agriculture” (by Nauges, O’Donnell and Quiggin) was presented at the Australian Agricultural and Resource Economics Society (AARES) conference in Cairns in February 2009.

The research conducted in 2008 demonstrates that it is possible to empirically analyse production under both uncertainty and inefficiency without regard to the nature of producer risk preferences. Using Finnish data, we have been able to test, and reject, an assumption that has been implicit in almost all efficiency studies conducted in the last three decades, namely that the production technology is output-cubical.

