Australian National University

NATURAM PRIMUM COGNOSCERE RERUM

ANNUAL REPORT 2021

Centre for Applied Macroeconomic Analysis

Crawford School
of Public Policy

College of
Asia and the Pacific

BY THE NUMBERS

729 twitter users   hosted 40 events   238 research associates

101 working papers   20 new affiliates

Message from the Director

The challenges caused by COVID-19 continued in 2021. We spent another year working from home and unable to travel internationally. Despite the challenges, we had another successful year. The CAMA global webinars were popular. Among the speakers we had Martin Wolf (University of St Gallen), Elena Bobeica (European Central Bank), Benny Hartwig (European Central Bank), Quentin Grafton (The Australian National University), Dan Andrews (OECD), Malhar Nabar (International Monetary Fund), John Bluedorn (International Monetary Fund), and Kenneth N Kuttner (Williams College).

In 2021 we welcomed 16 new research associates and four new doctoral student associates. We also welcomed Dr Ralph C Bryant, Professor Graham Elliott, Dr Dale Henderson and Professor Adrian Pagan as Distinguished Associates to CAMA. The new Distinguished Associates category was created to acknowledge the contribution of former CAMA members to research in macroeconomics and to allow them to continue promoting the goal of CAMA of widely disseminating excellent research in macroeconomics.

In the CAMA Shadow Board, Sarah Hunter was invited to continue the excellent work of Paul Bloxham who served the Shadow Board from August 2011 to December 2020.

Sadly, one of the CAMA members passed away in December 2021. Antony Makin was a valued member of CAMA in the Macroeconomic Policy Frameworks program and in the COVID-19 and the Macroeconomy program. Anthony J Makin was Professor of Economics and Director of the APEC Study Centre at Griffith University, Australia. He served as a senior economist in the Australian Department of Finance, the Australian Treasury and as an International Consultant Economist with the International Monetary Fund. Antony will be dearly missed.

CAMA is innovative and is always creating new opportunities for our members. In 2021 we introduced the E-Books page on the CAMA website, and we started to develop the new CAMA blog where the members will be able to publish articles in macroeconomics and public policy. We also launched a new CAMA research program, the Micro-Heterogeneity and Macroeconomic Performance program. This program will aim to better understand micro-heterogeneity in an Australian context, using datasets on firms and households, as well as econometric methods, with a view of building stronger micro-foundations for the Australian growth narrative.

CAMA is a global network of researchers. CAMA's success draws directly on researchers' active participation – researchers who believe in excellence in research and public policy and the importance of contributing to public goods. I would like to thank everyone in CAMA for their contributions and their support.

Warwick McKibbin
Director, Centre for Applied Macroeconomic Analysis

Contents

Centre for Applied Macroeconomic Analysis – an overview

The Centre for Applied Macroeconomic Analysis (CAMA) is located in Crawford School of Public Policy at The Australian National University. It was established in 2003 to bring together economists working on applied macroeconomic and financial market issues throughout Australia and worldwide. CAMA's objectives are to advance research and postgraduate training in applied macroeconomic and financial issues.

CAMA was founded by Professor Warwick McKibbin who is also the current Director. The Deputy Director is Professor Ippei Fujiwara. Former Directors include Professor Renée Fry-McKibbin and Professor Shaun Vahey and Deputy Directors include Professor Heather Anderson, Professor Mardi Dungey and Professor Renée Fry-McKibbin.

Research programs

The centre's research activities are built around a series of research programs headed by a Program Director (or Directors). The Program Director is responsible for organising research in the area of the program. Proposals for new programs are welcome and will be considered by the executive committee. Suggestions should be directed to the CAMA Director. It is envisaged that programs will be active for three years after which they are reviewed for activity, relevance and contributions to the academic and policy communities.

CAMA Research Programs
Behavioural macroeconomics and complexity
Climate change and energy
Commodities and the macroeconomy
COVID-19 and the macroeconomy
Finance and the macroeconomy
Globalisation and trade
Growth, demographics and productivity
Macroeconomic policy frameworks
Macroeconomic theory
Micro-heterogeneity and macroeconomic performance program
Model uncertainty and macro-econometrics
Multi-country models and methods
Open economy macroeconomics

Behavioural macroeconomics and complexity

Directors	Corrado Di Guilmi and Timo Henckel
Research Advisor	Prof Dr Cars H Hommes
Research Associates	See complete list under **Staff and Associates - Research Associates**

Behavioural macroeconomics seeks to refine our understanding of the discipline by accounting for relevant features of human behaviour that are absent in the standard economics framework. Instead of assuming a hyper-rational representative agent, the basis for analysis are empirically well-documented psychological and sociological factors such as cognitive bias, fairness concerns, herding, and social status. Acknowledging the growing econometric and experimental evidence that human behaviour often fails the predictions of the rational expectations and the full-information paradigm. This research

program provides an umbrella for all research dedicated to melding the insights from behavioural economics and psychology with modern macroeconomics in a sound and rigorous way.

An integral part of this research agenda is the problem of aggregation and the presence of agent heterogeneity, which considers the economy as an adaptive nonlinear network that generates complex, emergent behaviour. Salient features of this approach include dispersed interaction of agents, multiple levels of organisation and interaction, bounded rationality, continual adaptation of agents' behaviours, actions and strategies, deep, unquantifiable uncertainty, and persistent out-of-equilibrium dynamics.

The emphasis is both on theoretical and empirical models:

- Theoretical behavioural models will analyse the positive and normative macroeconomic implications of behavioural phenomena including, for example, prospect theory, hyperbolic discounting, adaptive learning, bounded rationality, habit/status concerns, money illusion, and endowment effects. Models of complexity analyse the properties of emergent behaviour, with a large emphasis on solution and simulation methods, including combinatorial mathematics, statistical mechanics and nonlinear computational algorithms. Many of these fall under the heading of agent-based models.
- Empirical models will use behavioural theory and complexity models to improve our statistical understanding and forecasting abilities of the macroeconomy and to analyse policy regimes and institutional features. These models are not only supposed to refine our understanding of individual choice but also help us understand and design better economic institutions and enhance overall welfare analysis.

The program seeks to foster a strong and growing network of researchers enthusiastic about behavioural macroeconomics and complexity. Activities will include workshops and conferences, collaboration with other CAMA research programs, and graduate courses and seminars on this topic.

Climate change and energy

Directors	Barbara Buchner and Warwick McKibbin
Research Associates	See complete list under **Staff and Associates - Research Associates**

Rapid global economic growth, particularly in China and India, has important implications for global energy use as well as causing a rapid rise in greenhouse gas emissions with implications for climate change. This program focuses on the importance of energy use and climate change as well as the associated policy responses on the macro-economy.

This program focuses on:

- methodologies for projecting long-term energy use and carbon dioxide emissions
- the relationship between macroeconomic performance and energy use
- the role of relative prices in energy demand and macroeconomic outcomes
- the macroeconomic consequences of alternative energy policies
- the macroeconomic consequences of alternative climate change strategies and
- the design and impact of alternative emission permit trading systems.

Collaborative work in this project is linked to the ANU Climate Change Institute and the ANU Energy Change Institute.

The Climate Change and Energy program of CAMA is included in the Think Tank Map.

Commodities and the macroeconomy

Directors	Paul Cashin and Renée Fry-McKibbin
Research Associates	See complete list under **Staff and Associates - Research Associates**

The implications of demand for resources by emerging market economies and understanding the special features of commodity economies are currently issues for policymakers and investors. Emerging markets in particular are an important driver of the most recent commodity price cycle. This program seeks to understand commodity cycles and their financial market and macroeconomic effects, as well as the interactions between the three from both an emerging and developed country perspective.

The program focuses on:

- understanding trends and cycles in commodity markets
- currency, equity and commodity market linkages
- global business cycle linkages and the role of emerging markets
- oil price shocks and their transmission through the macroeconomy
- food price shocks and their pass through to the macroeconomy and poverty implications
- policy responses to relative price movements
- the macroeconomics of sovereign wealth funds.

COVID-19 and the macroeconomy

Directors	Renée Fry-McKibbin and Joaquin Vespignani
Research Associates	See complete list under **Staff and Associates - Research Associates**

The 2020 outbreak of COVID-19 was a truly global shock, unlike any seen before. The public health policies implemented to contain the virus have significantly disrupted the

global economy through both supply and demand channels, and have substantially affected global financial markets. Governments, central banks, and international financial organisations such as the IMF and the World Bank have stepped up to support the economy with fiscal and monetary stimulus, plus a substantial increase in the government debt burden. However, the unfolding of COVID-19 is greatly uncertain. Health and hence economic outcomes appear to be vastly different across countries and even within states within countries. What is certain is that the global economy has fundamentally changed.

The program aims to understand the global and country-specific financial market and macroeconomic impacts of the COVID-19 pandemic. The program will provide a forum to explore the new financial market and economic linkages between countries and the potential mechanisms of recovery from the crisis. The aim is to inform policymakers in both emerging and developed economies and to enhance academic research as the world seeks to recover from this crisis.

The program focusses on:

- The global macroeconomics consequences of the pandemic
- New channels of transmission of the international financial market and economic shocks
- Fiscal policy responses to the pandemic
- Conventional and unconventional monetary policy responses to the pandemic
- The interaction between fiscal and monetary policy in mitigating the effects of the pandemic
- Commodity prices and the coronavirus pandemic
- The COVID-19 and income and intergenerational inequality
- Macroeconomic effects of changes in agents' behaviour and modes of interaction
- Short-term and long-term impacts on the labour market

Finance and the macroeconomy

Directors	Matthew Greenwood-Nimmo and Renée Fry-McKibbin
Research Associates	See complete list under **Staff and Associates - Research Associates**

Financial market developments impact directly and indirectly on real economy outcomes, particularly in the short term, and developments in the macroeconomy affect financial markets, systems and institutions. This program brings together work on financial interactions with an assessment of the impact of markets and institutions on the economy and implications for policy. It includes assessment of broader trends in the macroeconomy and finance. Areas of investigation include:

- the role of international financial markets in transmitting shocks between economies, including during periods of financial stress
- regional and global financial cooperation and architecture, with a particular focus on East Asia
- financial markets, institutions and systems, including the integration of financial markets, electronic finance, harmonisation of financial systems and the nexus between finance and economic growth and development
- policy dialogue and the interaction between policy decisions, such as fiscal and monetary policy and structural policies, and financial development, including a focus on East Asia.

Globalisation and trade

Directors	Martin H Davies and David Vines
Research Associates	See complete list under **Staff and Associates - Research Associates**

The linkages between countries are influenced by their macroeconomic policies. These policies can be conducted so as to reduce risks and increase the likelihood of good outcomes.

The objective of this program is to undertake research into the design of policies in three areas. The first of these is the overall framework of macroeconomic policy, including the extent to which policy can influence exchange rates in a world of a high degree of capital mobility, and the integration of fiscal and monetary policy in the management of the economy. The second is the extent to which the financial system can be regulated so as to minimise the risk of currency and financial crises and to lessen the costs of such crises as occur. The third is the way in which the liberalisation of international trade can be managed so as to avoid the growth of preferential discrimination between countries and the growth of discriminatory trading blocs.

Research in this program will also be conducted into the connection between these areas: the extent to which trade liberalisation strategies demand a change to exchange rate strategies and the extent to which the need to minimise the risks of financial crises has implications for exchange rate strategies.

Growth, demographics and productivity

Directors	Bruce Chapman and Creina Day
Research Associates	See complete list under **Staff and Associates - Research Associates**

The growth, demographics and productivity program promotes understanding of the economic growth processes for developing and developed countries. Growth in per capita output comprises growth in "three P's", productivity, participation and population, which provide the following key areas of focus:

How do research and development (R&D) and investment in human capital sustain economic growth in OECD countries? Can policies enhance long run growth prospects? What lessons and evidence relevant to developing countries does the experience of OECD countries provide? What role do institutions play in facilitating innovation and education-led growth? What are potential drags on economic growth in the form of demographic change, finite resources, trade and macroeconomic policies?

How do we understand changes in patterns and determinants of labour input? How do gender wage gaps, retiring cohorts, and immigration affect labour markets? What role does education play in labour productivity? Can we identify policies to promote labour force participation and productivity?

The world's population doubled twice in the twentieth century, but is not expected to double once this century. What are the economic determinants and consequences of changes in fertility, life expectancy and demographic structure? Are these changes inevitable? How does demographic change benefit economies? What are the challenges facing ageing economies? What policies reconcile demographic change with productivity growth and employment?

Macroeconomic policy frameworks

Directors	Ippei Fujiwara and Toshitaka Sekine
Research Associates	See complete list under **Staff and Associates - Research Associates**

Considerable progress has been made over the past 20 years in developing robust monetary and fiscal policy frameworks. For many countries, these have been aimed at maintaining low and stable inflation over the medium term, and public debt sustainability over the medium to long term. Associated implications and areas of importance have been less well developed.

This program brings together analytical and policy researchers interested in evaluating and advancing work in areas such as:

- the implications of medium-term fiscal and monetary policy frameworks for: the volatilities of output, interest rates and exchange rates; short-run stabilisation policies; intergenerational balance; financial stability; and external stability
- the role of governance procedures and associated institutional frameworks in sustaining the credibility of fiscal and monetary policy frameworks, including the

relative roles for policy coordination and operational independence, and the role of enforcement rules in fiscal policy frameworks

- macroeconomic policy frameworks for sustainable growth and employment and
- appropriate policy frameworks for common currency regimes.

Macroeconomic theory

Directors	Bruce Preston
Research Associates	See complete list under **Staff and Associates - Research Associates**

This program brings together various research agendas in the area of theoretical macroeconomics. The emphasis is on (i) the construction of macroeconomic models that have specific decision-theoretic foundations and equilibrium concepts; and/or (ii) the use of such models to understand observed economic phenomena, analyse policy regimes and other institutional features; and/or (iii) research that refines and expands the set of tools for undertaking research in (i) and (ii).

Research in this area includes equilibrium business cycle theories, growth theory, recursive policy games, recursive contract theory, dynamic public finance, international macroeconomics, expectations modelling and learning, sunspots and multiple equilibria in general equilibrium, search theoretic foundations of labour markets and monetary theory, and dynamic political economics.

The program's activities include:

- the annual Australasian Workshop in Macroeconomic Dynamics (WMD)
- Macroeconomics Study Group
- occasional advanced workshops and courses featuring experts in the relevant field.

Micro-heterogeneity and macroeconomic performance

Directors	Dan Andrews and Gianna La Cava
Research Associates	See complete list under **Staff and Associates - Research Associates**

The widespread heterogeneity in firms and households is crucial for understanding the propagation of macroeconomic shocks as well as the secular rise in inequality and the wage and productivity slowdowns. This program will aim to better understand micro-heterogeneity in an Australian context, using cutting-edge datasets on firms and households, as well as state-of-the-art econometric methods, with a view to building stronger micro-foundations for the Australian growth narrative.

This program focuses on:

- Generating key stylised facts on firm-level and worker-level heterogeneity in the Australian economy;
- Exploring the micro-drivers of Australia's pre-pandemic productivity slowdown, with a focus on the role of technology, resource reallocation and net entry;
- Understanding the role of firm and worker level heterogeneity in the propagation of the COVID-19 shock onto the macroeconomy and the post-pandemic recovery;
- Studying the links between the heterogeneity in household finances and the sensitivity of the aggregate economy to various shocks.

Model uncertainty and macro-econometrics

Directors	James Morley and Benjamin Wong
Research Associates	See complete list under **Staff and Associates - Research Associates**

This program focuses on the role of model uncertainty in empirical macroeconomics. This literature treats the 'true' model as an unobservable - an admission that has implications for many areas of macroeconomic analysis and has generated two distinct research sub-programs. One represents a renewed interest in model evaluation, comparison, selection and combinations when model misspecification is explicitly recognised. A second sub-program is based on accounting for model uncertainty explicitly in constructing predictive densities for objects of economic interest, conducting statistical inference and evaluating policies.

Multi-country models and methods

Directors	Ippei Fujiwara and Warwick McKibbin
Research Associates	See complete list under **Staff and Associates - Research Associates**

Countries are linked through trade flows and asset markets. The modelling of these interactions has been undertaken in large-scale model such as: computable general equilibrium models (for trade); large-scale macro-econometric models (aggregated trade and capital flows); and intertemporal general equilibrium models (trade detail and asset flows). There is also an emerging literature of smaller theoretical simulation models particularly of real business cycle and new Keynesian theories which attempt to understand global interdependence better. This program will bring together researchers interested in the linkages between countries and how these linkages impact on our understanding of economic outcomes in small open and large open economies.

Open economy macroeconomics

Directors	Martin Berka and Christoph Thoenissen
Research Advisor	Michael B Devereux, Charles Engel, and Maurice Obstfeld
Research Associates	See complete list under **Staff and Associates - Research Associates**

The objective of the Open Economy Macroeconomics (OEM) program is to further the development and testing of optimization-based OEM frameworks. The main focuses of interest of the program are:

- international transmission mechanisms in OEM frameworks
- international relative prices and the international transmission of shocks
- cooperation and monetary and fiscal stabilisation policies in OEM frameworks.

CAMA RBA Shadow Board

On the first Tuesday of every month (except in January) the Board of the Reserve Bank of Australia (RBA) meets to decide on a target for the cash rate. This decision is highly significant for the wider economy and is therefore closely monitored by the financial markets.

The CAMA RBA Shadow Board consists of nine voting members and one non-voting chair, all distinguished macroeconomists, who offer their own policy recommendations one day before the official RBA decision.

A novel feature of the CAMA RBA Shadow Board is the requirement that members offer their policy recommendations probabilistically. When a central bank sets the preferred target cash rate, the decision necessarily constitutes a compromise, a careful balancing and weighting of all salient upside and downside risks. The imprecision stems from the uncertainties associated with real-time measurements, latent variables, model type, model parameters and the inherently unpredictable nature of the macroeconomy. Whatever rate the central bank sets, there is a considerable probability that a different rate would be more appropriate.

Nevertheless, most central banks provide little quantifiable information on the uncertainty confronting policymakers. Conventional central bank communication of interest rate setting does not formalise risk considerations and the probability of extreme events. The probability that the interest rate should be substantially different from the 'most preferred' target rate receives little attention. Central banks currently record formally neither the uncertainty experienced by individual board members, nor by the board as a whole.

Each member of the CAMA RBA Shadow Board records the uncertainty by giving probabilistic assessments of the appropriate (target) interest rate for each round. The

higher the percentage attached to a given interest rate, the more confident the member is that this rate is the appropriate target.

The aim of the CAMA RBA Shadow Board is to:

1. foster a lively and informed debate in the community about each interest rate decision and about macroeconomics more generally
2. show how individual policymakers can quantify the uncertainty surrounding a preferred target cash rate and how these uncertainties may be aggregated to provide a probabilistic collective view
3. generate data on probabilistic monetary policy decision-making that may be used in future research.

It is important to note that this project is not aimed at predicting RBA Board behaviour. In common with shadowing exercises in other countries (e.g. the US Shadow Open Market Committee), this is a normative exercise in stating the most suitable interest rate for current and expected economic conditions, not forecasting what the RBA will actually do.

The CAMA RBA Shadow Board (initially going by the name of PRO-POL) was conceived in August 2011 by Dr Timo Henckel, Professor Shaun Vahey, and Dr Elizabeth Wakerly, all of CAMA. Until June 2013 the logistics were handled by Mr Damien Hughes and Dr Elizabeth Wakerly.

Current members

Sally M Auld is Chief Investment Officer at JBWere. Sally completed her Bachelor and Master degree in economics at Sydney University with First Class Honours and the University Medal. Sally went on to complete a Doctor of Philosophy in economics at Oxford University. She is currently Deputy Chair of the Council of The Women's College, within the University of Sydney, and sits on the Board of Equality Australia. Auld joined J.P. Morgan in September 2008 as head of fixed income and FX strategy for Australia and New Zealand. She was responsible for views on the Antipodean economic and policy outlook as well as strategic and tactical trade recommendations in Antipodean interest rate and FX markets. Previously, Auld was co-head of economics and interest rate research at ANZ and commenced her career as an interest rate strategist at Credit Suisse.

Renée Fry-McKibbin is a Professor of Economics in the Crawford School of Public Policy. She is the Co-Director of the Finance and Macroeconomy Program and the Commodities and the Macroeconomy within CAMA, and a research associate of the Research Project in Forecasting at George Washington University, the National Centre for Econometric Research (NCER) and the Norwegian Centre for Macroeconomic and Petroleum Analysis (CAMP). Renée was Associate Dean Research of the College of Asia & the Pacific at ANU from 2014 to May 2018. In 2012 she was appointed to the advisory board of the Australian Defence College (ADC). She is an associate editor for the *Journal of Banking and Finance* and *Finance Research Letters*, as well as a co-editor of the *Economic Record*. She has been a visiting scholar or consultant to the European Central Bank, the Federal Reserve Bank of Atlanta, the International Monetary Fund, the Bank of England, the Department of Prime Minister and Cabinet, the Federal Treasury, AUSAID, the New Zealand Treasury and the Reserve Bank of New Zealand.

Timo Henckel (non-voting chair) is a Senior Lecturer in the Research School of Economics at ANU College of Business and Economics. He is also a CAMA Research Fellow and director of CAMA's "Behavioural Macroeconomics and Complexity" research program. His research spans the fields of behavioural economics, monetary economics, international macroeconomics, and experimental economics, with a particular focus on financial crises, bubbles and central bank policy. He appears frequently in the media and has written numerous policy briefs. Dr Henckel holds a PhD from the London School of Economics.

Sarah Hunter joined Oxford Economics in June 2010 as a member of the macroeconomics team. She currently leads the macroeconomics team within BIS Oxford Economics, and is responsible for the Australia Macro Service, our flagship economics subscription service which provides clients with forecasts and analysis of Australia's economy at the macro, industry and state level. As part of this service, Sarah takes a leading role in presenting the Australian and global outlook to clients in the region, and she is a regular commentator in the national press. Sarah is also responsible for the Asia-Pacific macro consulting team, who provide clients across the region with tailored macroeconomic analysis. During her time at Oxford Economics she has worked on a number of projects including estimating and forecasting household income by income band, enhancing and expanding the company's modelling of the energy sector, developing methodologies for financial institution stress testing scenarios, and developing quantitative models and analysis for due diligence reports for infrastructure asset transactions. Sarah

has a degree in economics from the University of Cambridge and an MSc in Economics from the London School of Economics, which she passed with distinction. Prior to joining Oxford Economics she completed her PhD in Economics at the University of Oxford, where her thesis modelled the impact of World War I on Britain's position in the global economy.

Mariano Kulish received his PhD in economics from Boston College in 2005. His research interests include macroeconomics, monetary economics and applied econometrics with a focus on understanding the behaviour of economies undergoing structural changes. Mariano has developed new techniques to solve and estimate rational expectations models with structural changes and has applied them to policy-relevant settings, such as the recent period of monetary policy with zero interest rates, disinflation policies, and the impact of commodity price fluctuations in Australia. Mariano has published in international economics journals such as the *Review of Economics and Statistics*, the *Journal of Monetary Economics*, the *Journal of International Economics*, the *Journal of Applied Econometrics*, the *Journal of Economic Dynamics and Control*, and the *European Economic Review*.

Guay Lim is a Professorial Research Fellow at the Melbourne Institute of Applied Economics and Social Research and an Adjunct Professor at the Department of Economics, University of Melbourne. Her research interests are in quantitative macroeconomics and macroeconometrics and her papers have been published in major international journals. She has held visiting research positions at the IMF, ECB, RBNZ, Osaka University, Brown University, Georgetown University and Fordham University. Guay is also the head of the Macroeconomics Unit at the Melbourne Institute and they publish indicators of activity about the Australian economy on a regular basis.

Warwick McKibbin is a professor and has a Chair in Public Policy in the ANU Centre for Applied Macroeconomic Analysis (CAMA) at Crawford School of Public Policy at The Australian National University (ANU). He is also an ANU Public Policy Fellow; a Fellow of the Australian Academy of Social Sciences; a Distinguished Fellow of the Asia and Pacific Policy Society; a non-resident Senior Fellow at the Brookings Institution in Washington D.C (where he is Co-Director of the Climate and Energy Economics Project) and President of McKibbin Software Group Inc. Professor McKibbin was the founding Director of the ANU Centre for Applied Macroeconomic Analysis and

founding Director of the ANU Research School of Economics. He was also a Professorial Fellow at the Lowy Institute for International Policy for a decade from 2003 where he was involved in its design and development. Professor McKibbin served for a decade on the Board of the Reserve Bank of Australia (the Australian equivalent of the Board of Governors of the US Federal Reserve) until July 2011. He has also served as a member of the Australian Prime Minister's Science, Engineering and Innovation Council, and on the Australian Prime Minister's Taskforce on Uranium Mining Processing and Nuclear Energy in Australia.

James Morley is a Professor of Macroeconomics at the University of Sydney. He received his PhD from the University of Washington in 1999 and was previously at Washington University in St. Louis and the University of New South Wales, most recently as Associate Dean (Research) of the UNSW Business School from 2014-2017. He is an Academic Fellow of the Reserve Bank of New Zealand and has been a visiting scholar at various policy institutions worldwide, including the Bank of Canada, Bank Negara Malaysia, and the Bank for International Settlements. He is a former President of the Society for Nonlinear Dynamics and Econometrics and is currently Co-Editor of the Economic Society of Australia's journal *The Economic Record*. His research focuses on the empirical analysis of business cycles, stabilisation policy, and sources of persistent changes in macroeconomic and financial conditions.

John Romalis studies international economics and macroeconomics. Romalis has published well-known papers on the determinants of international trade, and on the economic effects of tax and trade policy in journals such as the *American Economic Review*, the *Quarterly Journal of Economics*, the *Review of Economics and Statistics*, and the *Journal of the European Economic Association*. Romalis has three main current lines of research. He studies the trade and welfare implications of tariff reductions since the Uruguay Round of trade negotiations. A second line of research studies the causes of the collapse of international trade during the recent global recession. Finally, Romalis studies how firms engaged in international competition determine the quality and price of their products.

After completing degrees in economics and in law, Romalis worked negotiating contracts governing swaps and other derivatives for a commercial bank, and then moved to the economics research department in Australia's central bank. After completing his PhD in economics at the Massachusetts Institute of Technology, he joined the University of Chicago Booth faculty in 2001. John Romalis has also served as a Resident Scholar for the International Monetary Fund, has been a Faculty Research Fellow for the National

Bureau of Economic Research, and had appointments at Princeton University and The Australian National University. In 2013 John Romalis moved to The University of Sydney where he was appointed the Sir Hermann Black Chair of Economics.

Jeffrey Sheen is a Professor of Economics at Macquarie University. He has been on the faculty of the Universities of Manchester, Essex and Sydney, and has had a visiting appointment at the Reserve Bank of Australia. He has published his research in major international journals, and his interests span international economics, macroeconomics, labour and international finance. He obtained his PhD at the London School of Economics.

Past members

Paul Bloxham (member from August 2011-December 2020) is Chief Economist for HSBC in Australia and New Zealand. Prior to joining HSBC, Paul Bloxham was an economist within the Reserve Bank of Australia's Economic Analysis Department where he headed up the overseas economies and financial conditions sections, as well as working on domestic forecasting and prices. Bloxham has published a number of papers, including on household finances, asset prices and monetary policy. He is also a regular commentator on local and international business television and a frequent contributor of opinion editorials to the Australian newspapers. He holds a Master degree in public financial policy from the London School of Economics.

Mark Crosby (member from August 2011-December 2019) is Dean of the Global Master of Business Administration (GMBA) and interim Dean of the Global Bachelors of Business Administration (GBBA) effective 17 October 2011. Dr Crosby has held academic appointments at the University of Toronto, the University of New South Wales, and the University of Melbourne, where he was most recently the Associate Dean (International) at the Melbourne Business School. Dr Crosby has co-authored a widely-used textbook on macroeconomics, and publishes regularly in academic journals, contributes articles to the media, and has written a number of book chapters. Besides his university activities, Dr Crosby has worked or consulted widely for government and private enterprises including the World Bank, the Hong Kong Institute for Monetary Research, the Monetary Authority of Singapore, the South African Treasury, the Center for Strategic and Policy Studies in Brunei, the Commonwealth Bank of Australia, the Reserve Bank of New

Zealand, and BHP Billiton. Most recently he completed a project on South Africa's current account deficit and a project on diversifying Brunei's economy. He is a frequent guest on ABC TV and writes regularly for Australian newspapers.

Mardi Dungey (Member from August 2011-December 2018) was Professor of Economics and Finance at the University of Tasmania, a Senior Research Associate at the Centre for Financial Analysis and Policy at the University of Cambridge and Adjunct Professor at the Centre for Applied Macroeconomic Policy at The Australian National University. Mardi moved to the University of Tasmania in October 2008, from a position as the Deputy Director of the Centre for Financial Analysis and Policy at the University of Cambridge. Prior to that she has held academic positions at The Australian National University and La Trobe University. She also worked at Econtech Consulting Group and the Reserve Bank of Australia, and held visiting positions at the IMF, University of Cambridge, Princeton University, the Federal Reserve Bank of Atlanta and Australian and New Zealand Treasuries. She spoke regularly to international forums on her research and held a number of competitive grants. Mardi was a co-editor of the *Economic Record* and an Associate Editor of the *Journal of Applied Econometrics*, the *Journal of Asian Economics*, and the *Journal of Banking and Finance*.

Saul Eslake (Member from August 2011-June 2014) has been Chief Economist at Bank of America Merrill Lynch Australia since December 2011. He was previously a Program Director with the Grattan Institute (a non-aligned think tank affiliated with Melbourne University) and, between 1995 and 2009, Chief Economist at ANZ Bank. He is also a non-executive Director of Hydro Tasmania, and a member of the National Housing Supply Council and the Australian Statistics Advisory Council.

Bob Gregory (Member from August 2011-May 2018) Professor Gregory has held positions at the University of Melbourne, London School of Economics, Australian National University, Industries Assistance Commission, Northwestern University, and visiting positions at Harvard University, the University of Chicago and University College London.

He has been closely involved in the analysis and development of Australian economic policy; a member of the Board of Management at the Australian Institute of Family Studies, principal consultant in a series of government Aged Care Reviews, member of the committee that recommended the introduction of student income contingent loans, member of the Board of the Reserve Bank of Australia and the

Australian Sciences and Technology Council. Professor Gregory has been awarded the Order of Australia Medal and has an honorary doctorate from the University of Melbourne.

Mark Thirlwell (Member from August 2011-September 2013) is Director of International Economy Program and Fellow of G20 Studies Centre. Mark has been tracking global economic trends since he joined the Bank of England's International Divisions in 1990 where he worked as part of the Whitehall Economists Subgroup, coordinating the forecasting of major emerging markets across the Bank, Treasury, the FCO and other stakeholders. Mark subsequently joined J P Morgan as a Vice President in Economic Research with responsibility for Central Europe. Before joining Lowy, he served as Senior Economist at Australia's Export Finance and Insurance Corporation, working on sovereign risk with a particular focus on East Asia.

Shaun Vahey (Member from August 2011-May 2013) is Professor at Warwick University and a Research Associate at CAMA (ANU) in the Model Uncertainty and Macro-Econometrics program. His current research interests include: empirical macro, time series econometrics with macro and financial variables, and some data science. He is a regular co-organiser of the Real-time Economics Conference which runs annually (usually) at FRB Philadelphia and other central banks since 2001. Shaun's previous employers include Cambridge University (Christ's College), Melbourne University, the Reserve Bank of New Zealand, Norges Bank and the Bank of England. His research has been published in academic journals including the *American Economic Review*, the *Journal of Business and Economic Statistics*, the *Journal of Applied Econometrics* and the *Economic Journal*. Shaun has previously acted as a consultant with The Money Cloud, The Coefficiency Lab, the ACCC, Citadel Group, Rio Tinto, Norges Bank and RBNZ.

Shaun Vahey was a voting member from August-December 2011 and the inaugural chair until May 2013.

Publications

The CAMA Working Paper Series covers a broad range of topics in one of the thirteen areas of CAMA research. The working papers are available online and through RePec (Research Papers in Economics) and SSRN (Social Science Research Network).

CAMA Working Paper Series

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CAMA published six newsletters in 2021. The newsletter is developed through the contribution of the CAMA members and it includes among other information about new members, projects, awards, publications, interviews, and events. Online copies of the newsletters can be found at the CAMA website (https://cama.crawford.anu.edu.au/cama-publications/newsletter).

Other publications

Many CAMA working papers are published in major international journals or edited books. Publications in journals written by the CAMA research associates in 2021 include:

Behavioural Macroeconomics and Complexity program

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Book and book chapter

Commodities and the Macroeconomy program

• **Koh WC** (2021).' Natural resources and economic development'. In S. Tsani and I. Overland (eds.) *Handbook of Sustainable Politics and Economics of Natural Resources*. United Kingdom: Edward Elgar Publishing, 15-29.

COVID-19 and the Macroeconomy program

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Finance and the Macroeconomy program

• **Kavuri AS** and Milne A (2021), 'How technology is supporting working capital finance', in *Palgrave MacMillan Handbook of Technological Finance* edited by Raghavendra (Raghu) Rau, Robert Wardrop, Luigi Zingales. Palgrave Macmillan UK.

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Growth, Demographics and Productivity program

• **Leigh A** (2021) What's the worst that could happen? Existential risk and extreme politics, *MIT Press.*

Media

In 2021, the CAMA affiliates contributed to the public debate by participating in interviews with media including the *Australian Financial Review*, *The Australian, The Business*, and others.

Some articles published in 2021 include:

- Warwick McKibbin, Loans plan for virus-hit businesses, *The Australian*, 3 February
- Warwick McKibbin, Australia must have a new macroeconomic framework, *The Australian Financial Review*, 3 February
- Ferrara L, Will Joe Biden's stimulus plan cause the US economy to overheat?, *The Conversation*, 11 March
- Peter Downes, Renée Fry-McKibbin and Warwick McKibbin, Time to end the sex discrimination in JobMaker, *Australian Financial Review*, 29 March
- Peter Downes, Renée Fry-McKibbin and Warwick McKibbin, The sucessor to JobKeeper can't do its job. There's an urgent need for JobMaker II, *The Conversation*, 7 April
- Sherrill Shaffer and other, What first-time credit card users need to know, *The Montley Fool*, 13 April
- Kamiar Mohaddes, How do businesses deal with uncertainty effectively? *The Mastering Entrepreneurship Blog*, 13 April 2021
- Warwick McKibbin, Australia risks being left behind on climate; McKibbin, *The Australian Financial Review*, 19 April
- Warwick McKibbin, Afternoon Briefing – Patricia Karvelas discusses the top stories with Warwick McKibbin and others, *ABC iview*, 20 April
- Timo Henckel, Little demand for loans outside of housing, *7 News*, 31 May
- Warwick McKibbin, Climate could clip 1.75pc off economy by 2060, *The Australian Financial Review*, 30 June 2021
- Warwick McKibbin, Planet races towards climate tipping point, *The Australian Financial Review*, 9 August 2021
- Warwick McKibbin, A future-focused review must question Reserve Bank's inflation target, *The Australian Financial Review*, 19 September 2021
- Warwick McKibbin, Pressure to review Reserve Bank's inflation target as OECD warns of post-COVID climate change shock - Monday Finance with Peter Ryan, *RN Breakfast with Fran Kelly*, 20 September 2021
- James Graham, Wage subsidy was essential to save jobs during lockdowns, *Stuff*, 23 September 2021
- Frank Jotzo and Warwick McKibbin, Australia can no longer afford to kick carbon adjustment down the road, *The Australian Financial Review*, 25 October 2021

- Hans Fehr and George Kudrna, Homeownership and wealth – The role of tax and pension policies, *Austaxpolicy: Tax and Transfer Policy Blog*, 29 October 2021
- Kamiar Mohaddes, Matt Burke, Mattew Agarwala and Patrycja Klusak, Climate finance: it'll be cheaper in the long run if poorer countries receive it as a matter of urgency, *The Conversation*, 6 November 2021

CAMA published on Twitter (@CAMacroAnalysis) and contributed to the *APPS Policy Forum*. The *Policy Forum* is a public policy website devoted to Asia and the Pacific. It is located at Crawford School of Public Policy. Articles published by CAMA on APPS in 2021 include:

- McKibbin W, Australia must have a new macroeconomic framework, 4 February 2021
- Kenny M, McKibbin W, Sullivan H, Democracy Sausage: Climate, the coronavirus, and the cost of uncertainty, 9 February 2021
- Downes P, Fry-McKibbin R, McKibbin W, Replace JobKeeper with a better fairer JobMaker, 31 March 2021
- McKibbin W, A future-focused review must question Reserve Bank's inflation target, 20 September 2021
- Jotzo F and McKibbin W, Australia can no longer afford to kick carbon adjustment down the road, 25 October 2021

Other articles published by *APPS Policy Forum* can be found at http://www.policyforum.net/

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Events

CAMA actively promotes events such as workshops and conferences in Australia and internationally through sponsorship, organisation, and advertising. CAMA is a representative on the NBER East Asian Seminar in Economics (EASE) and the National Economic Research Organizations (NERO) network sponsored by the Organisation for Economic Cooperation and Development (OECD) in Paris.

In 2021, the webinars presented by CAMA were recorded. These podcasts can be found at https://cama.crawford.anu.edu.au/news-events/podcasts/video

Conferences and workshops

8th annual workshop on the global economy
23 to 24 February 2021
Online
Various speakers

Policy Dialogue – Mature workers in organisations: Emerging policy issues for a productive future
10 June 2021
Online and in person at ANU
Various speakers

Other conferences and workshops

19-20 March 2021 – 2021 Australian Leadership Retreat – Forging our future – the next steps. Speaker – Warwick

28 April 2021 – Central Banking in Challenging Times, Sri Lanka (Online) – Speaker: Warwick McKibbin

3 June 2021 – Universities Higher Education Conference – Attendance: Warwick McKibbin

29 July 2021 – Australian Bureau of Statistics Conference - 2021 ABS Input Output User Group workshop (online). 'Global Macroeconomic Scenarios of the COVID-19 Pandemic'- Speaker: Warwick McKibbin

13 August 2021 – Macroeconomic consequences of COVID-19, climate change and antimicrobial resistance, ANU – Speaker: Roshen Fernando

7 September 2021 – Fiscal Policies for Climate Change and Green Recovery, IMF Conference, Singapore (online) – Speaker: Warwick McKibbin

29 September 2021 – ECB Sintra Forum Presentation, Sintra Portugual (online) – Speaker: Warwick McKibbin

1 December 2021 – 10th Annual International Forum on Economic Development and Public Policy – Speaker: Warwick McKibbin

7 December 2021 – <u>Fiduciary Investors Symposium</u> – Speaker: Warwick McKibbin.

CAMA global webinars

A medley of modelling and policy insights on COVID-19 by Quentin Grafton

Date: 18 February 2021

Speaker: Quentin Grafton, Australian National University

The presentation reviews some of the key findings and policy insights from the presenter's co-authored papers in relation to COVID-19. Key findings are provided in relation to: (1) estimated cross-country true (population) infection rate; (2) possible national economic costs with different stringencies of mandated social distancing; (3) possible pay-offs with 'go early, go hard' (and of sufficient duration) 'lockdowns'; and (4) a public health and economic evaluation of the 'Swedish Model'.

Macroeconomic research, present and past by Kenneth Kuttner

Date: 28 April 2021

Speaker: Kenneth N. Kuttner, Williams College

What is the state of macroeconomics? We explore this question by hand-collecting information on the epistemological approaches, theoretical and empirical methods and data sources used in macro research for 1,894 published papers. We found that over the past 40 years there has been a growing emphasis on increasingly sophisticated quantitative theory, such as Dynamic Stochastic General Equilibrium (DSGEs). Papers employing these methods account for the majority of articles in macro journals. The shift towards quantitative theory is mirrored by a decline in the use of econometric methods to test economic hypotheses. Microeconometric techniques have displaced time series methods, and empirical papers increasingly rely on micro and proprietary data sources. Market imperfections are pervasive, and the amount of research involving financial frictions has increased significantly in the past 10 years. The frequency with which non-macro Journal of Economic Literature (JEL) codes appear in macro articles indicates a great deal of overlap between macroeconomics and other fields.

IMF World Economic Outlook – Managing divergent recoveries

Date: 24 June 2021

Speaker: Malhar Nabar, IMF, and John Bluedorn, IMF

Malhar Nabar and John Bluedorn will walk us through the latest findings from the World Economic Outlook produced by the International Monetary Fund. Malhar Nadar will

provide an overview of global economic prospects in uncertain times, and will be followed by John Bluedorn, who will overview their work on Recessions and Recoveries in Labor Markets: Patterns, Policies, and Responses to the COVID-19 Shock.

COVID-19, productivity and reallocation: Hibernation or zombification?

Date: 25 August 2021
Speaker: Dan Andrews, OECD

The consequences of the pandemic for potential output will partly hinge on its impact on productivity-enhancing reallocation – the rate at which labour is reallocated from low to high productivity firms. While Schumpeter proposed that recessions can accelerate this "cleansing" process, downturns can also distort reallocation dynamics if financial constraints result in the premature shakeout of productive but financially fragile firms. The pandemic could provide a further twist on the cleansing hypothesis if job retention schemes distorted the reallocation process by delaying the restructuring of unproductive firms that would have otherwise contracted, thereby risking "zombification". But timely evidence on this issue is scarce. This seminar provides an overview of two recent OECD studies, which exploit novel real-time data sources to shed light on the impact of the pandemic on productivity-enhancing reallocation, including the role of job retention schemes in this process.

High vaccination coverage is required before public health measures can be relaxed and Australia's international border fully reopen

Date: 1 September 2021
Speaker: Quentin Grafton, ANU

In this seminar the author presents his model on possible eventual public health outcomes (cases, hospitalisations and fatalities) of Phase D, the Post Vaccination Phase (to live with COVID-19: management consistent with influenza or other infectious diseases) of the National Plan to transition Australia's National COVID-19 Response. He compares outcomes under alternative adult vaccination rates and with (and without) vaccinating children, having higher vaccination rate for older Australians, and using vaccination boosters. The author finds a large difference in hospitalisations between 70%, 80% and 90% vaccination rates and alternative vaccination strategies.

The COVID-19 shock and challenges for time series models

Date: 24 September 2021
Speaker: Elena Bobeica and Benny Hartwig, European Central Bank

The authors document the impact of COVID-19 on frequently employed time series models. They show that for both single equation models (Phillips curves) and Vector Autoregressions (VARs) estimated parameters change notably with the pandemic. In a VAR, allowing the errors to have a distribution with fatter tails than the Gaussian one equips the model to better deal with the COVID-19 shock. A standard Gaussian VAR can still be used for producing conditional forecasts when relevant off-model information is used. The authors illustrate this by conditioning on official projections for a set of variables, but also by tilting to expectations from the Survey of Professional Forecasters. For Phillips curves, averaging across many conditional forecasts in a thick modelling framework offers some hedge against parameter instability.

Monetary policy in the age of automation

Date: 26 October 2021
Speaker: Martin Wolf, University of St Gallen - Switzerland

The author provides a framework in which monetary policy affects firms' automation decisions (i.e. how intensively capital and labour are used in production). This new feature has far-reaching consequences for monetary policy. Monetary expansions can increase output by inducing firms to invest and automate more, while having little impact on inflation and employment. A protracted period of weak demand might translate into less investment and de-automation, rather than into deflation and involuntary unemployment. Running the economy hot, through expansionary monetary and fiscal policies, may have a positive long run impact on labour productivity and wages. Technological advances that increase the scope for automation may give rise to persistent unemployment, unless they are accompanied by expansionary macroeconomic policies.

Other webinars

15-16 April 2021, 'Mitigating Climate Change: Growth Friendly Strategies to Achieve net Zero Emissions by 2050'. PBC-IMF High-Level Online Seminar on Green Finance and Climate Policy, Speaker: Warwick McKibbin

12 May 2021, 'Global economic impacts of climate shocks, climate policy and changes in climate risk assessment'. Australian Treasury, Speaker: Warwick McKibbin

17-20 May 2021, International Society for Pharmacoeconomics and Outcomes, Speaker: Warwick McKibbin

4 June 2021, G-Cubed Model', IMF & Bank of Russia Webinar on Climate Risk in Macroeconomic Models, Speaker: Warwick McKibbin

14 June 2021, '[Climate change and monetary policy: issues for policy design and modelling](#)'. Climate Change, Macroeconomics and Finance Forum. Rome, Speaker: Warwick McKibbin

24 June 2021, '[Mitigating Climate Change: Growth-Friendly Policies to Achieve Net Zero Emissions by 2050](#)', Speaker: Warwick McKibbin

30 August 2021, 'Global Demographic Change and International Capital Flows: Theory and Empirics', CEPAR Cross Nodal Seminar Series, Speaker: Larry Liu

26 October 2021, '[Where to next for the Reserve Bank'](#), Speaker: Warwick McKibbin

16 November 2021, 'Mitigating Climate Change: Growth-Friendly Policies to Achieve Net Zero Emissions by 2050', DTF Economic Division's New Directions in Economic Policy series, Speaker: Warwick McKibbin.

ACDE seminars presented by CAMA speakers

Globalisation and the convergence of profitability

Date: 30 March 2021
Speaker: Yixiao Zhou

Globalisation is changing the pattern of competition within and across countries, with concentration and profitability rising in most countries. We examine the pattern of changes in average profitability over the 30 years from 1989 to 2018 and relate these changes to the changing dispersion of firm profitability both within and across countries. In regression analysis we find strong evidence of convergence of the average profitability of firms within individual countries towards the global mean for their industrial sector, although evidence suggests that the rate of convergence slowed in the second half of the sample period.

Substitutability between clean and dirty electricity generation under a clean transition

Date: 14 May 2021
Speaker: Tony Wiskich

The elasticity of substitution between wind and solar inputs and dirty inputs in electricity is estimated to be around 3 or 4 by fitting an aggregate production function to panel data. A high elasticity is consistent with detailed electricity models which also predict that the substitutability decreases as the share of clean inputs rises, as integrating intermittent

energy supply becomes increasingly difficult. A simple dispatch model of electricity generation demonstrates this characteristic. Decreasing substitutability implies higher costs of a clean transition, greater costs from regions transitioning sequentially rather than together, and a greater role for carbon taxes over research subsidies.

Macro uncertainties and tests of capital structure theories across renewable and non-renewable resource companies

Date: 28 May 2021
Speaker: Denny Irawan

Capital structure is one of the most important decision firms need to make in doing business. This study examines the role of macro (economic and non-economic) uncertainties in affecting firms financing behaviour. Three prominent capital structure theories are tested, (1) Trade-Off, (2) Pecking Order, and (3) Market Timing. The tests are conducted to resource firms data in four resource sectors: (1) alternative energy; (2) forestry and paper; (3) mining; and (4) oil and gas producers. The dataset comprises unbalanced panel data of 2,669 companies in 75 countries worldwide during the 1987-2017 period in annual frequency. The results suggest pecking order theory as the leading theory, with downward cyclical patterns of pecking order coefficients observed among the companies. Furthermore, macro uncertainties at the global and country-level are significant in explaining firms' financing behaviour, especially for firms in the non-renewable sector.

Public goods and group size

Date: 22 June 2021
Speaker: Larry Weifeng Liu

This paper examines the effects of group size on private provision of public goods, focusing on the role of public good aggregators through which individual public good contributions are aggregated. We propose a general aggregator that comprises existing aggregators of pure public goods, accommodates rivalrous public goods, and also includes several novel aggregators. Considering a wide range of aggregators we show that the effects of group size on public good provision heavily depend on aggregator structure. We also allow agent heterogeneity in incomes and preferences and demonstrate that the effects of heterogeneity on public good provision differ across aggregators. Methodologically, we employ the aggregative game approach (Cornes and Hartley 2007a, 2007b) to characterise equilibrium, which avoids dimension proliferation when group size increases.

International spillover effects of unconventional monetary policies of major central banks

Date: 10 August 2021
Speaker: Tatsuyoshi Okimoto

This study examines effects of unconventional monetary policies (UMPs) of the major central banks – the Bank of England (BOE), Bank of Japan (BOJ), European Central Bank (ECB), and the Federal Reserve (Fed) – on international financial markets, taking global spillovers and monetary policy interaction into account. A Global Vector Autoregressive (GVAR) model is applied for 35 countries and one region for the period March 2009–July 2019. The analysis considers possible structural changes in effects. We find clear evidence of monetary policy coordination after the global financial crisis and less evidence of policy interaction in the recent period. The results also suggest that the UMPs of the major central banks generally had stronger effects on both domestic and international bond markets in earlier years. In contrast, global equity markets responded more positively to the UMPs in more recent years. There is no noticeable difference in the responses of domestic equity markets throughout the sample.

Macroeconomic consequences of COVID-19, climate change and antimicrobial resistance

Date: 13 August 2021
Speaker: Roshen Fernando

Climate change, infectious diseases and antimicrobial resistance (AMR) are three complex challenges the world currently faces. My thesis focuses on modelling macroeconomic consequences of these challenges. The first section combines three studies conducted to evaluate macroeconomic consequences of infectious diseases, using COVID-19 as a case-study, and plausible policy responses to manage the pandemic and support economic recovery. The second section explores macroeconomic consequences of physical climate risks and particularly the responsiveness of financial markets to climate-related extreme events. The third section outlines several studies contributing to identify AMR risk factors, evaluate their contribution to AMR evolution and macroeconomic consequences of AMR escalation.

Mitigating climate change: Growth-friendly policies to achieve net zero emissions by 2050

Date: 24 August 2021
Speaker: Warwick McKibbin

The paper examines climate mitigation strategies to reach net-zero emissions by mid-century, focusing on smoothing macroeconomic costs in the short- to medium-term—the

horizon relevant for policymakers. It explores a comprehensive policy package, which complements carbon pricing with an initial green fiscal stimulus, consisting of green public investment and subsidies to renewables production. Model simulations show that thanks to the green public spending, the policy package boosts global output relative to the baseline for the first 15 years of the low-carbon transition. Subsequent transitional output costs resulting from further increases in carbon prices are moderate of the order of 1 percent of baseline global GDP by 2050. The findings suggest that upfront green fiscal packages could help smooth the transition to a low-carbon economy. In the current context of the COVID-19 economic crisis, they would help support the recovery from the crisis and put the global economy on a greener, more sustainable path.

Has R&D contributed to productivity in China? The role of basic, applied and experimental R&D activities in China

Date: 3 September 2021
Speaker: Sudyumna Dahal

This paper estimates the effect of three types of Research and Development (R&D) activities on Total Factor Productivity (TFP) across the Chinese provinces during 1998-2018. The paper uses novel data at the provincial level in China and applies the panel data cointegration and spatial regression approaches. The empirical results, robust to different specifications and control variables, show a significant positive effect of overall R&D stock on productivity. However, when disaggregated between basic, applied and experimental, the paper finds that the positive effect has emanated from experimental R&D stock. No significant results or negative results when significant are observed for basic R&D stock.

Asymmetric response of carbon emissions to recessions and expansions is explained by negative oil market shocks

Date: 21 September 2021
Speaker: David Stern

The 2020 COVID-19 driven recession saw a sharp drop in carbon dioxide emissions as transportation and some other energy uses were curtailed. This was an unusual recession – past recessions were driven primarily by changes in investment and central bank policies or oil price shocks, while this one was driven by a pandemic. Previous research showed that when GDP declines carbon emissions fall faster relative to GDP than they rise in economic booms. Using monthly US data, we examine each individual recession in the US since 1973 finding that there is an asymmetric response in the 1973–75, 1980, 1990, and 2020 recessions but not in the 1981–82, 2001, or 2007–09 recessions. The former four recessions are associated with negative oil market shocks. In the first three there was a supply shock and in 2020 a demand shock.

Measuring the global comovements of interest rates: Implications for monetary interdependence

Date: 5 October 2021
Speaker: Renee McKibbin

A general measure to identify the strength of global interest rate comovements is proposed based on entropy theory. The approach captures interest rate interdependence through traditional linear channels using second-order comoments and non-linear channels through the inclusion of higher-order comoments. Using monthly short-term shadow rates for Australia, Canada, Europe, Japan, New Zealand, Switzerland and the UK between January 1999 to May 2020, the empirical results show evidence of positive and significant interdependence with the US rate for most countries, with international rates becoming more independent during the post-GFC period as a result of changes in the strength of higher-order comoments. The empirical results also highlight the importance of using shadow rates to measure global interest rate comovements, especially during periods of unconventional monetary policy when interest rates operate at or near the lower bound.

The determinants of excess reserves in the banking system of Papua New Guinea

Date: 8 October 2021
Speaker: Thomas Wangi

This study examines why profit-maximising commercial banks in Papua New Guinea hold non-remunerated excess reserves. An Autoregressive Distributed Lag (ARDL) model is employed to estimate the demand for excess reserves using time series data for the period January 2002 to December 2017. The model includes precautionary and involuntary factors that influence excess reserves in commercial banks. The empirical results are analysed for both long-run and short-run situations. The results suggest that involuntary variables are the leading determinants of excess reserves in the banking system. For sensitivity purposes, the estimation results of the DOSL method confirm the long-run results of the main model.

Children matter: Global imbalances and the economics of demographic transition

Date: 15 October 2021
Speaker: Tsendsuren Batsuuri

This paper investigates the effect of child dependency on the economy and external imbalances under an asymmetric demographic transition and productivity shocks. It develops a two-country model with life-cycle features that explicitly models child

dependency. Simulations show that child dependency changes both the steady-state and the transition dynamics under a demographic shock. Specifically, the paper compares the effects of the same fertility, mortality, and productivity shocks across models with and without child dependency and finds that the child dependency changes the impact of fertility transition on external imbalances in the short to medium run. In contrast, child dependency changes the magnitude of the long-run effect. Furthermore, the model comparison shows that to start from the same interest rate in the steady-state, parameters that determine the steady-state equilibrium interest rate have to be chosen differently across models with and without child dependency. This affects the magnitude of the transition dynamics of different models. These findings illustrate the importance of incorporating child dependency in studies that intend to explain the historical contribution of demographic changes to external imbalances and approaching studies that use models without child dependency for this purpose with caution.

Resource dependence, commodity shock, and the role of exchange rate: an empirical study of Papua New Guinea

Date: 10 December 2021
Speaker: Rubayat Chowdhury

The role of exchange rate as a 'shock absorber' is often undermined in resource dependent developing countries when a negative commodity price shock hits the economy. Rather than pursuing a greater flexibility, the policymakers rely more on intervention strategies which further aggravates the balance of payment crisis by leading to a forex crisis. This paper presents an empirical study of Papua New Guinea which has been facing a severe shortage of foreign currency since 2013. It examines if a sudden depreciation shock to the exchange rate stimulates the overall trade balance while simultaneously evaluates its impact on inflation. Employing a structural vector autoregression model I find that the positive trade balance effect outweighs the negative inflationary effect. Further, I find external shocks as the major sources of real business cycles and a negative response of the non-resource economy to a positive resource shock.

Staff and Associates

Director

Professor Warwick McKibbin, AO is a Professor of Public Policy and Director of the Centre for Applied Macroeconomic Analysis (CAMA) in the Crawford School of Public Policy at the Australian National University (ANU). He is also an ANU Public Policy Fellow; a Fellow of the Australian Academy of Social Sciences; a Distinguished Fellow of the Asia and Pacific Policy Society; a non-resident Senior Fellow at the Brookings Institution in Washington D.C (where he is co-Director of the Climate and Energy Economics Project) and President of McKibbin Software Group Inc. Professor McKibbin was foundation Director of the ANU Centre for Applied Macroeconomic Analysis and foundation Director of the ANU Research School of Economics. He was also a Professorial Fellow at the Lowy Institute for International Policy for a decade from 2003 where he was involved in its design and development. Professor McKibbin served for a decade on the Board of the Reserve Bank of Australia (the Australian equivalent of the Board of Governors of the US Federal Reserve) until July 2011. He has also served as a member of the Australian Prime Minister's Science, Engineering and Innovation Council, and on the Australian Prime Minister's Taskforce on Uranium Mining Processing and Nuclear Energy in Australia.

Prof McKibbin received his B.Com (Honours 1) and University Medal from University of NSW (1980) and his AM (1984) and a PhD (1986) from Harvard University. He was awarded the Centenary medal in 2003 "For Service to Australian Society through Economic Policy and Tertiary Education" and made an Officer of the Order of Australia in 2016.

Professor McKibbin is internationally renowned for his contributions to global economic modeling. Professor McKibbin has published more than 200 academic papers as well as being a regular commentator in the popular press. He has authored/ edited 5 books including "Climate Change Policy after Kyoto: A Blueprint for a Realistic Approach" with Professor Peter Wilcoxen of Syracuse University. He has been a consultant for many international agencies and a range of governments on issues of macroeconomic policy, international trade and finance, greenhouse policy issues, global demographic change and the economic cost of pandemics.

Deputy Director

Ippei Fujiwara is Professor of Macroeconomics at Crawford School of Public Policy, associate editor of *Japan and the World Economy*, research associate at the Globalization and Monetary Policy Institute, Federal Reserve Bank of Dallas, co-director for Australia-Japan Research Centre, and the deputy director at the Centre for Applied Macroeconomic Analysis (CAMA). He completed his DPhil in economics at the University of Oxford (Nuffield), and a PhD in Applied Economics at Osaka University. Professor Fujiwara worked for the Bank of Japan for 18 years before joining Crawford School of Public Policy where his research has focused on international finance, monetary economics and macroeconomics. His recent publications are in *Journal of Applied Econometrics*, *Journal of Monetary Economics*, *Journal of International Money and Finance*, *Journal of Money Credit and Banking*, *Journal of Economic Dynamics* and *Control and Macroeconomic Dynamics*.

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Tsendsuren Batsuuri

Rubayat Chowdhury

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Denny Irawan

Thuong Nugyen

Lin Qi

Kai-Yun Tsai

Thomas Wangi

Timothy Watson

David Winter

Daniel Silva Withmory

Program directors

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Bruce Preston	University of Melbourne	Macroeconomic Theory program
Toshitaka Sekine	Hitotsubashi University	Macroeconomic Policy Frameworks program
Christoph Thoenissen	University of Sheffield	Open Economy Macroeconomics program
Joaquin Vespignani	University of Tasmania	COVID-19 and the Macroeconomy

Name	Institution	Program
David Vines	University of Oxford	Globalisation and Trade program
Benjamin Wong	Reserve Bank of New Zealand	Model Uncertainty and Macro-Econometrics

Doctoral student associates

Name	Institution	Program
Tsendsuren Batsuuri	The Australian National University	Multi-Country Models and Methods program and Climate Change and Energy program
Sud Dahal	The Australian National University	COVID-19 and the Macroeconomy
Roshen Fernando	The Australian National University	COVID-19 and the Macroeconomy
Edwin Jiang	University of Sydney	Globalisation and Trade program
Thuong Nguyen	The Australian National University	Growth, Demographics and Productivity program
Lin Qi	The Australian National University	Finance and the Macroeconomy program
Ashish Sedai	Colorado State University	Growth, Demographics and Productivity program
Timothy W Watson	The Australian National University	Macroeconomic Policy Frameworks program

Research associates

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Vitali Alexeev	University of Tasmania	Finance and the Macroeconomy program, and Commodities and the Macroeconomy program
Baris Alpaslan	The University of Manchester, UK	Growth, Demographics and Productivity program and COVID-19 and the Macroeconomy
Heather Anderson	Monash University	Model Uncertainty and Macro-Econometrics
Mikhail Anufriev	University of Technology, Sydney	Behavioural Macroeconomics and Complexity program

Name	Institution	Program
Filippo Arigoni	Bank of Slovenia	COVID-19 and the Macroeconomy
Kerim Peren Arin	Zayed University	Finance and the Macroeconomy program
John Baffes	The World Bank	Commodities and the Macroeconomy program
Girish Bahal	The University of Western Australia	Macroeconomic Theory program, and COVID-19 and the Macroeconomy
Faruk Balli	Massey University	Finance and the Macroeconomy program
Michelle L Barnes	Federal Reserve Bank of Boston	Finance and the Macroeconomy program
Christiane Baumeister	University of Notre Dame	Commodities and the Macroeconomy program, Model Uncertainty and Macro-Econometrics, and COVID-19 and the Macroeconomy
Antonio Andrés Bellofatto	University of Queensland	Macroeconomic Policy Frameworks program, and Macroeconomic Theory program
Gianluca Benigno	London School of Economics	Open Economy Macroeconomics program
Tino Berger	Georg-August University Göttingen	Model Uncertainty and Macro-Econometrics, and COVID-19 and the Macroeconomy
Prasad Bhattacharya	Deakin University	Model Uncertainty and Macro-Econometrics, and COVID-19 and the Macroeconomy
Sambit Bhattacharyya	University of Sussex	Growth, Demographics and Productivity program
Saroj Bhattarai	University of Texas at Austin	COVID-19 and the Macroeconomy
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Alison Booth	The Australian National University	Growth, Demographics and Productivity program
Melisso Boschi	Senate of the Republic of Italy	Finance and the Macroeconomy program, and Macroeconomic Policy Frameworks program

Name	Institution	Program
Robert Breunig	The Australian National University	Growth, Demographics and Productivity program, and COVID-19 and the Macroeconomy
Markus Brueckner	The Australian National University	Commodities and the Macroeconomy program, and COVID-19 and the Macroeconomy
Barbara Buchner	Climate Policy Initiative	COVID-19 and the Macroeconomy
Paul Burke	The Australian National University	Climate Change and Energy program
Giovanni Caggiano	Monash University	Macroeconomic Policy Frameworks program, and COVID-19 and the Macroeconomy
Yiyong Cai	The Treasury	Climate Change and Energy program
Gerard Caprio	Williams College	Finance and the Macroeconomy program
Efrem Castelnuovo	University of Padova	Macroeconomic Policy Frameworks program, and COVID-19 and the Macroeconomy
Joshua Chan	University of Technology Sydney	Model Uncertainty and Macro-Econometrics
Yoosoon Chang	Indiana University	Finance and the Macroeconomy program
Arpita Chatterjee	University of New South Wales	COVID-19 and the Macroeconomy
Pratiti Chatterjee	University of New South Wales	COVID-19 and the Macroeconomy
Yu-chin Chen	University of Washington	Open Economy Macroeconomics program, and Commodities and the Macroeconomy program
Sang-Wook (Stanley) Cho	University of New South Wales	COVID-19 and the Macroeconomy
Biplob Chowdhury	University of Tasmania	Finance and the Macroeconomy program, and COVID-19 and the Macroeconomy
Edda Claus	Wilfrid Laurier University	Finance and the Macroeconomy program
Adam Clements	Queensland University of Technology	Finance and the Macroeconomy program
Patrick J Coe	Carleton University	Model Uncertainty and Macro-Econometrics
Valentina Colombo	University of Bologna	Model Uncertainty and Macro-Econometrics

Name	Institution	Program
Mariarosaria Comunale	Bank of Lithuania	Open Economy Macroeconomics program, and COVID-19 and the Macroeconomy
David Cook	Hong Kong University of Science and Technology	Open Economy Macroeconomics program
Arusha Cooray	University of Nottingham (Malaysia)	Finance and the Macroeconomy program
Jenny Corbett	The Australian National University	Finance and the Macroeconomy program
Jamie L Cross	BI Norwegian Business School - CAMP	Commodities and the Macroeconomy program
Mario Crucini	Vanderbilt University	Open Economy Macroeconomics program
Creina Day	The Australian National University	COVID-19 and the Macroeconomy
Gordon De Brouwer	Department of the Environment	Finance and the Macroeconomy program, and COVID-19 and the Macroeconomy
Paul De Grauwe	The London School of Economics and Political Science	Behavioural Macroeconomics and Complexity program
Emmanuel De Veirman	De Nederlandsche Bank	Finance and the Macroeconomy program
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Corrado Di Guilmi	University of Technology, Sydney	COVID-19 and the Macroeconomy
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Dinesh Gajurel	University of New Brunswick	Finance and the Macroeconomy program, and COVID-19 and the Macroeconomy
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Mauro Gallegati	Università Politecnica delle Marche	Behavioural Macroeconomics and Complexity program
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James Graham	The University of Sydney	Macroeconomic Policy Frameworks program, Macroeconomic Theory program, and COVID-19 and the Macroeconomy
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Alfred Guender	University of Canterbury	Macroeconomic Policy Frameworks program

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Mathias Hoffmann	Deutsche Bundesbank	Open Economy Macroeconomics program
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Stan Hurn	Queensland University of Technology	Finance and the Macroeconomy program
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Karel Janda	University of Economics, Prague	Climate Change and Energy program
Raghbendra Jha	The Australian National University	Growth, Demographics and Productivity program

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Jong-Wha Lee	Korea University	Multi-Country Models and Methods program, and Growth, Demographics and Productivity program
Kirdan Lees	New Zealand Institute of Economic Research	Macroeconomic Policy Frameworks program
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Andrew Theo Levin	International Monetary Fund	Macroeconomic Policy Frameworks program
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Thomas Lubik	Federal Reserve Bank of Richmond	Macroeconomic Theory program
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Aubrey Poon	University of Strathclyde	Model Uncertainty and Macro-Econometrics program
Phitawat Poonpolkul	Bank of Thailand	Growth, Demographics and Productivity program
Bruce Preston	University of Melbourne	COVID-19 and the Macroeconomy
Simon Price	University of Essex	Finance and the Macroeconomy program, and Model Uncertainty and Macro-Econometrics program

Name	Institution	Program
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Ronald A Ratti	University of Missouri	Finance and the Macroeconomy program
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Eli Remolona	Asia School of Business - Malaysia	Finance and the Macroeconomy program and Macroeconomic Policy Frameworks program
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Alberto Russo	Università Politecnica delle Marche	Behavioural Macroeconomics and Complexity program
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Akshay Shanker	The University of New South Wales	Climate Change and Energy program
Vivek Sharma	Luiss University	Finance and the Macroeconomy program
Jeffrey Sheen	Macquarie University	Macroeconomic Policy Frameworks program
Shuping Shi	Macquarie University	Finance and the Macroeconomy program
Kalvinder K Shields	University of Melbourne	Model Uncertainty and Macro-Econometrics program, and COVID-19 and the Macroeconomy
Aarti Singh	The University of Sydney	Macroeconomic Theory program

Name	Institution	Program
Pierre Siklos	Wilfrid Laurier University	Finance and the Macroeconomy program, and COVID-19 and the Macroeconomy
Tara M Sinclair	The George Washington University	Model Uncertainty and Macro-Econometrics program, and COVID-19 and the Macroeconomy
Aarti Singh	The University of Sydney	Micro-Heterogeneity and Macroeconomic Performance program
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Michael Smith	University of Melbourne	Model Uncertainty and Macro-Econometrics program
Eunbi Song	Korea University	Multi-Country Models and Methods program
Rodrigo da Silva Souza	The Australian National University	Commodities and the Macroeconomy program
Nicola Spagnolo	Brunel University	Finance and the Macroeconomy program
John Stachurski	The Australian National University	Macroeconomic Theory program
Gabriele Standardi	Fondazione Eni Enrico Mattei	Multi-Country Models and Methods program
David Stern	The Australian National University	Climate Change and Energy program
Andrew Stoeckel	The Centre for International Economics	Commodities and the Macroeconomy program, and COVID-19 and the Macroeconomy
Rodney Strachan	The University of Queensland	Model Uncertainty and Macro-Econometrics program
Satoshi Tanaka	University of Queensland	Macroeconomic Theory program
Kam Ki Tang	University of Queensland	Growth, Demographics and Productivity program
Lei Ming Chrismin Tang	University of Melbourne	Finance and the Macroeconomy program
Yuki Teranishi	Keio University	Macroeconomic Policy Frameworks program
Susan Thorp	University of Sydney	Finance and the Macroeconomy program
Jing Tian	University of Tasmania	Finance and the Macroeconomy program

Name	Institution	Program
Brian Trung Duc Tran	University of Sydney	Commodities and the Macroeconomy program and Model Uncertainty and Macro-Econometrics program
Chung Tran	The Australian National University	Macroeconomic Theory program
Sirimon Treepongkaruna	The University of Western Australia	Finance and the Macroeconomy program
Takayuki Tsuruga	Osaka University	Open Economy Macroeconomics program
Rod Tyers	The University of Western Australia	Multi-Country Models and Methods program, and COVID-19 and the Macroeconomy
Kozo Ueda	Waseda University	Macroeconomic Policy Frameworks program
Lawrence Uren	University of Melbourne	Macroeconomic Theory program
Shaun Vahey	The University of Warwick	Model Uncertainty and Macro-Econometrics program
Farshid Vahid	Monash University	Model Uncertainty and Macro-Econometrics program
Abbas Valadkhani	Swinburne University of Technology	Finance and the Macroeconomy program
Tugrul Vehbi	Reserve Bank of New Zealand	Finance and the Macroeconomy program
Philip Vermeulen	Auckland University of Technology	Finance and the Macroeconomy program
Joaquin Vespignani	University of Tasmania	Finance and the Macroeconomy program
Vladimir Volkov	University of Tasmania	Finance and the Macroeconomy program
Yuichiro Waki	The University of Queensland	Macroeconomic Theory program
Sumila Wanaguru	Central Bank of Sri Lanka	Finance and the Macroeconomy program
Mark Weder	University of Adelaide	Macroeconomic Theory program, and COVID-19 and the Macroeconomy
Peter Wilcoxen	Syracuse University	Multi-Country Models and Methods program, and Climate Change and Energy program
John C Williams	Federal Reserve Bank of San Francisco	Macroeconomic Theory program, and Model Uncertainty and Macro-Econometrics program
Samuel Wills	University of Sydney	Commodities and the Macroeconomy program, and COVID-19 and the Macroeconomy

Name	Institution	Program
Anthony Wiskich	The Australian National University	Climate Change and Energy program
Justin Wolfers	University of Michigan	Behavioural Macroeconomics and Complexity program
Benjamin Wong	Monash University	Commodities and the Macroeconomy program, and COVID-19 and the Macroeconomy
Wing Thye Woo	University of California Davis	Multi-Country Models and Methods program
Alan Woodland	University of New South Wales	Globalisation and Trade program
Tomasz Wozniak	University of Melbourne	Model Uncertainty and Macro-Econometrics
Eliza Wu	University of Technology Sydney	Finance and the Macroeconomy program
Juanyi (Jenny) Xu	Hong Kong University of Science and Technology	Open Economy Macroeconomics program
Ying Xu	The Treasury	Finance and the Macroeconomy program
Akira Yakita	Nanzan University	Growth, Demographics and Productivity program
Abdullah Yalaman	Eskisehir Osmangazi University	Finance and the Macroeconomy program
Akhtar Zaman	Toi Ohomai Institute of Technology	Globalisation and Trade program
Francesco Zanetti	University of Oxford	Macroeconomic Policy Frameworks program
Bo Zhang	Shanghai University	Model Uncertainty and Macro-Econometrics
Jasmine Zheng	Deloitte Access Economics	COVID-19 and the Macroeconomy
Yixiao Zhou	The Australian National University	Multi-Country Models and Methods program, Globalisation and Trade program, and COVID-19 and the Macroeconomy
Daniel Zizzo	Newcastle University	Behavioural Macroeconomics and Complexity program

Funding

The table below summarizes CAMA funding for 2022

Income		
Gov Block Grant Funding	$	-
Other Gov Grants Contracts	$	323,801.24
Hecs CGS	$	-
Tuition Fees	$	-
Non Govt Revenue	$	137,640.80
Investment Revenue	$	-
Other Revenue	-$	1,733.13
Total Income	$	459,708.91
Expenses		
Salaries and Related Costs	$	391,000.33
Employee Related Costs	$	55.10
Contracted Services	$	-
Consumables & Supplies	$	12,022.12
Travel & Conferences	$	712.58
Site Services	$	338.16
Scholarships, Stipends & Prize	$	11,930.99
External Contributions	$	-
Other Misc Op Expenses	$	1,361.81
Borrowing Cost	$	-
Bad Debts and Write Downs	$	-
Total Expenditure	$	417,421.09
Transfer inflow/outflow	$	88,068.20
Total operating result	$	130,356.02
Budget remaining	$	468,469.36

Numbers

BY THE NUMBERS

729 twitter users

hosted 40 events

238 research associates

101 working papers

20 new affiliates

Contact

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