

<p>Institution: University of Glasgow</p>
<p>Unit of Assessment: 18 Economics and Econometrics</p>
<p>a. Overview</p> <p>Since the previous research assessment exercise there has been considerable structural change within the University of Glasgow providing important opportunities to enhance the research activities and outputs of Economics at Glasgow.</p> <p>In 2010, the former Departments of Accounting & Finance, Economics, and Management were merged to form a new research-led Business School. Renamed the University of Glasgow Adam Smith Business School (ASBS), all of its constituent staff were co-located within the main university building. This co-location of the subject groups within the ASBS has resulted in a number of benefits. First, our expanding staff complement has been located in a single, more functional location. Second, it has been possible to relocate the majority of the school's PhD students into a single location in the Adam Smith Building. Third, it has streamlined the management and administrative functions associated with large undergraduate and taught and research postgraduate student bodies. As a result of the creation of the School and the growth in post-graduate student numbers that has accompanied it, the REF assessment period has been one of major investment and research-led change.</p> <p>Our desire to build on RAE 2008 (Economics at Glasgow came first in Scotland, eleventh in the UK) was reflected in continued investment in areas of existing strength, such as macroeconomics and finance. However, we also expanded capacity in econometrics and especially in core microeconomics where we made six appointments at Chair level. Our research strategy reflects our high ambitions for Economics at Glasgow, including for PhD training, and aims to sustain a distinctive profile of research strength across microeconomics, macroeconomics and finance, our three main research groupings. We aim to do this by building on our recent hires, by drawing on the strongly pro-research philosophy of the ASBS to attract and retain leading researchers, and by designing a new PhD programme with a high-level taught component. We shall continue to seek researchers who can produce leading research and deploy that research in their teaching at all levels; who can provide leadership in the discipline; and who will attract research funding.</p> <p>The culture of Economics at Glasgow has long reflected a desire to engage with interested parties outside of academia. We shall continue to ensure that our research has impact outside of academia, something that the structures and policies of the ASBS, the College of Social Sciences and the wider University are designed to facilitate.</p>
<p>b. Research strategy</p> <p>Our stated research goals at RAE 2008 were:</p> <ol style="list-style-type: none"> 1. To enhance macroeconomics and finance and maintain our strength in microeconomics, development and history; 2. To ensure the Scottish Institute for Research in Economics (SIRE) was a catalyst for research activity; 3. To maintain high publication standards and encourage grant bids; 4. To ensure research has wider policy significance. <p>We are delighted to report that we have surpassed these objectives. We address each of the above points in turn.</p> <ol style="list-style-type: none"> 1. We have appointed twelve Chairs and made six junior appointments. In macroeconomics over the assessment period there has been a major expansion in research breadth and depth. We have appointed three Professors (Dennis, Kirsanova and Nolan) and one Reader (Tsoukalas) all full-time. These appointments complement the existing three chairs in macroeconomics (Malley, Macdonald and Leith) and replace a number of part-time posts. In addition to Cerrato and Talmain, we have appointed three new Chairs in finance, two full-time (Ewald and Taub) and the other 0.25 FTE. This latter appointment, (Craig Burnside), is a professor at Duke University in the USA and is part of our efforts to raise the international profile of our finance research. Burnside has taught PhD courses at Glasgow, participated in policy roundtables at Glasgow and collaborates on research with faculty. We have also sought to widen and deepen our research strengths by appointing six

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Chairs in microeconomics (Bogomolnaia, Ghosal, Hayashi, Moulin, Vailakis and Zapechelnyuk) all full-time. In addition to these posts we also appointed a number of excellent junior scholars in the areas of microeconomics (Driesen, Lombardi and Yoshimoto), and econometrics (Avarucci, Kim and Korobilis).

The recently recruited microeconomics Chairs, along with the more junior hires, comprise a strong research grouping and cover all the major subfields in microeconomics: Individual and collective decision theory (Moulin, Hayashi, Ghosal and Lombardi), Game Theory (Moulin, Bogomolnaia, Lombardi and Driesen), Mechanism and Market Design (Moulin, Bogomolnaia and Lombardi), Welfare economics (Moulin, Bogomolnaia, Lombardi, Vailakis and Ghosal), Information Economics (Zapechelnyuk) and General Equilibrium (Vailakis and Ghosal). The group (Ghosal, Hayashi, Kovalenkov and Vailakis were the organisers) hosted a major conference in November 2013 with keynote addresses by Faruk Gul (Princeton) and Thomas Mariotti (Toulouse). In addition, Moulin is organising a weekly microeconomics seminar in term-time and micro faculty will also present work in progress in the weekly internal seminar, thus contributing to a vibrant and diverse research culture in microeconomics at Glasgow. Moreover, the recently recruited faculty in microeconomics complements existing strengths in macroeconomics and finance. This recruitment is a key component in an effort to establish a distinctive profile for Economics at Glasgow in the UK context. For example, we are in the process of establishing a Ph.D. programme in Economics with a taught component (an initiative being undertaken by Ghosal, Bogomolnaia and Kirsanova) and which would not have been possible without the presence of a strong micro group. Moreover, there is ongoing research at Glasgow at the interface of micro/macro/finance, with a focus on linking micro frictions to macro outcomes (an initiative being undertaken by Dennis, Ewald, Ghosal, Kirsanova, Leith, Nolan, Taub and Vailakis, amongst others). Further, the recruitment of the micro group will facilitate the development of a number of exciting interdisciplinary research initiatives, for example, linking micro and finance (Vailakis, Taub, and Ewald), examining the links between internal constraints and poverty traps (involving Philippe Schyns at the Centre for Cognitive Neuroimaging at Glasgow, Ken Gibb at Urban Studies and Ghosal in Economics). Also, there is an overlap in the research interests of Moulin and Bogomolnaia (both specialists in mechanism design) and research being carried out in Computing Science in the area of computable mechanism design.

Economics at Glasgow holds the Directorship of the *Macroeconomics, Financial Linkages and Regions* programme of SIRE. Our major investment in microeconomics complements that strength in macroeconomics and finance by extending our influence into the *Behaviour, Incentives and Contracts* programme of SIRE. Moreover, it facilitates development of the graduate programme, and opens up distinctive avenues for future research collaborations within and without the economics subject area.

2. The time since RAE 2008 has been an active period so far as SIRE is concerned. Economics at Glasgow is a founding member of the Scottish Institute for Research in Economics (SIRE), launched in 2007 and, as noted, holds the directorship (Nolan) of the largest of these programmes, *Macroeconomics, Financial Linkages and Regions* (MFLR), underpinned by £1.7m of funding from the Scottish Funding Council to the University of Glasgow. SIRE funding has provided core funding for numerous workshops and conferences organized and hosted at Glasgow including, for example, on financial markets after the crisis (including the participation of Burnside), the conduct of fiscal policy in post-crisis economies, a major international conference on "Tax Competition, Common Consolidated Tax Base and Fiscal Autonomy" (with 13 European experts including the participation of Michael Devereux, Oxford; Eckhard Janeba, Mannheim; and Gary Gillespie, Scottish Government Chief Economic Adviser), a workshop on "Theory and Estimation of Gravity Equations" (including the participation of Jonathan Eaton, Pennsylvania State University), the European Monetary Forum annual workshop, a PhD workshop on Dynare (attracting participants from all over the UK including the Bank of England) and a major international conference on the Chinese economy. More such events are in train. Moreover, the MFLR programme of SIRE runs a scheme to fund junior faculty participation, their paper having been accepted, at major international conferences such as ESEM and the European Economic Association. The programme has also funded participation at other prestigious conferences and

advanced training events for junior faculty and PhD students. To date around £86k has been spent on such activities. Holding the directorship of MFLR has thus given Glasgow a unique lever to initiate events and encourage wider participation, especially amongst our PhD students and junior faculty. The MFLR has also been a key driver in the SIRE Policy Forum, a regular meeting between academics and Scottish government economists. It has also been a funder of the SIRE Econometrics workshop and the SIRE Young Economists Research Forum.

However, examples of our strong research leadership and ethos are not limited to SIRE-related activities. For example, Economics at Glasgow hosted the 2010 Congress of the European Economic Association, an event which was last hosted in the UK in 1991 by Cambridge University. This event saw around 1,000 delegates take part in what is the largest conference in Economics in Europe and second in the world, following the annual meeting of the American Economic Association. The resources of the Business School have also proven invaluable in co-funding conferences in partnership with SIRE and other bodies.

3. Our mission to achieve top publications and encourage grant bids is pursued via the appointments we have made at senior and junior levels and the priority we accord this in work allocation and promotion. For instance, the ASBS has a newly-developed, unified workload model across all disciplines which provides explicit credit for papers in prestigious journals. Moreover, we have a focussed annual Performance and Development Review (P&DR) process. This reviews colleagues' achievements over the preceding year, including publications, policy involvement and impact, research funding applications, and so on. And importantly, it agrees key aims and objectives for the year ahead. This process matches each colleague with a senior member of staff; e.g., junior colleagues with a Chair familiar with their area of research. Chairs, in turn, agree their P&DR with the Head of the Business School. In the case of Chairs, the completed P&DR is also reviewed by a committee chaired by the Head of College and a senior management committee of the University. Moreover, all professors in the University underwent a zoning exercise in 2011. Major factors underpinning this zoning process include research outputs, policy impact, grants and wider evidence of research and policy esteem. Together, these mechanisms amount to a sustained focus on the need to be ambitious in research, impact and revenue generation which we believe are evidenced in our outputs profile.

4. Finally, to ensure our research has wider policy significance, we encourage engagement with policymakers in a number of ways. First, it is a major factor in external appointments and internal promotions. For example, at Chair level Leith and Kirsanova have written work concerning fiscal institutions which proved influential in setting up the Office for Budget Responsibility. Similarly, Ghosal (recent Chair appointment in microeconomics and development) is currently undertaking large-scale field experiments in areas of development and social policy. And Ewald (recent Chair appointment in finance) is involved in a number of finance-related consultancy projects. Second, we have initiated, via SIRE, a series of policy forums where academics meet Scottish Government economists, present work and discuss issues of mutual interest under Chatham House rules. These forums have covered topics such as growth, taxation of MNEs, demographics, fiscal and monetary policies. This has led to ongoing collaboration and consultancy. At the College level the *Adam Smith Research Foundation* provides a vehicle for knowledge exchange and at the University level *Policy Scotland* is a policy research and knowledge exchange hub based at the University of Glasgow which aims to stimulate new and critical policy thinking by bringing together academics, practitioners and policy-makers. These vehicles are utilised by colleagues. For example, Policy Scotland organised an event on currency options for an independent Scotland to which several colleagues contributed (e.g., Burnside and Leith), including the Principal and Vice-Chancellor (Muscatelli). Our impact case studies and impact template provide further details of our achievements and future ambitions.

The research priorities of the Adam Smith Business School (set out in full in Adam Smith Business School Strategic Plan 2012-2020) are: to continue to recruit high-quality staff, and to ensure that all academic staff seek to publish in quality journals; to improve our levels of research income from external grant funding; to increase the number of staff holding research grants; to increase the number of PhD students; to increase our activities in international research collaborations; and to

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ensure research impact through knowledge exchange.

The research goals of Economics within the ASBS reflect these strategic themes and will aim specifically

- To build further on our strengths in microeconomics, macroeconomics and finance and appoint in econometrics at Chair level;
- To continue to provide research leadership in collaborative undertakings such as SIRE and cross-institutional research and to foster international collaborations;
- To encourage research that is world class; to cultivate an environment that attracts, motivates and retains the best international researchers; and to develop PhD training;
- To maintain high publications standards, encourage grant bids and focus on the impact of our research.

c. People, including:**i. Staffing strategy and staff development**

The core of the ASBS staff recruitment and development policy is to enhance the research profile of the school and ensure that teaching is research-led. Economics at Glasgow aims to recruit and retain leading researchers, and those with the potential to become so, to full-time posts. Moreover, we believe in the benefit of building clusters of scholars at both senior and junior levels as it aids developing junior researchers' careers and creates an environment that can cope with a healthy turnover of staff whilst maintaining and building strength. We stand ready to promote our existing staff where appropriate and appoint externally so as to maintain a balance of junior and senior colleagues in key areas. More specifically, our strategy since the RAE 2008 has been to develop core strengths in microeconomics, macroeconomics and finance. We have introduced "market supplements" to salaries as a way flexibly to respond to staff retention issues. Such supplements are applied following a rigorous assessment but provide a flexible means of responding to market pressures. We have also developed a workload model that explicitly factors in quality research outputs. And detailed below are other aspects of staff development which we believe contribute to a vibrant, inspiring research culture. Together, these factors (research clusters, pecuniary and non-pecuniary research-related policies) contribute to an environment which we believe helps secure a sustainable, highly research-oriented Economics team at Glasgow.

The University and the ASBS are committed to developing the full potential of staff. For example, in Economics, support for staff takes a number of forms depending on the experience of the staff involved. Newly qualified staff undergo a period of probation (three years) involving attendance on the university's teaching programme, opportunities to attend a range of staff development courses, and the allocation of a mentor (a senior colleague whose task is to provide advice and support on all aspects of a university career, particularly in terms of guidance on research and publishing). Newly qualified lecturing staff are gradually introduced to administrative duties and take on a full load only at the end of their probationary period. New staff members are also encouraged to take study leave as soon as eligible. As junior staff become more experienced, they are encouraged and supported to seek outside research funding with the advice and help of more established staff members who have experience in this area. Senior and junior staff members are encouraged to work on joint publications where appropriate and this is occurring in a number of instances. Following the notable development of our microeconomic research base, such collaboration is likely to increase. All staff are eligible to attend the university's staff development programmes, many of which are related to research and grant applications.

Staff members receive support to apply for research funds from external agencies. The University has implemented a policy of passing on a substantial share of overheads directly to principal investigators. These funds can be used for research-associated activities such as teaching buy-outs, travel and equipment purchases. All staff receive full support for conference attendance. Additional funding is available, principally for junior staff and PhD students, from SIRE for attendance at the most prestigious academic conferences such as ESEM if their work is accepted for presentation.

Staff who are eligible are encouraged to pursue fellowships and visits to other institutions and this

is supported by the University's study leave scheme. That enables researchers to be released (with full salary) from teaching and administrative duties to focus on their research projects. Staff are eligible for a semester's leave every three years and many colleagues also choose to concentrate most, or all, of their teaching in specific terms or blocs thus freeing up longer periods of time to focus on research. Researchers are fully supported in their efforts to obtain externally funded buy-outs of their time.

The University actively supports the implementation of the Concordat for Career Development of Researchers, launched at Glasgow in 2009 including mentoring, training and career guidance for staff at all levels and courses in research project management and grant applications. Glasgow was the first Scottish HEI to set up an Equality and Diversity Unit; all provision is governed by the principles outlined in its Equality and Diversity Policy.

Staff members who have demonstrated that they are fulfilling their potential are encouraged to seek early internal promotion. The research performance of several staff members has been acknowledged in this fashion over the assessment period.

ii. Research students

Economics in the School offers three PhD degrees: PhD in Economics, PhD in Finance and PhD in Quantitative Finance. Currently, there are 56 students registered for the PhD in Economics, 2 for the PhD in Finance and 3 for the PhD in Quantitative Finance. The normal entry requirements for a PhD in Economics include above average performance in postgraduate studies in Economics, at the level of e.g., the MSc in Economics of the Scottish Graduate Programme in Economics (SGPE). Admission for studies for a PhD in Finance and Quantitative Finance requires above average performance in postgraduate studies in Finance or Economics (with a strong technical component for the PhD in Quantitative Finance).

There are currently 31 staff members in Economics available to supervise PhD students. Both the numbers of staff and PhD students have increased since 2008. In particular, the number of registered PhD students has increased to 61 from 42. The increase in PhD student numbers reflects supply of potential supervisors, given the increase in faculty, but is also due to more interest in PhD studies in Economics. In particular, PhD applications increased to 174 for a PhD start in 2013-14 from 91 for a start in 2008-09, representing a 91% increase. The percentage of offers made has dropped to 17% in the current period from 37% in 2008-09.

Since 2008, 9 PhD students have been awarded ESRC scholarships, 6 a SIRE scholarship, 6 a scholarship from the College of Social Sciences/University of Glasgow, 6 an Adam Smith Business School Scholarship, 3 scholarships from funding available to supervisors, 1 a Commonwealth Scholarship, 2 a Cairncross Scholarship, while 10 international students have been awarded scholarships from home funding bodies. The above scholarships involve competition among excellent PhD students at different levels. For the ESRC scholarship, in particular, the number of total scholarships available for PhD students in Economics in Scottish universities has been set to a maximum of six per year, since the 2010-11 period. In the 2010-11 competition, two students from Glasgow were awarded a scholarship, while in the 2011-12 competition one student was awarded the scholarship.

The PhD students are enrolled in a +3 programme, with a maximum of four years allowed for completion of their studies.

Studying for a PhD at Glasgow includes many opportunities for attending non-compulsory graduate-level courses. In particular, Economics and the School regularly obtain funding to provide specialised courses that have included, in recent years, courses on Macroeconomic DSGE modelling, advances in panel data econometric techniques, advances in econometric techniques for international economics and finance, and software demonstration and programming (matlab, Dynare, stata, EVIEWS). These courses have been delivered by leading experts such as Professors Burnside, Canova, Collard, Koop, Levine and Soderlind. Economics at Glasgow is planning to extend significantly the taught courses offered at the PhD level, starting from the

academic period 2014-15, to include microeconomics, macroeconomics and quantitative methods at the level of top American PhD programmes, by capitalising on the experience and expertise of the academic staff recently hired, in particular Moulin (who has joined from Rice) and Ghosal (who joined from Warwick) both of whom have detailed knowledge of course design and administration of PhD programmes with high-level taught components. Moreover, the PhD students can attend advanced MSc courses, either at the University of Glasgow, or offered by the SGPE Programme. They have further access to postgraduate training offered by summer schools organised by the Scottish Doctoral Training Centre and the SGPE in particular. In addition to the above, the ASBS has funding available for PhD students to attend specialised training courses in Europe. For example, three of our graduate students attended the Dynamic Programming Squared Masterclass run by Sargent in early 2013 at UCL. Finally, the College of Social Sciences and University of Glasgow offer training and skills development courses throughout the year, focused on presentation skills, academic writing, software demonstration and job market support.

We encourage students to present their work outside of Glasgow. The PhD students are given financial support (up to £2000) to present their work to international conferences, which have included, for example, the Royal Economic Society and the European Economic Association meetings. Additional resources are available through SIRE. PhD students at Glasgow may also join the SGPE Programme and present their research at the annual PhD conference organised by the SGPE for Scottish universities. The University of Glasgow in general and the Subject of Economics in particular, further encourage their PhD students to benefit from international research networks by promoting research partnerships with world-leading universities (a recent link has been set up between Columbia University and the University of Glasgow regarding the exchange of PhD students) and by facilitating research visits of current students to European universities and policy-making institutions. Examples include research visits by Economics PhD students to the University of Zurich and internships at the European Central Bank.

PhD students have published research executed during their PhD studies in economics journals that include the *European Economic Review*, the *Review of Economic Dynamics*, the *Journal of Economic Dynamics and Control*, the *Journal of Money, Credit and Banking*, *Economica*, *Economics Letters*. Recent graduates of the University of Glasgow have secured employment at Universities including Bari (Italy), Dundee, Catholic University in La Paz (Bolivia), Lancaster, Napoli, Nottingham, Kent, Quaid-i-Azam (Pakistan), Shandong (China), Swansea and in Central Banks, including the Deutsche Bundesbank (Germany), Central Bank of Ireland and the Reserve Bank of Malawi.

d. Income, infrastructure and facilities

We are committed to increasing our success in funding our research from outside sources, in part because we believe such funding reflects success along other dimensions we value, such as impact. Over the assessment period our REF spend is £836,202, compared to the total RAE 2008 spend of £625,761; during the current review period Economics has been awarded approximately £1.325 million in research grants. Much of that reflects grant income in areas of traditional strength, such as macroeconomics and regions and development, including ESRC grants to Leith, Angelopoulos and Malley.

However, in addition to this grant income, we generated other income which boosts our research environment. For example our key role in the macroeconomics programme of SIRE meant that we spent £85,711 on running conferences, facilitating colleagues' participation at the most prestigious international conferences and enabling visiting scholars to come to Glasgow University and other Scottish institutions. Such funds have also been used, in conjunction with funding from the ASBS, for workshops on specialist research topics and more general events such as the SIRE Young Researchers Forum, and the SIRE Policy Forum. £264,098 was also spent over this period on PhD and other scholarships. The vibrancy of our research environment is also attested by the £954,397 spent by the Centre for Public Policy for Regions (CPPR).

We intend to generate more external research income, particularly in areas of new research strength such as microeconomics and finance. It is encouraging to note the grant income track records of our recent hires in the areas of microeconomics, such as Bogomolnaia, Ghosal, Moulin

and Vailakis. For example, Vailakis has two recent grants. The first (2012-15) is from ANR French National Centre for Scientific Research. The second, (2010-12) was an ERC Starting Grant (Principal investigator, amount 156.538 EUR).

Finally, we note that two of our MSc programmes, run under the auspices of the Centre for Economic and Financial Studies (Ewald is the Director), have been awarded 20 full fee scholarships from the Scottish Funding Council. These MSc programs can result in students applying for a place on our PhD programme upon successful completion of the MSc studies. So, we think of these scholarships as having a “research potential”.

Economics at Glasgow has its own Discussion Paper Series. The papers are available online and linked to listings such as WoPEC and RePEc and are also included in the SIRE Working Paper series, providing additional visibility. Reference to <http://repec.org/> shows that our Discussion Paper Series is in the top 5 per cent for downloads and the top 10 per cent as per the *h*-index. Of course many of our papers are available in other series and through other download services, e.g. NBER, SSRN, CESifo and CEPR.

e. Collaboration or contribution to the discipline or research base:

Our staff, at all levels, interact extensively with the wider research base, including international research collaborations, interdisciplinary work, policy/third sector interaction, and editorships.

For instance, Azemar has consulted for the European Tax Policy Forum, Christian Aid, the International Centre for Tax and Development (funded by the UK Department for International Development and the Government of Norway), and the United Nations. Ewald is involved in research collaboration with AON Hewitt London (2009-present) and a collaborative project and consulting for Acropolis Securities S.A (2009-10). These projects involve private sector funding of PhD and MSc dissertations.

Ghosal is a co-investigator in major pieces of interdisciplinary work which impacts government and third sector policy in India. In Kolkata, in collaboration with the Durbar Foundation, he will examine whether a programme, called "Dream Building", which aims to raise aspirations of a marginalised group in society, sex workers, can have a positive impact on aspirations, self-perception and actions (e.g. savings behaviour) to improve their own well-being. Similarly, he collaborates with co-authors in Argentina assessing the impact of participating in orchestras on educational outcomes of children from deprived backgrounds. This involves setting up about 30 new orchestras allowing for the training of some 3000 schoolchildren and will directly impact policy-making in Argentina. Macdonald has consulted for the IMF on 16 separate occasions, including appointment as a monetary advisor in 2012, consultant to the Reserve Bank of New Zealand, Monetary Authority of Singapore, European Central Bank (x2), Deutsche Bundesbank, Central Bank of Norway, European Commission, Qatar General Secretariat for Development Planning, Dubai Economic Council and UK National Audit Office

Staff hold a wide selection of journal editorships. For instance, Burnside is an editor of the *American Economic Review*; Dennis, Leith and Nolan are associate editors at the *European Economic Review*. Leith was also Co-Editor, *B.E. Journal of Macroeconomics* 2010-12, and Co-Editor, *Scottish Journal of Political Economy*, 2003-12. Kirsanova is editor of the *Scottish Journal of Political Economy*. Ewald holds editorial positions at *Investment Management and Financial Innovation*, the *International Review of Applied Financial Issues and Economics*, *Environmental Economics* and the *Journal of Industrial and Management Optimization*. Moulin was Editor-in-Chief, *Mathematical Social Sciences*, Fall 1993 – Spring 2005, Associate Editor *Transactions on Economics and Computation*, 2011-present, Associate Editor, *Social Choice and Welfare*, 1984-2011 Associate Editor, *International Journal of Game Theory*, 1984-99, 2004-present and Associate Editor, *Games and Economic Behavior*, 1988-93, 2006-present. Angeles is associate editor of *The Journal of International Development*. Vailakis is Associate Editor for the *Journal of Mathematical Economics*. Ghosal is on the editorial board of *Theoretical Economic Letters* and *Game Theory*.

Staff serve the subject in a number of ways, in addition to editorships. Many act as post-award

reviewers for grant-awarding bodies and a number serve in a more senior capacity. For instance, Ghosal and Leith serve on the ESRC Peer Review College. Ghosal served on the ESRC-ICSSR Committee, the ESRC/HMT Macroeconomics Postdoctoral Research Fellowships Commissioning Panel, and the ESRC/DFID Growth Programme, Commissioning Panel. Nolan is on the Committee of the MMF Research Group and Director of Macroeconomics, Financial Linkages and Regions programme at the Scottish Institute for Research in Economics. Nolan also sits on the Executive of SIRE. Leith held REF Panel membership in 2008 and 2014.

Colleagues in Economics proactively pursue international collaborations across disciplines. For example, Azemar was invited by Professor Shang-jin Wei, director of the Chazen Institute of International Business, Columbia University, to be a visiting researcher in 2011. She approached Professor Hubbard (Dean of Columbia Business School and Chairman of the US Council of Economic Advisors from 2001 to 2003) and they produced a paper: '*Country Characteristics and the Incidence of Capital Income Taxation on Wages*'. Ewald works with mathematicians, biologists and veterinary scientists as a member of the Boyd Orr Centre for Population and Ecosystem Health and has published numerous articles on ecological aspects of fisheries economics. He obtained international funding for his work, for example, 150,000 AUD from the Australian Research Council. Moulin is principal investigator in an NSF Grant CCF (Computing and Communications Foundations). Ghosal has a number of collaborations. For example, he is Invited Professor at THEMA, University de Cergy-Pontoise, Paris and Invited Researcher: Singapore Management University, Singapore, 2010. He is a Fellow, International Network on Expectations Coordination at the Institute of New Economic Thinking, led by Roger Guesnerie. Ghosal was also Research Director at the ESRC-funded Centre for Competitive Advantage in the Global Economy 2010-12 where he is currently a Co-investigator and Research Fellow. He was a Senior Fellow, Complexity Centre, Mathematics Department, University of Warwick 2008-13. Macdonald is currently involved in a project on health and wellbeing with Colleagues from Public Health at Glasgow University.

A number of colleagues have been invited to give advanced courses. For example, Malley delivered lectures at: the University of Zurich; the Scottish Government; the Centre for Economic Studies, University of Munich; Dresden Technical University and CESifo Dresden. Vailakis teaches General Equilibrium Theory at University of Athens (Doctoral Program in Economics) and Limited commitment in General Equilibrium, University of Evry, Paris (Doctoral Program in Economics). Leith has been invited to give advanced macroeconomics courses at Kobe and Indiana. Macdonald has delivered his advanced course on exchange rate economics on 11 separate occasions at the IMF Institute, Washington DC, and to the Austrian Central Bank.

In addition to some of the collaborations and networks mentioned above, most staff are members of international research networks, of varying degrees of formality, either by virtue of their co-authors or of membership of particular structures. For example, Malley is a Member of Euro Area Business Cycle Network (from 2005) as is Leith. Malley is also Consultant to the Central Bank of Greece (from 2004). Lombardi is a Research Fellow, Centre for Research in Economic Theory and its Applications, CRETA, Warwick University as are Vailakis and Ghosal. Moulin is a Fellow of the Econometric Society since 1983 and past-President of the Society for Social Choice and Welfare, 1998-99. Dennis is a research associate and program director of the Centre for Applied Macroeconomic Analysis, CAMA, based at the ANU and a research associate of the Globalization and Monetary Policy Institute (based at the Federal Reserve Bank of Dallas). Nolan is a research associate in the open economy programme of CAMA and a research associate of the Centre for Dynamic Macroeconomics at the University of St Andrews, as is Leith. Ghosal was on the organizing committee of the European Econometric Society meetings in 2008 and the Royal Economic Society Meetings 2006-09.