

## Life after Kyoto: Perception, Ambition, International Engagement

How could New Zealand's decision to opt out of the Kyoto Protocol affect the way we address climate change over the next decade?

In early November the New Zealand Government made the decision to opt out of the second commitment period of the Kyoto Protocol, choosing to focus instead on the new process under the United Nations Framework Convention for Climate Change (UNFCCC) that involves major developing and developed nations.<sup>1</sup> Dr Suzi Kerr, who leads Motu's environment programme, writes that this could be a positive step for New Zealand's contribution to global climate mitigation – if we can rise to three challenges: maintaining a positive and accurate international perception of New Zealand's climate efforts; setting unambiguous, ambitious targets; and contributing to mitigation in developing countries by creating models for credible international carbon trade.

Addressing international climate change is a cooperation problem. All people and countries have strong incentives to “free ride”, letting others do the work. A wide range of insights from game theory, behavioural experiments, and experience with local commons, such as Elinor Ostrom's Nobel Prize-winning work, show us that humans can cooperate to solve problems. We also know that in order to cooperate we need to build trust and reward or penalise each other based on historical behaviour. Consequently, it is important to both contribute our share to climate change mitigation and also have others perceive that we are contributing our share. That will give others confidence to increase their own contribution without feeling that they might be “suckers”. Can New Zealand leave Kyoto but maintain the perception that we are committed to the global effort? That will depend on our commitments.

One important aspect of gaining international trust in our non-Kyoto mitigation efforts will be to provide clarity on what exactly our target will be and how it will be measured. This could be expressed as a carbon price to apply in our economy (independent of interna-



tional markets – following Australia's example); if we can create effective and credible ways to support mitigation in developing countries, it could be a quantitative “responsibility target” (under which we either mitigate within New Zealand or pay for it to be done elsewhere) that aims at a similar level of stringency; or our target could be a combination of both, particularly while only some sectors are covered by the ETS and we continue to avoid leakage from some sectors. If leaving Kyoto means we diverge from Kyoto emissions measurement rules, we will need to be very clear on what this means for the stringency of our commitment, possibly reporting in both Kyoto-compliant and our own ways.

One way for New Zealand to meet mitigation goals could be to fund mitigation in developing countries. Developing countries often have options for large-scale, cheap mitigation, as they are making large investments and structural changes in ways developed countries with existing capital stock and infrastructure are not, meaning that developing countries can mitigate at a lower cost.

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# Director's letter

A standard question asked of organisations these days is: do they make a difference?

After three and a half years at Motu, and now finishing my term here, I can confidently say that Motu's research does make a difference.

Motu's research is relevant to a wide range of policy issues of long-term importance – productivity, infrastructure, climate change, longevity, labour markets and inter-generational impacts. Its research is frequently cited.

Motu's research is trusted. It is independent of any ideological assumptions or viewpoints. It consistently is of a very high standard.

Motu's research involves highly quantitative analysis. Value is extracted from data sets such as Statistics NZ surveys and a wide range of administrative data. Considerable expertise is involved in extensive "cleaning" of data to enable sophisticated econometric and statistical techniques to be used to derive insights into causal relationships. The article in this newsletter on the "Warm Up New

Zealand: Heat Smart" evaluation provides a good example of the work required to get meaningful results from varied data.

Other articles in this newsletter are illustrative of the value Motu brings to public policy design and debates.

Suzi Kerr's article on New Zealand's withdrawal from the Kyoto Protocol brings insights from economics to provide some broader perspectives on ways in which New Zealand's climate change efforts could be framed in order to better contribute to international outcomes. It relates to recent work undertaken by Motu to provide economic insights into the development of effective, efficient and fair international policies.

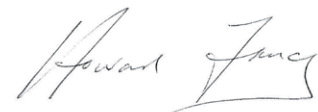
The new Marsden project led by Arthur Grimes and Les Oxley recognises that assessing the wellbeing of a nation's people requires broader measures than economic ones such as GDP. This research will investigate how broader indicators of wellbeing can predict objective outcomes relating to the

wellbeing of groups within and across countries.

Motu's research shapes thinking and it raises important questions for policy considerations. This is seen in a number of ways:

- The consistently high numbers of people who attend Motu's Public Policy Seminars;
- The different ways Senior Fellows contribute to public policy thinking via governance and advisory roles and through conferences and workshops;
- Our research into the impacts of an ageing population, infrastructure, housing, and the effectiveness of emissions trading schemes, all of which influence policy thinking and advice.

I would like to take this opportunity to wish all our readers, on behalf of all staff at Motu, a happy New Year and all best wishes for 2013.



Howard Fancy

*Continued from front cover*

Currently New Zealand contributes to developing country mitigation primarily through the Clean Development Mechanism (CDM), which is part of the Kyoto agreement, though we also contribute through research cooperation projects such as the Global Research Alliance. The CDM is widely acknowledged to be a flawed mechanism because it has high transaction costs, focuses on a few large developing countries and has dubious environmental integrity.<sup>2</sup> Several New Zealanders are working on potential alternative approaches. One example would be supporting the development of emissions trading systems in developing countries that have clear targets and strong compliance mechanisms. If these were created, we could link to them and purchase emission units with confidence that the units represent real emission reductions. We may be able to do this more effectively outside Kyoto, where we can experiment on our own or in collaboration with a small group of countries.

Much of the most interesting and promising action on climate mitigation is now taking place outside of the Kyoto Protocol. The challenge is to make leaving Kyoto a positive step for climate mitigation and cooperation, rather than a signal that New Zealand is opting out of its obligations.

Motu's recent work around international climate change mitigation efforts has included preparing a report for the World Bank on emissions trading in Chile, and recent working papers on economic insights in the development of effective, efficient, and fair international climate policy in general, and specifically to reduce deforestation and forest degradation.<sup>3</sup> See this work at [www.motu.org/research/group/climate\\_change](http://www.motu.org/research/group/climate_change)

<sup>1</sup> Groser, Tim. 2012. "New Zealand Commits to UN Framework Convention," [beehive.govt.nz](http://www.beehive.govt.nz), the New Zealand Government. Available online at <http://www.beehive.govt.nz/release/new-zealand-commits-un-framework-convention>

<sup>2</sup> Wara, Michael. 2008. "Measuring the Clean Development Mechanism's Performance and Potential", *UCLA Law Review* 55:6 pp. 1759–803. Available online at [http://iis-db.stanford.edu/pubs/22226/wara\\_law\\_review\\_ucla.pdf](http://iis-db.stanford.edu/pubs/22226/wara_law_review_ucla.pdf)

<sup>3</sup> Motu Economic and Public Policy Research. "Roadmap for Implementing a Greenhouse Gas Emissions Trading System in Chile: Core Design Options and Policy Decision-Making Considerations," *Motu Working Paper* 12-14; Kerr, Suzi, and Adam Millard-Ball. 2012. "Cooperation to Reduce Developing Country Emissions," *Motu Working Paper* 12-03; and Kerr, Suzi. 2012. "The Economics of International Policy Agreements to Reduce Emissions from Deforestation and Degradation," *Motu Working Paper* 12-12. Available online at <http://www.motu.org.nz/publications/working-papers/>



## Comings and Goings

The past few months have been busy at Motu, with familiar faces departing and new ones arriving. Howard Fancy finished his term as Director at Motu in November; his experience and guidance will be missed. Emma Jellicoe and Glenda Shaw departed Motu in late November and early December for new opportunities and we wish them the best of luck.

Three Research Analysts have also wrapped up their time at Motu over the last year. Alex Olssen, who had been at Motu for two and a half years, left to pursue work at the Australian National University. Hugh McDonald, who had been at Motu for three years, is travelling, while Zack Dorner, one of last year's summer interns who remained for this year as an RA while completing his studies, is presently completing an internship at Treasury.

Finally, Boon-Ling Yeo, a PhD candidate at the University of California at Davis, has finished her six-month stay at Motu. Boon-Ling's visit was funded by the National Science Foundation and the Royal Society of New Zealand under the aegis of the NSF's Pacific Rim Advanced Graduate Research Fellowship.

We also have some new faces around the office. Gemma Wills and Josh Pemberton are this year's summer interns; Gemma joins us from the University of Auckland and Josh attends the University of Otago. Josh is working with Suzi Kerr to explore how economists think about environmental value, and Gemma is working with Arthur Grimes on the alternative measures of wellbeing project. We also welcome Grant Coppersmith and Lynette Campbell, who will take over finances. Grant has a background in chartered accountancy and banking, coming to Motu after 27 years at ANZ-National.

Lynette has more than 20 years' accounting experience, coming to Motu from Limited Editions and Icon Textiles.

## Recruiting Interns and Research Analysts

Motu is currently recruiting research analysts and summer interns for the end of 2013. Motu research analysts are typically outstanding students in Economics, Statistics, or Operations Management, who will have completed an Honours or Masters by the end of this year. Summer internships are available to students completing their third year of study. For more information see [www.motu.org/about/vacancies](http://www.motu.org/about/vacancies), or to apply contact Isabelle Sin, [recruitment@motu.org.nz](mailto:recruitment@motu.org.nz).

## Sir Frank Holmes Prize Awarded

In November Motu was thrilled to award the inaugural Sir Frank Holmes Prize to Anna Robinson of the University of Otago. Anna stood out in a strong field because of her intellectual rigour, pragmatism and dedication to New Zealand public policy. Sponsored by the Hugo Group, the Sir Frank Holmes Prize is a prestigious scholarship that recognises academic excellence and strong quantitative skills. It is named in honour of Sir Frank Holmes to acknowledge his tremendous contributions to economics and public policy in New Zealand.

## AgDialogue Film Released

In October Motu was pleased to release a new short film about tackling agricultural emissions. The film is informed by the work done by the Agricultural Emissions Dialogue Group, and covers a wide range of emissions-related topics. The AgDialogue group met regularly for 18 months. It was com-

prised of farmers, tangata whenua, representatives from farm industry groups, NGOs and the government and aimed to ensure that agricultural emissions are addressed in a way that is robust, effective, efficient and fair. The film addresses ways in which New Zealand could achieve real reductions in agricultural greenhouse gas emissions. It can be viewed and downloaded, with teaching materials, at [agricultural-emissions.blogspot.co.nz](http://agricultural-emissions.blogspot.co.nz).

## Bergstrom Prize Awarded to Isabelle Sin

Congratulations to Motu Fellow Isabelle Sin, who was awarded the 2012 A R Bergstrom Prize in Econometrics for her paper "The Gravity of Ideas: How Distance Affects Translation". The objective of the prize is to award excellence in econometrics, as evidenced by a research paper. The citation for the award writes that Izi's paper, elements of which appeared in her PhD dissertation, is "an innovative study of how various measures of distance affect the international transmission of ideas".

## Motu people

**Board of Trustees** Leith Comer, Philippa (Pip) Dunphy, Rob Fenwick, Neil Green, John Hay (chair), Tom Lambie, Richie Poulton

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**Fellows and Post-Docs** Isabelle Sin, Levente Tímár

**Research Analysts and Interns** Simon Anastasiadis, Sean Hyland, Yun Liang, Josh Pemberton, Gemma Wills

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# “Warm Up New Zealand: Heat Smart” Evaluation

Arthur Grimes

**Evaluation results of central government’s Warm Up New Zealand: Heat Smart (WUNZ:HS) programme have recently been published.** The programme, which started in 2009, provided co-funding for retrofitting insulation and clean heating to houses built prior to 2000. The principal purposes of the scheme were to improve energy efficiency and to improve health outcomes; employment benefits were also mooted given that the scheme was begun during the recession.

Approximately 100,000 houses were treated with insulation in the first two years of the programme, and 24,000 houses received clean heat treatment (some of which also received insulation). A further 78,000 were targeted to receive insulation treatment over the next two years, with an extra 37,000 clean heat treatments. Total fiscal cost over the four years was projected at around \$320 million.

By any scale, this is a large public policy intervention. What were its effects on energy, health and other outcomes? What were its total costs? Did the benefits outweigh the costs?

These questions were addressed in an evaluation of the scheme involving researchers from Motu, University of Otago (UoO), Covic and Victoria University of Wellington. Professor Philippa Howden-Chapman (UoO), who had pioneered research into insulation and clean heat treatment in New Zealand, was a member of the research team. Previously, she and colleagues had conducted randomised community trials of insulation and clean heating interventions in different areas of New Zealand. Randomisation in her trials involved the timing of the receipt of treatment. All participants had to agree to provide relevant records for evaluation purposes. By the end of each programme, all participants received treatment.

These studies showed significant beneficial impacts of insulation treatment on energy use and health outcomes, and benefits from clean heating. However, the number of treated houses in some of these studies made it difficult to obtain statistically significant results in some areas with relatively rare outcomes, such as hospitalisation rates; and treatments were mostly targeted towards at-risk groups (e.g. those with respiratory conditions such as asthma), raising issues about the generalisability of the results to the general population.

The WUNZ:HS programme – with its target of treating almost 200,000 houses and its universalist approach (all households were eligible for subsidies, with community services card (CSC) holders eligible



for a greater percentage contribution to costs) – offered an ideal setting to test the impacts of insulation and clean heat treatment in a much larger setting, enabling more statistical precision.

However, the programme was announced as a first-come-first-served scheme with no built-in evaluation element. The only information that subsidy recipients had to provide was data directly related to the treatment, plus their CSC status. Installers provided details to the Energy Efficiency and Conservation Authority on the insulation and clean heating installed. Thus there were no health or energy data available to assist evaluation, and no control houses against which to compare the treated houses.

Faced with this situation, the researchers chose the first 46,655 houses to be treated (those treated to May 2010). Quotable Value New Zealand matched control houses to each treated house according to a list of requirements (e.g. treated and control houses had to be: in the same census area unit, built in the same decade, of the same type, constructed of the same materials, and have the same number of floors and bedrooms). Suitable control houses were obtained for 67% of treated houses; of these, between 1 and 10 control houses were obtained for each treated house.

Researchers obtained metered monthly energy records from four energy companies (Mercury Energy, Meridian, Genesis and Trustpower) which they matched to treated and control houses on a confidentialised basis. Energy records provided coverage of energy use both before and after treatment; records were obtained for approximately half of the matched houses.

Similarly, health and pharmaceutical records were obtained on a confidentialised basis from the Ministry





of Health and Pharmac. The information included pharmaceutical use, hospital admissions (decomposed into admission type), and cost of treatment. Health records were obtained for 87% of matched houses.

Researchers ran a difference in difference regression for each set of data. For energy, the monthly data enabled researchers to interact treatment effects with external temperature to gauge impacts in different parts of the country and in different seasons. The health study paid particular attention to differences in health outcomes according to socio-economic (CSC) status and according to whether prior hospitalisation for a condition had taken place.

The energy study showed that insulation treatment caused a statistically significant, but small (0.7%-1.0%) fall in metered energy consumption. The small drop in energy use is consistent with an economic model in which energy efficiencies were obtained from the insulation so that the effective price of heating fell, in turn resulting in increased consumption of heat (i.e. a warmer house). Greatest energy savings were experienced in cool areas. Measured energy use was shown to increase slightly with the installation of clean heat installation (no data were available on non-metered energy use).

Consistent with having warmer houses, health outcomes improved. Small impacts were detected for pharmaceutical and hospitalisation costs, with greater effects for CSC holders. The size of the study meant that, for the first time, significant mortality effects were detected; mortality was lowered for those who had previously been hospitalised with circulatory illness. No discernible health impact was detected from clean heat installation (although all these houses had insulation).

The evaluation also included analysis of the effects of WUNZ:HS on employment and industry. Small benefits were detected on these fronts.

The researchers estimated that 74% of the installations were “additional”, i.e. installations that would not have taken place in the absence of the scheme. Using this estimate of additionality, combining the health, energy and industry benefits, and combining the direct and indirect programme costs (including costs of raising taxation), the study found an overall benefit:cost ratio of 3.9 for the programme and a net present value of close to \$1 billion. The largest of the benefits (71% of the total) came from the reduction in mortality – a benefit that had not hitherto been quantified and which had not been at the heart of the mooted benefits of the programme.

The evaluation of the Warm Up New Zealand: Heat Smart programme was performed under the aegis of the Ministry for Economic Development (now part of the Ministry of Business, Innovation and Employment). The four reports produced are available at [http://www.motu.org.nz/news-media/detail/reports\\_on\\_warm\\_up\\_new\\_zealand\\_heat\\_smart\\_now\\_available](http://www.motu.org.nz/news-media/detail/reports_on_warm_up_new_zealand_heat_smart_now_available):

Grimes, Arthur, Tim Denne, Philippa Howden-Chapman, Richard Arnold, Lucy Telfar-Barnard, Nicholas Preval and Chris Young. 2012. “Cost Benefit Analysis of the Warm Up New Zealand: Heat Smart Programme”, Report to the Ministry of Economic Development, MED, Wellington.

Grimes, Arthur, Chris Young, Richard Arnold, Tim Denne, Philippa Howden-Chapman, Nicholas Preval and Lucy Telfar-Barnard. 2012. “Warming Up New Zealand: Impacts of the New Zealand Insulation Fund on Metered Household Energy Use,” Paper prepared for Ministry of Economic Development, MED, Wellington.

Telfar-Barnard, Lucy, Nicholas Preval, Philippa Howden-Chapman, Richard Arnold, Chris Young, Arthur Grimes, and Tim Denne. 2012. “The Impact of Retrofitted Insulation and New Heaters on Health Services Utilisation and Costs, Pharmaceutical Costs and Mortality: Evaluation of Warm Up New Zealand: Heat Smart,” Report to the Ministry of Economic Development, MED, Wellington.

Denne, Tim, and Steven Bond-Smith. 2012. “Impacts of the NZ Insulation Fund on Industry and Employment”, Paper prepared for Ministry of Economic Development, MED, Wellington.

# Motu Publications

For a complete list of publications, visit [www.motu.org.nz/publications](http://www.motu.org.nz/publications)

## Working Papers and Motu Notes

### Environmental Regulation

Kerr, Suzi, Simon Anastasiadis, Alex Olssen, William Power, Levente Tímár and Wei Zhang. 2012. "Spatial and Temporal Responses to an Emissions Trading Scheme Covering Agriculture and Forestry: Simulation Results from New Zealand," *Motu Working Paper* 12-10, Motu Economic and Public Policy Research, Wellington.

This paper uses LURNZ, a Motu-designed computer model, to analyse the effects of various Emissions Trading Scheme scenarios on rural land use, agricultural greenhouse gas emissions, and agricultural production.

Kerr, Suzi. 2012. "The Economics of International Policy Agreements to Reduce Emissions from Deforestation and Degradation," *Motu Working Paper* 12-12, Motu Economic and Public Policy Research, Wellington.

This paper shows how theoretical insights from economics can be used when designing effective, efficient, and fair international policy to reduce deforestation and forest degradation, and promote reforestation as part of the international climate change mitigation effort.

Kerr, Suzi, and Alex Olssen. 2012. "Gradual Land-use Change in New Zealand: Results from a Dynamic Econometric Model", *Motu Working Paper* 12-06, Motu Economic and Public Policy Research, Wellington.

Rural land use is important for New Zealand's environmental and economic outcomes. This paper uses data from 1972–2008 to model land-use change in response to changing commodity prices, and finds that land-use responses to price changes can be slow. This suggests that policy-induced land-use change is likely to be slow or costly.

Kerr, Suzi, Hugh McDonald, and Kit Rutherford. 2012. "Nutrient Trading in Lake Rotorua: A Policy Prototype", *Motu Note* #10, Motu Economic and Public Policy Research, Wellington.

Water quality in Lake Rotorua has been declining for at least the last 30 years, despite significant effort and expenditure to reduce nutrients entering the lake. This paper presents a nutrient trading scheme that would achieve nutrient loss reductions for the Lake Rotorua catchment in a cost-effective way, while maintaining a high level of environmental certainty and maximising flexibility for participants.

Olssen, Alex, Wei Zhang, David Evison, and Suzi Kerr. 2012. "A Forest-Profit Expectations Dataset for New Zealand, 1990–2008," *Motu Working Paper* 12-07, Motu Economic and Public Policy Research, Wellington.

This paper constructs a dataset of annual expected forest profits in New Zealand from 1990–2008 at a fine spatial resolution. Four measures of expected profits are measured: net present value, land expectation value, equal annual equivalent, and internal rate of return. The final dataset, working datasets, and the code used in this work are publicly available to the research community and can be accessed from the Motu website: [http://www.motu.org.nz/building-capacity/dataset/u10073\\_forest\\_profit\\_expectations\\_dataset](http://www.motu.org.nz/building-capacity/dataset/u10073_forest_profit_expectations_dataset).

Sin, Isabelle. 2012. "The Adoption of Environmentally Friendly Technologies in Agriculture," *Motu Note* #12, Motu Economic and Public Policy Research, Wellington.

This paper considers the decision faced by farmers who have the option of adopting a new, environmentally friendly production technology. It discusses why farmers may not choose to adopt even when it would be most beneficial for society overall for them to do so, and outlines potential roles for intervention in efficiently increasing adoption.

Woods, Darian, with Andrew Coleman. 2012. "Price, Quality, and International Agricultural Trade", *Motu Working Paper* 12-08, Motu Economic and Public Policy Research, Wellington.

This paper explores whether exporters can and do offset increased production costs by reducing exports to low-value destinations. Although the answers are not definitive, it finds little support for the idea that exports to these destinations are curtailed when supply costs increase.

### Economic Geography

Grimes, Arthur. 2012. "Optimal Infrastructure Adaptation to Climate Change," *Motu Note* #11, Motu Economic and Public Policy Research, Wellington.

This paper examines key issues around infrastructure investment and efforts to adapt to climate change. It concludes, first, that adaptation investments should aim to reduce the chances of adverse events (such as coastal flooding), the exposure given such an event (the number of buildings in flood-prone areas), and the loss given the exposure (the damage to buildings following a flood); and, second, that caution should be taken when committing to irreversible infrastructure investments that may no longer be optimal as our understandings of the severity and frequency of climate change-related events are revised.

### Labour and Population Economics

Fabing, Richard, Arthur Grimes and David C. Maré. 2012. "Performance Pay Systems and the Gender Wage Gap," *Motu Working Paper* 12-13, Motu Economic and Public Policy Research, Wellington.

This paper examines the relationship between performance pay systems and wages, paying particular attention to gender differences in outcomes. It finds that women, on average, benefit less from the operation of performance pay systems.

### Macroeconomics and Other Topics

Coleman, Andrew. 2012. "Pension Payments and Receipts by New Zealand Birth Cohorts, 1916–1986", *Motu Working Paper* 12-11, Motu Economic and Public Policy Research, Wellington.

This paper compares the amount of money New Zealanders can expect to contribute into the Pay-as-you-go (PAYGO)-funded New Zealand Superannuation scheme, and contrasts it with the amount of money they will expect to receive back as superannuitants. Its results show that New Zealanders born before 1980 can expect to pay half as much as they expect to receive during retirement, because of the small number of pension recipients over their working life.

Grimes, Arthur, Les Oxley and Nicholas Tarrant. 2012. "Does Money Buy Me Love? Testing Alternative Measures of National Wellbeing," *Motu Working Paper* 12-09, Motu Economic and Public Policy Research, Wellington.

Gross domestic product, surveyed happiness, the Human Development Index, ecological footprint – all these measures, and many others, attempt to quantify a nation's wellbeing – with widely differing results. Which measure should policy-makers pay heed to? This paper explores current and alternative measures of wellbeing for policy-makers to use in assessing the effectiveness of their policies to improve New Zealand's social and economic performance and long-term sustainability.

Abramitzky, Ran, and Isabelle Sin. 2012. "Book Translations as Idea Flows: The Effects of the Collapse of Communism on the Diffusion of Knowledge," *Motu Working Paper* 12-05, Motu Economic and Public Policy Research, Wellington.

This paper uses book translations to measure the flow of ideas between countries. It finds that, following Communism's collapse in Eastern Europe, translations between Communist languages decreased by two-thirds while Western-to-Communist translations increased fivefold. Economically-useful fields such as the sciences saw particularly high increases in translations. These findings help us understand how institutions like Communism shape the international diffusion of knowledge.



## External Publications

- Fabling, Richard, Arthur Grimes & Lynda Sanderson. 2013. "Any Port in a Storm: Impacts of New Port Infrastructure on Exporter Behaviour", *Transportation Research E*, 49:1.
- Grimes, Arthur. 2013. "Infrastructure and Regional Growth", Chapter 28 in *Handbook of Regional Science* (eds. M. Fischer & P. Nijkamp). Berlin: Springer Verlag.
- Kerr, Suzi, Simon Anastasiadis, Alex Olssen, William Power, Levente Timár and Wei Zhang. 2012. "Spatial and Temporal Responses to an Emissions Trading Scheme Covering Agriculture and Forestry: Simulation Results from New Zealand," *Forests* 3:4, pp. 1133–56.
- Dixon, Sylvia, and David C. Maré. 2012. "The Costs of Involuntary Job Loss: Impacts on Workers' Employment and Earnings", *MBIE Research Paper*, Ministry of Business, Innovation and Employment, Wellington.
- Fabling, Richard, Arthur Grimes & Philip Stevens. 2012. "The Relatives are Fine: Use of Qualitative Firm Data in Economic Analysis", *Applied Economics Letters*, 19(7), 615-618.
- McLaughlin, Eoin, David Greasley, Nick Hanley, Les Oxley and Paul Warde. 2012. "Testing for Long-run 'Sustainability': Genuine Savings Estimates for Britain, 1760–2000," *Stirling Economics Discussion Paper* 2012-05, Stirling Management School, University of Stirling, Stirling, UK. Available online from <http://www.stir.ac.uk/management/research/economics/working-papers/>.
- McDonald, Hugh, and Suzi Kerr. 2012. "Why do New Zealanders Care about Agricultural Emissions?" *Policy Quarterly*, 8:2, pp. 29–36.
- Grimes, Arthur, Cleo Ren and Philip Stevens. 2012. "The Need for Speed: Impacts of Internet Connectivity on Firm Productivity," *Journal of Productivity Analysis* 37:2, pp. 187–201.
- Roskruge, Matthew, Arthur Grimes, Philip McCann & Jacques Poot. 2012. "Social Capital and Regional Social Infrastructure Investment: Evidence from New Zealand", *International Regional Science Review* 35:1, pp. 3–25.
- Fabling, Richard, Arthur Grimes & Lynda Sanderson. 2012. "Whatever Next? Export Market Choices of New Zealand Firms", *Papers in Regional Science*, 91(1), 137-160.
- Coleman, Andrew, and Ozer Karagedikli. 2012. "The Relative Size of New Zealand's Exchange Rate and Interest Rate Responses to News," *North American Journal of Economics and Finance* 23:1, pp. 1–19.
- Coleman, Andrew. 2012. "Uncovering Uncovered Interest Parity during the Classical Gold Standard Era, 1888–1905," *North American Journal of Economics and Finance* 23:1, pp. 20–37.
- Daigneault, Adam, Hugh McDonald, Sandy Elliott, Clive Howard-Williams, Suzie Greenhalgh, Maksym Guysev, Suzi Kerr, James Lennox, Linda Lilburne, Uwe Morgenstern, Ned Norton, John Quinn, Kit Rutherford, Ton Snelder, and Bob Wilcock. 2012. *Evaluation of the Impact of Different Policy Options for Managing to Water Quality Limits*. Wellington: Ministry for Primary Industries. Available online at <http://www.mpi.govt.nz/news-resources/publications>

## Public Policy Seminar Series sponsors:



## Public Policy Seminars

Motu's Public Policy Seminar series provides a forum for informed debate on important public policy issues. Through the series, we aim to make the latest economic research more accessible to inform policy debates in New Zealand. Our seminars are accessible to a wide audience, and are attended by people from diverse backgrounds who want to stay informed on economic, social and public policy research. The seminars are presented by the Motu Senior Fellows and Affiliates, as well as other top visiting academics from within New Zealand or around the world. These seminars are free to the public, and there is no need to register to attend.

Since the last newsletter, we have hosted a number of Public Policy Seminars in Auckland and in Wellington. Presentation material from these seminars, including slides and in some cases audio recordings, is available online at [http://www.motu.org.nz/building-capacity/past\\_public\\_policy\\_seminars](http://www.motu.org.nz/building-capacity/past_public_policy_seminars). Arthur Grimes and Professor Philippa Howden-Chapman presented in Auckland and Wellington on healthy housing issues, including results of an evaluation of the impact of the Warm Up New Zealand: Heat Smart programme on health and energy use outcomes. In September Jose Enrique Garcilazo, of the Unit for the Rural and Regional Development Program, OECD, spoke in Wellington about the importance of promoting growth across all regions. Andrew Coleman presented his ongoing work "Saving a Super Scheme: The Economics of PAYGO and SAYGO Retirement Schemes in New Zealand" in Auckland in October and later that month Professor Rohini Somanathan of the Delhi School of Economics gave a seminar entitled "Pricing Plastics: Consumer Responses to Environmental Policies" in Wellington. November was a busy month. Early on Motu worked with the Government Economics Network to host two seminars presented by the Germany-based Institute for the Study of Labour (IZA). Klaus Zimmermann, also of Bonn University, presented on challenges facing the European Union following the Euro Crisis, and Professor Amelie Constant, also of George Washington and Temple Universities, presented on the ways vocational training and education policies can affect youth unemployment. Professor Robert Cairns of McGill University spoke on the Green Paradox and the Economics of Exhaustible Resources and Professor Lewis Evans of Victoria University of Wellington presented on the effects of climate change on allocation of water by the New Zealand Electricity Market. Suzi Kerr presented in Auckland on possibilities for New Zealand's continued engagement with climate change mitigation after our withdrawal from the Kyoto Protocol. Finally, in December Motu held a very successful Auckland PPS. Professor Paul Cheshire, of the London School of Economics, spoke to a large and engaged audience on the economic importance of cities, and how important it is that we understand the implications of city policy before we mess around with how cities function. Professor Cheshire repeated this successful seminar in Wellington in January.

We have one upcoming seminar presently planned. In February Suzi will speak again in Wellington on life after withdrawing from the Kyoto Protocol. See <http://www.motu.org.nz/events> for more details.

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# National Wellbeing and Sustainability Measures

Arthur Grimes

Motu researchers and associates have recently been awarded a three-year Marsden Fund grant by the Royal Society of New Zealand. The grant, *Testing the Validity and Robustness of National Wellbeing and Sustainability Measures*, will be led by Motu Senior Fellow Arthur Grimes and affiliate Les Oxley of the University of Waikato. Jamie Ataria (Lincoln University) and Robert MacCulloch (University of Auckland) will be associate investigators. The study will address a fundamental question: **Are a country's policies and actions sustainably increasing its wellbeing?**

Although material prosperity in New Zealand and other nations has increased over the past fifty years, many people still suffer from uncertainties and anxieties, social and economic divisions have widened in many countries, and concern has grown about environmental degradation. Life satisfaction has not changed much in many developed countries despite decades of rising GDP per capita.

Over recent decades, social scientists and ecologists have developed many indicators of national wellbeing and sustainability, from Gross National Income (GNI) per capita to surveyed happiness and life satisfaction; to composite measures such as the Human Development Index (HDI); to economic sustainability measures such as Genuine Savings; to ecological sustainability measures such as Ecological Footprint. What is lacking, however, is an overarching study that tests the adequacy and robustness of these aggregate measures. We will compile a new measure of sustainable economic progress for New Zealand and will test the validity and robustness of existing wellbeing measures in order to answer the fundamental question posed by the study.

While values of aggregate wellbeing measures are of interest, we need to know how they predict objective (health, anthropometric, migration) outcomes that reflect actual wellbeing of groups within and across countries. There is currently limited work in this regard internationally. Our strategy for testing wellbeing is to use observed physical



outcomes such as health outcomes and anthropometric measures of stature (such as height) as objective and observable indicators of aggregate wellbeing, and to interpret life choices reflected by inter-regional migration as revealed preference indicators of wellbeing as people shift to improve life outcomes in accordance with spatial equilibrium theories.

A recent Motu Working Paper<sup>1</sup> made a preliminary contribution to testing a number of wellbeing indicators. It tested whether aggregate indicators such as life satisfaction indices, inequality measures or the HDI add extra information over and above GNI per capita in explaining net national migration. The paper found that GNI per capita was significant in explaining net national migration outcomes. However, there was also consistent evidence that a national measure of life satisfaction acted positively on net migration over and above the income variable. There was also some weak evidence that greater levels of inequality contribute to net migration outflows.

Future work within the research programme will probe the robustness of these results through the examination of more detailed bilateral migration relationships, as well as tests of the information content of aggregate indicators on other objective wellbeing outcomes.

<sup>1</sup> Grimes A., Oxley L. & Tarrant N. 2012. "Does Money Buy Me Love? Testing Alternative Measures of National Wellbeing", *Motu Working Paper 12-09*, Motu Economic and Public Policy Research, Wellington. Available online at [http://www.motu.org.nz/publications/detail/does\\_money\\_buy\\_me\\_love\\_testing\\_alternative\\_measures\\_of\\_national\\_wellbeing1](http://www.motu.org.nz/publications/detail/does_money_buy_me_love_testing_alternative_measures_of_national_wellbeing1).

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