

Institution: University of East Anglia
Unit of Assessment: 16 – Economics and Econometrics
<p>1. Unit context and structure, research and impact strategy</p> <p>Established in 2005, the School of Economics (ECO) in the Faculty of Social Sciences (SSF) forms the core of research in economics and econometrics at the University of East Anglia. In keeping with UEA's interdisciplinary ethos, researchers in the School interact and collaborate with economists located in Norwich Business School (NBS), the Law School (LAW), the School of International Development (DEV), the School of Environmental Sciences (ENV), the Norwich Medical School (MED), and the School of Health Sciences (HSC). These collaborations are supported and sustained through research centres, including the Centre for Behavioural and Experimental Social Science (CBESS), the Centre for Competition Policy (CCP), Tyndall Centre for Climate Change Research, Centre for Social and Economic Research on the Global Environment (CSERGE), and UEA's new research themes, including ClimateUEA and the forthcoming DecisionsUEA.</p> <p>At REF2014, the School consisted of three research groups. Two, Behavioural Economics (BE) and Industrial Economics (IE), represent two areas in which the School has made distinctive contributions over the last two decades, and align with CBESS and CCP, respectively. In 2013, the School had established a third group, Applied and Financial Economics, with plans to support the further development of this group in the 2014-2020 cycle. An external review undertaken in 2015 affirmed the School's ambition to establishing research capacity and PhD training across all the core areas expected in a modern department of economics. To reflect this, Applied and Financial Economics has evolved into Applied Econometrics and Finance (AEF), and has been joined by two new groups, Environment, Resources and Conflict (ERC) and Economic Theory (ET).</p> <p>The Environment, Resources and Conflict group includes Banuri (development), Brunnschweiler (resource economics and conflict studies), D'Exelle (gender, intrahousehold decision-making, impact evaluation), Di Maria (environmental and natural resource economics and technological change), Hugh-Jones (group identity, political science), Poulsen (bargaining), Turocy (contests) and Valente (sustainability), with six PhD students. In establishing this group, we leveraged our existing strengths in behavioural economics and links with DEV, while refreshing our commitment to environmental economics. The composition of the group reflects this: Brunnschweiler, Valente, Hugh-Jones, and Banuri joined UEA in the first half of this cycle, and D'Exelle now has a joint appointment between ECO and DEV. The group organises an annual networking workshop with invited external participants from ENV, DEV, the Law School, the Sainsbury Research Centre, and the Centre for Environment, Fisheries, and Aquaculture Science, among others.</p> <p>The Economic Theory group includes Di Maria (economic growth), Lazarova (matching theory, coalition formation), Le Quement (applied microeconomics, information transmission), Massari (statistical decision theory, general equilibrium), Mcquillin (social choice, cooperative game theory), Patel (psychological game theory), Penczynski (information disclosure, social learning), Polanski (networks, bargaining), Sugden (decision theory, game theory), Turocy (behavioural and computational game theory), Tvede (general equilibrium and economic dynamics), and</p>

Valente (macroeconomics), with five PhD students. The recruitment of Le Quement, Patel, Penczynski, Tvede, and Massari over the period reflects the School's evolution from a focus on decision theory and game theory inherited from the behavioural economics and industrial economics group, to encompass macroeconomics and more applied topics.

The **Applied Econometrics and Finance** group includes Bokhari (outcomes research, large datasets), Borcan (applied political economy and development), Brown (behavioural finance, betting markets), Brunnschweiler (growth and development), Bruns (time series, empirical macroeconomics), Di Maria (policy evaluation and productivity analysis), Fruet Dias (financial economics, high-frequency econometrics), Hugh-Jones (genoeconomics, text analysis), Kummer (big data from naturally-occurring experiments, online markets), Lazarova (applied economics), Moffatt (financial econometrics, credit risk), and Polanski (financial economics), with one senior research associate and nine PhD students. Under the group's revised name, an emergent unifying theme is interest in using data science and the application of big data methods to address economic questions.

The **Behavioural Economics** group includes Banuri (biases of professionals, motivation of public sector workers), Cooper (game theory, organisational economics, leadership), D'Exelle (lab-in-the-field, development economics), Hugh-Jones (honesty, groups and identity), Koh (attribution bias, gender), Massari (ambiguity and non-Bayesian reasoning), Moffatt (experimetrics), Patel (behavioural health economics), Penczynski (natural language evaluation, health decision-making), Poulsen (bargaining), Sitzia (complexity in decision-making), Sugden (philosophy of behavioural economics, focal points, game theory) and Turocy (design and evaluation of decision-making frames), with three research associates and seven PhD students. This group is founded in our long tradition of research in this area dating back to the work of Sugden and colleagues from the 1980s associated with seminal contributions on methodology, decision-making under uncertainty and theories of reasoning in decision-making environments. Alongside the growth of interest in the insights of behavioural economics, our recruitment has focused on broadening the domains of applications in the group, with Banuri and D'Exelle bringing expertise on lab-in-the-field experiments, Massari on behavioural finance, and Koh, Patel and Penczynski on behavioural biases.

The **Industrial Economics** group includes Bokhari (health and pharmaceutical industries), Davies (evaluation of competition policy), Fruet Dias (empirical market microstructure), Kuhn (methodology and competition policy), Kummer (online markets), and Lyons (geographical market definition, competition in markets with 'behavioural' consumers), with nine PhD students. They are established experts internationally especially in the area of competition policy, where, in collaboration with CCP (Section 3), UEA is a first point of call by competition regulators seeking advice, including the CMA, BEIS, DG COMP, and the OECD (see Section 4). The group sees the biggest challenge in competition policy in the coming years to be how regulators can best foster digital competition and innovation. UEA research in this area is already cited in the Penrose report 'Unlocking digital competition' (2019); our recruitment of Kummer and Fruet Dias will support this direction.

In our early years as a School, our small size and focus on two core areas permitted the growth of strong collaborative and personal connections which in turn underpinned our reputation in behavioural and industrial economics. We wanted to retain this close-knit community even as we grew in numbers and expanded in scope. We therefore designed our research groups with an

interlocking structure; colleagues typically identify with two groups, resulting in a small-world network of interactions. This also informed our recruitment strategy; our new joiners generally have points of contact between their interests and more than one group, while bringing in some new area of expertise not yet represented in the School. Our structure therefore selects for researchers who have broad interests and who are open to collaboration outside their own areas, which is reflected in many of our achievements in this cycle.

BE was a founding member of the ESRC Network for Integrated Behavioural Science (2013-17), collaborating with economists, psychologists and computing scientists at Nottingham and Warwick. In the second phase (2017-2021), Sugden and Turocy (BE) joined Lyons (IE) and Amelia Fletcher (Norwich Business School) to study 'The science of the behavioural consumer', representing a new synthesis between our BE and IE groups.

In 2018, Sugden published *The Community of Advantage: A Behavioural Economist's Defence of the Market*, which was awarded the 2019 Joseph B. Gittler Award by the American Philosophical Association for outstanding scholarly contribution in the field of the philosophy of one or more of the social sciences. Moffatt bridges AFE and BE with his development of experimetrics, including the publication in 2015 of *Experimetrics: Econometrics for Experimental Economics*, which has accumulated 180 Google scholar citations and been translated into Mandarin and Japanese.

Di Maria has been involved in a series of successful bids linking between climate change policy and sustainable development goals (CD-Links, 2015-2019) and the role of biodiversity in the peaceful, sustainable development of post-conflict Colombia (GROW-Colombia, 2020-2021).

Approach to impact

We are best known to research users via the engagement of our industrial economics group with practitioners and policy makers, primarily in the area of competition policy. Two of our impact case studies, detailing how Lyons' research on geographic market definition influenced EU merger control policy, and how Davies' work informs the evaluation of the effectiveness of competition policy, reflect the long-term relationships and reputation built up by IE in collaboration with CCP.

We have designed engagement and impact into the structures supporting our broader ambitions. Our new School blog includes posts by researchers on interesting research results and discussing current events. Blogging has already borne fruit in our case study on how Bokhari's research on pay-for-delay deals in pharmaceuticals came to the attention of Billy Kenber when he was doing background reading for what became a major series of investigative articles in *The Times* on anticompetitive practices in the industry. This case study therefore represents a new channel for disseminating our IE research, reaching a different audience.

We formed ERC, and enhanced the staffing of BE, specifically with the potential for applications and impact in mind. Section 4 highlights some contributions from these groups in the current cycle, some of which may form the basis for case studies in the next submission. These represent new strands of activity which do not have parallels in the previous cycle. In BE, we have also looked to our colleagues in DEV, who have a strong impact culture and whose behavioural and development economics research group (BEDERG) also participate in CBESS. D'Exelle and Verschoor (DEV) were awarded the 2020 ESRC Celebrating Impact Prize for

Outstanding Business and Enterprise Impact for their work on designing weather-index insurance for small-scale farmers in Uganda; this project is featured in a case study submitted to Unit of Assessment 22.

A lesson we have learned from both CCP and DEV is the importance of establishing and building relationships to be able to realise the translation of research results into impact. Our Director of Impact oversees our support structures and provides advice; but it is infeasible for a research-active staff member to allocate significant time to direct support for developing new impact opportunities. Therefore, we have recruited a senior research associate, whose specific remit is to work with UEA's Research and Innovation Service to advertise our existing publications and expertise to potential research users, and to provide capacity to support translational projects.

Research integrity

As a School for which studies with human participants in both the lab and the field are essential to our research, we have invested in supporting a culture of research ethics and integrity. We have a dedicated subcommittee of the University Research Ethics Committee who scrutinise all research projects involving human participants or personally-identifiable data. Because the subcommittee specialises in research in the discipline, it can focus on developing and sharing good practice for issues that commonly arise, including our experience with studies conducted in the field and those with children and adolescents. PhD students, and students on our flagship MSc in Behavioural and Experimental Economics, receive standard induction into these protocols as part of their training. The Laboratory for Economic and Decision Research (LEDR, Section 3) supports transparency and replicability by offering long-term secure storage of data and software from decision-making experiments and supports researchers in preparing data for submission to repositories.

Objectives for the 2021-2026 cycle

Fifteen years on from our formation as a School, we have grown into a fully-fledged department. In the coming years, we will build upon this foundation to ensure our sustainability.

- 1. To nurture our newer research groups to maturity through supporting career development, encouraging grant capture, targeted recruitment of PGR students and attracting senior research associates.*

Our internal processes ensure that all five groups have equitable access to School resources, while recognising that each one has a distinct character and differing needs. All are now thriving: in the current cycle there have been promotions to associate professor in four of the research groups, and promotions to professor in three. We achieved this through effective mentoring, rewarding field-leading research, and careful management of workloads to generate opportunities to meet the criteria for academic progressions (Section 2). We will continue to provide guidance and support to our early- and mid-career to ensure opportunities and outcomes are equitable and in line with the standards of UEA and our discipline.

We will continue to provide each research group with dedicated budgets to fund internal capacity-building activities, and continue our internal funding opportunities to support larger strategic initiatives, from which members of all groups have received support (see Section 2).

To further stimulate funding bids, we will expect a bid submission as one of the outcomes from a period of study leave, where appropriate, especially for more senior researchers.

To ensure that research groups have equal opportunities in the recruitment of junior researchers, since 2019 the School has allocated School-funded PhD studentships to research groups on a rotating basis (Section 2). We will continue this scheme in this cycle, monitoring the quality of the recruited students, and evaluating the benefits of the scheme to early-career researchers and new appointments with the aim to ensure equitable access to supervision opportunities.

We typically have had only a small number of research associates in the School at any time. These generally have been attached to an externally-funded project, or recruited to fill a targeted internal need. In this cycle we will more systematically search out strong candidates to support for fellowships such as those offered by British Academy and Leverhulme Trust. We are supported in this by SSF, which has a scheme for prestigious fellowships covering any costs not paid by the funder. Success in these competitive schemes would bring independent early career researchers to enrich our environment while benefitting from the distinctive mix of strengths we have as a School and University.

2. *To further build research reputation through networks and interdisciplinary collaborations*

In the current cycle we developed a portfolio of hosted workshops and conferences (Section 4) to enhance our reputation and to bring researchers to Norwich. Alongside continuing these events, we will look to establish formal bilateral links with international partners whose research profiles have interesting complementarities with ours; our emerging collaborations with Tohoku University (Japan), KIMEP University (Kazakhstan), and Lahore University of Management Sciences (Pakistan) are our first steps in this direction.

Closer to home, we will also look for deeper collaboration with our colleagues across UEA and the Norwich Research Park. We will build upon our existing links to DEV and BEDERG, which includes D'Exelle, with Banuri and Brunnschweiler participating as external members. More broadly, we are well-positioned to participate and lead in UEA's emerging research themes including those on climate and human decision-making (Section 3).

3. *To enhance our visibility among research users to generate new research partnerships and impact opportunities.*

Throughout this cycle we have evolved our thinking about the roles non-academic collaborators play in our research activities. This has been a consequence of recruitment decisions, where we have sought to add colleagues with the potential to expand our network of links with research users, and the internal support described above. Our impact stalwarts in IE are now joined by new collaborations based in ERC. In BE, we see opportunities for translating our well-established reputation and expertise, and our infrastructure in LEDR for delivering research studies. We will partner with non-academic organisations to support capacity-building in applying behavioural insights, which will generate impact opportunities from our existing research and

allow us to engage with collaborators at all stages of the research lifecycle. One example is our first Knowledge Transfer Partnership, launched in 2020 with Anglian Water (Section 4).

We will continue to draw on the experience of CCP, whose outstanding track record in engagement with research users and generation of impact is underpinned by effective techniques for communicating research results and expertise. We will adopt and adapt these techniques as appropriate to our research more broadly, building on initiatives we have already begun such as our blog. CCP have also been effective in using policy briefs and responses to consultations to build the visibility of their expertise based on a collective body of research by the group.

4. *To complement growth from within with strategic recruitment at senior levels to ensure the long-term vitality of all research groups.*

We have been successful in establishing leadership in the three newer research groups, with the leads of two (Brunnschweiler in ERC and Tvede in ET) joining in this cycle and a third, Moffatt (AFE), being promoted to professor at the start of the cycle. We also now have associate professors making contributions across all groups and moving into formal and informal leadership roles. In the next cycle we anticipate retirements in BE and IE. We intend to build on our reputation and infrastructure in these areas to recruit at the Professor level in these groups; these posts are in the School's financial plan and recruiting will begin early in the cycle.

2. People

Staffing strategy and staff development

We use the ATR and ATS contracts at UEA strategically to provide core time for research for ATR staff while delivering high-quality, research-led, and personal teaching on our undergraduate and master's programmes. In this cycle, we have increased the number of ATR staff by 5, with 15 joiners and 10 leavers, while maintaining the number of ATS staff. We now have 10 professors, 14 associate professors, and 6 assistant professors, with 4 senior research associates.

Since 2014/15 we transitioned from a regional to an international search process for junior recruiting, aligning with the major job market meetings. We advertise all our junior posts on Job Openings for Economists, holding preliminary interviews at the ASSA meetings as well as the regional European markets. We have taken advantage of the increase in applications we now receive to integrate all members of the School into the search and selection process. Under the coordination of group leads, we encourage all staff to recommend candidates to the selection committee to invite to job market interviews. We have ensured balance in gender and ethnicity on the committee; lecturers, including those on probation, have taken active roles in those first-stage interviews.

Progression and Promotion

We welcome new joiners with a comprehensive induction programme, including personal meetings with each director on the School executive. New joiners receive an allocation in the

workload model (WLA, see below) to account for their induction, and for the additional time required in preparing to teach at UEA for the first time. For early career researchers there is a time allocation for completing the MA in Higher Education Practice. New staff who join on probation are allocated a mentor to support them through to confirmation of appointment. Staff who join with confirmation are allocated a guide for their first year; and any member of staff can request a mentor at any stage. We signal the value we place on the role of mentoring with explicit time allocations in the WLA. Staff on probation receive annual formal feedback on their progress, in writing from the Promotions Committee and in personal meetings with the Head of School.

UEA has an annual cycle of appraisals for all staff, and Research Activity Plans (RAP) for staff on ATR contracts. The RAP focuses on plans for the coming two years, and is an opportunity to identify resource needs and potential opportunities for collaboration, engagement and impact. Appraisal considers all aspects of being a member of staff, including teaching and administration, and is an opportunity to review how those responsibilities are balanced. In reflection of the complementarity of these processes, we conduct them in tandem. Everyone receives feedback on their RAP from an ATR member of staff on the School executive in the same meeting as the appraisal discussion, giving joined-up signals on their progression.

Staff are eligible for a term of study leave after every seven terms of service; in the WLA, a term of study leave is in addition to the 40% base allocation to research. We encourage staff to apply for study leave when eligible, and planning for the next term of study leave is integrated in the RAP/appraisal process. During this cycle, 13 members of staff have taken a term of study leave. Highlights from these include Brunnschweiler's dissemination of the results of her work in Ghana, Polanski's initial collaborations that led to the BiNoMa workshops (both detailed in Section 4), and Bokhari's work on pay-for-delay strategies in the pharmaceutical industry which ultimately underpinned an impact case study.

We take a collaborative approach towards applications for confirmation of appointment and promotions. UEA's Academic Progressions Handbook recognises that each researcher has a different mix of achievements among research outputs, external funding, impact, and other activities. We therefore complement the Handbook by publishing and regularly reviewing clear criteria for how applications will be evaluated in the context of our discipline. Colleagues considering promotion are encouraged to circulate drafts of their applications informally to members of the Promotions Committee well in advance of application deadlines. Through this mechanism, the committee supports applicants in shaping their application to communicate and contextualise their accomplishments effectively to the committees at the Faculty and University levels. In this cycle, all seven of our members on ATR contracts who have come up for confirmation of appointment have been successful. In addition, we promoted seven colleagues to associate professor/reader and three to professor. Several of our mid-career cohort have also taken on substantive leadership roles: we have our first female Head of School (Lazarova), two Associate Deans in SSF (Di Maria, Postgraduate Research; Turocy, Research), and the Director of CBESS (Penczynski).

During this cycle we implemented a new workload allocation model (WLA) which explicitly and transparently allocates time for teaching, including new preparations and large modules, and for administrative responsibilities. Teaching can be consolidated primarily within one term or the other, if this is desired by a member of staff and feasible within the constraints of the School's

courses. For all ATR staff the model allocates 40% of time to research, with additional time allocated when staff have been successful with funding bids paying for investigator time. The model leaves 10% of time unallocated; this time can be used for additional research, engagement, impact generation, or other activities at each individual's discretion.

We have maintained our practice of allocating each member of staff an individual allowance, which was set at £4000 in 2018/19 and 2019/20. This allowance can be used for conference attendance, travel, hosting collaborators, and other research expenses, and for specialist computing equipment over and above the standard workstations provided. This core School funding is in addition to financial and other support available via UEA's system of research centres and themes (Section 3). We now complement the individual allowance with several new allocations targeted towards strategic objectives:

- We provide an additional subsidy towards presentations at selected major international conferences (Royal Economic Society, European Economic Association, Econometric Society, and Allied Social Sciences Association).
- We have calls for proposals for hosting conferences and workshops, especially in Norwich at UEA. These have led to the initiation of conference series on contests, networks, and social norms, as well as the development of our regular workshop and summer school series. (Section 4)
- We have a scheme for funding collaboration with organisations outside academia on projects with impact potential or grant capture. Since launching this scheme, a total of just under £60k has been allocated among 24 projects. This funding has supported, for example, Brunnschweiler's work in Ghana and Sitzia's with Norwich City Council. (Section 4)
- Each research group now has an allocation of £2000 for developing the activities of the group, for example, by funding ad-hoc half-day workshops with a mix of internal and external speakers.

Support and promotion of equality and diversity

We established the Equality and Diversity Director and the Equality and Diversity in Economics (EDE) committee in March 2014 to develop a supportive culture that values all students and colleagues, and to provide a structure for continuous review of our practices, especially in the light of data and feedback from the School's members. In 2017 we became the first department of economics in England, and the second in the UK, to achieve an Athena SWAN Bronze Award.

EDE, which includes student representatives, meets monthly to discuss current issues and initiatives relating to equality and diversity. It designs and conducts bi-annual internal staff and UG, PGT and PhD student surveys. The survey results have led to several changes within the School to develop a more inclusive environment, such as greater consultation on administrative role allocations, more transparency on the hiring, confirmation and promotion processes, and the strengthening of the School's mentoring scheme. Moreover, the School has organised two workshops tailored to its faculty and staff, on unconscious biases and on bullying and discrimination, to provide information on these important but sensitive issues and discuss how to address them.

Following on from our Athena SWAN award, EDE have continued their efforts to ensure greater equality and diversity in the School and the discipline as a whole. In 2018, the committee put forward and helped implement a Faculty-wide "back-to-work-fund", open to all faculty and colleagues returning to work after a prolonged break such as maternity leave, parental leave, sickness, or caring responsibilities. We inform all new hires of this scheme during their induction

meetings, and make information on it easily available within the School. The first person to benefit from the Faculty scheme was a member of the School, who received financial support to ease her return to research and carry out fieldwork after her maternity leave. We have launched a series of half-day workshops to celebrate diversity in economics. The first two, in October 2019 and October 2020 in honour of Black History Month, featured short presentations on research by BAME economists from PGR students to associate professors, and individuals' accounts of their personal journeys to the economics profession. Both workshops had over 35 participants, coming from ECO, DEV, PPL and NBS.

PhD students

As envisioned in our 2015 review, we have expanded and systematised our approach to PGR training. We now offer a full complement of five core PhD training modules: microeconomics, macroeconomics, econometrics, mathematics, and research methods. We have strengthened these previously-optional modules to be compulsory for all students starting with the 2018-19 intake. The research methods module is designed to support students in developing their initial research ideas, and forming essential skills for written and oral presentation of their research.

These modules prepare the student for their probationary review, which occurs at the end of their first year of registration. For most students, this review takes place in the context of a 'mini-conference' for students in the School, which is held in the early summer; all academic staff are invited and encouraged to attend. Each student makes a conference-length presentation outlining their progress so far and proposed plan of work for their dissertation. Two academic members of staff, not on the student's supervisory team, serve as discussants for the presentation, and are the internal examiners who recommend whether the student proceeds in the programme.

We continue our emphasis on developing research communication skills by requiring each student to give a conference-length talk at least once per year. This expectation may be fulfilled by presenting at a national or international conference with peer-reviewed submissions, or internally in a seminar with researchers outside their supervisory team serving as discussants.

Complementing the core training provision in the first year, we offer three annual summer schools, ranging from two to five days in length, on experimetrics, behavioural game theory, and industrial organisation. These are open to registration by students from other universities, with over 40 external registrations in 2019.

We participate in the economics pathway of the South East Network of Social Sciences (SeNSS) consortium along with six other universities (City University London, Royal Holloway, Reading, Sussex, Essex, and Surrey). Through our involvement, we ensure that our training standards are aligned with those of the other participants in the pathway. Universities in the pathway are working towards creating a platform on which students can access PhD training courses delivered online by all participating institutions without paying additional fees.

Our students have been successful in winning three SeNSS studentships – two in the "+3" category (in the 2017 and 2019 competitions) and one in the "1+3" category (in the 2020 competition). In addition, Borcan was successful in the 2020 SeNSS competition for a collaborative PhD studentship, with the support of the United Nations Office for Drugs and Crime

(UNODC). Her project “Global integrity education: A behavioural approach” will implement integrity training for university students in different countries and evaluate its impact on students’ ethical behaviour and attitudes to corruption using experimental methods. The training is inspired from the Ethics and Anti-Corruption Modules from UNODC’s Education 4 Justice Initiative. Work has begun on a field experiment, which will roll out an online integrity training for randomly selected law students in Ukraine, with the support of a local partner - USAID New Justice.

In the current cycle, our overall PhD cohort has ranged in size between 32 and 34 students, with intakes ranging from 6 to 10 students per year. Among the 59 students who have joined the programme since 2013/14, 27 (46%) are female. Our current students come from 18 countries: Brazil, China, Colombia, Egypt, Haiti, India, Italy, Kuwait, Mauritius, Nigeria, the Philippines, Russia, Saudi Arabia, Spain, Thailand, the UK, the US, and Vietnam.

We took in eight students in 2019 and in 2020, a level at which we aim to stabilise going forward. With consistent cohort of this size, we can selectively recruit strong students from a variety of backgrounds who will benefit from complementarities with our research groups. We offer five internally-funded studentships per year. Since the autumn 2019 intake, we have allocated two of those studentships per year to individual research groups, on a rotation basis. This enables the group to do targeted advertisement of these opportunities within their fields and their personal networks, including specific areas of research and supervision interest. The quality and fit of the students we have attracted in the first two cycles via this initiative give us early evidence that this will be an effective scheme to ensure a steady stream of promising students in each group. We will track the progress of these students to evaluate the right proportion of these hypothecated studentships to offer each year.

We are expanding our networks to continue to attract students from a variety of backgrounds. In 2019/20 we established a joint PhD programme with Lahore University of Management Sciences (LUMS), which will open for students joining from the autumn 2022 intake. Students on this programme will be based in Pakistan, and have a supervisor both at LUMS and at UEA. This programme is designed for students with personal or family constraints preventing them from being resident for a full four-year programme in the UK; instead, they will be able to access training remotely and by coming to Norwich for shorter intervals of time. Their dissertations will be assessed to the same standard as our UEA-based students.

On average, we have awarded 6.4 degrees per year:

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total
PhD	10	6	4	7	6	5	7	45

Since 2014, we have conducted a job market preparation workshop in the late summer for students interested in either the academic or non-academic markets, modelled on those offered at North American institutions; these are currently led by Cooper. Of the students who have completed since 1 August 2013, 29 (64%) are in academic positions, including Aston, Bolton, Bournemouth, Cardiff, Leeds, Leicester, Northampton, Reading, Warwick in the UK and Universidad Andres Bello, Central University (Ghana), Chinese University of Hong Kong, GATE Lyon, Hang Seng University of Hong Kong, Karlsruhe Institute of Technology, Macau University of Science and Technology, TU Munchen, Wuhan University, Universidad del Valle, Zayed

University (UAE), and ETH Zurich internationally. Non-academic placements include the Abu Dhabi Council for Economic Development, the Competition and Markets Authority, the Economic and Social Research Institute, the German Cartel Office, the Japanese Fair Trade Commission, the Mauritius Competition Authority, NERA Economic Consulting, the Philippine Competition Commission, and RBB Economics. These students have published papers in, among others, *Economic Inquiry*, *Environmental and Resource Economics*, *European Economic Review*, *Journal of Economic Behavior & Organization*, *Journal of the European Economic Association*, *Journal of Public Economics*, *Journal of Risk and Uncertainty*, *Management Science*, *Social Choice and Welfare* and *Theory and Decision*.

Our students appreciate our comprehensive approach to their development as researchers. In the 2019 PRES, our overall satisfaction score was 91, with 100 in 'supervision', 93 in 'resources' and 93 in 'responsibilities'. We have made significant progress since the 2015 PRES, in which our students gave us an overall score of 80; since 2015, their satisfaction with 'research culture' has increased from 70 to 85. The Russell Group average for 2019 was 80 for overall satisfaction and 66 for research culture.

We have accomplished the transformation in our PhD programme by allocating the right resources to support our students from recruitment through to completion. Our PGR team is led by the PGR Director, supported by an Admissions Director, a Training Officer, and the Lead for the SeNSS economics pathway. Each student has both a primary and a secondary supervisor; in the new WLA, allocations for these are made in addition to the 40% research time. Through the flexibility and transparency of the WLA, we have been able to allocate additional time to supervisors who have been supporting students with special needs. Each student receives a budget of £500 per year to support their research and additional training, which they are responsible for administering in consultation with their supervisors. These funds have been used for attending conferences and workshops, fees for submitting articles to journals, and for training courses, for example in specialist software packages, beyond topics which we offer in-house. Students are now physically located within the School, with personally-dedicated desks in shared offices with individual workstations. We support flexible working and travel with a laptop loan scheme, which six students have made use of since 2017.

3. Income, infrastructure and facilities

Income

In this cycle we have increased, and importantly diversified, our research funding streams. Our average annual income of £493,513 is up 27% on the annual income of £387,865 returned to REF2014. Under this headline figure is a substantial transition, as the ESRC Centre funding for CCP, which played a significant role in our REF2014 return, ended in 2014. Our increased funding is more distributed across our groups and across funders.

Key successes in this cycle include Sugden's European Research Council Advanced Grant (2015-2020, £850k), 'Reconstructing normative economics on a foundation of mutual advantage;' Hugh-Jones' ESRC Future Research Leaders Grant, 'The norm of honesty: Empirical studies on school pupils and the UK population' (2015-2017, £175k); Phase 2 of the ESRC Network for Integrated Behavioural Science (Lyons, Sugden, Turocy, 2018-2021, £471k);

and Banuri's projects for the World Bank 'Conspicuous consumption and access to credit' (USD37k) and 'Lab experiments on governance and behaviour' (USD49k).

We focused efforts on building grant bidding capacity in ERC to draw on GCRF funding. To support this, the School successfully bid for Faculty funding for a research associate to support the group's GCRF bidding strategy. This has led to stronger links with DEV and the School of Education and Lifelong Learning. GCRF successes include 'Preserving, restoring and managing Colombian biodiversity through responsible innovation' (Di Maria, NERC, £150k) and 'Growing a low carbon, resource efficient economy with a sustainable supply of raw materials' (Di Maria, Horizon 2020, £94k).

These successes reflect a shift to a more diversified portfolio, across our research groups, with a broader range of funders, and with a greater variety of collaborators both in other disciplines and outside of academia. These are the first fruits of our strategy to build a broad-based School in this cycle outlined in Section 1, which we will continue in the coming cycle. The wider environment at UEA, described below, will support us in sustaining this ambition.

Infrastructure

We benefit from collaborations and networks established and supported by UEA's established research centres.

The **Centre for Behavioural and Experimental Social Science (CBESS)** was established in 2008 by members of the School (including Sugden) to extend our established reputation in behavioural and experimental economics and support research in behavioural science across the University and Norwich Research Park. The Centre hosted UEA's portion of the two phases of the ESRC Network for Integrated Behavioural Science (2012-2017 and 2018-2021) with our collaborators at the Universities of Nottingham and Warwick, and Sugden's ERC Advanced Grant. The Centre brings together 30 staff and 6 PhD students from the ECO, DEV, PSY, NBS, and MED within four clusters of research: behaviour change; the science of consumer behaviour; diversity and discrimination; and text analysis and artificial intelligence. The Centre is currently directed by Penczynski, resourced by an in-kind contribution of ECO in its WLA. CBESS provides seedcorn funding for developing pilot studies which can be used as the foundation for larger proposals for external funding, and serves as the portal for organisations outside academia to access our research expertise in these areas.

The **Centre for Competition Policy (CCP)**, founded in 2004 by four industrial economists including Davies and Lyons, is a centre of international excellence exploring competition policy, including incentive regulation, from the perspectives of economics, law, business management and political science. CCP draws its members from the ECO, NBS, LAW, and Politics, Philosophy and Language. CCP research is interdisciplinary, academically rigorous, independent and policy-relevant. It provides financial support, buy-outs, and research assistance to facilitate the interactions that enable policy-relevant research and help develop the next generation of researchers of competition and regulatory policy. Funded as a Centre by ESRC from 2004-2014, it has now established itself sustainably via a portfolio of external funding sources including grants from public funders, contract research, engagement activities, and training courses. The Centre currently employs five research and administrative staff, and has 41 faculty and 24 PhD student members, and operates from a dedicated space in the Grade-II* listed Earlam Hall on campus. The Centre has six paying subscription members including the

Department for Business, Energy and Industrial Strategy, Ofgem and The Competition and Markets Authority; these members regularly use the opportunity to test emerging ideas with the Centre during workshops hosted at CCP.

UEA research themes

In the coming cycle, we see UEA's emerging interdisciplinary themes as excellent opportunities for new research collaborations.

UEA's first theme, **ClimateUEA**, launched in 2020, reflects the contributions of the University to climate science and aligns closely with the ERC group. Di Maria has been affiliated with the **Tyndall Centre for Climate Change Research** and CSERGE since joining UEA and is on the steering committee for the Leverhulme Doctoral Scholarships awarded to UEA in 2020 on the 'critical climate change decade'.

The development of UEA's third theme, **DecisionsUEA**, originates from conversations between Turocy and Colin Cooper (Norwich Medical School), who identified overlaps in research interests between lines of research in CBESS, in particular the cluster in behaviour change, and interest in health behaviour and behaviour change within the Faculty of Medicine and Health. Turocy and Cooper are leading the group developing the theme, with additional members from the Schools of Environmental Sciences; Literature, Drama and Creative Writing; and Psychology. Delayed by the pandemic, the theme is set to launch in 2021.

Facilities

In 2018 we established the **Laboratory for Economic and Decision Research**, with Turocy as Director. Laboratory facilities, which were previously in multiple locations, have been consolidated into a single storey within the Zicer building dedicated to research with human participants. We have complemented this by investing in professionalising the management of the laboratories and related activities, moving away from fixed-term postdoctoral researchers having part-time management duties, and recruiting a full-time lab manager on an indefinite contract. We have end-to-end capacity to deliver studies with human participants, whether lab, lab-in-the-field, or online, including design and software implementation. This supports our strategy of engagement with external stakeholders, with opportunities for co-produced research, impact, and a diversification in our income streams.

In Summer 2017, we moved to dedicated space in the Registry building across two dedicated storeys. This marks the first time in the history of the School that all colleagues have been located in a contiguous block of offices and meeting/social spaces, and, importantly, the first time that PGR students have been embedded physically in the School.

4. Collaboration and contribution to the research base, economy and society

Contributions to society and the economy

Lyons and Sugden contributed chapters to *Behavioural Economics in Competition and Consumer Policy*, a CCP handbook for policymakers launched in November 2013 at the Competition Commission. Subsequently, they have developed the practical concept of 'transactional fairness', grounded in Sugden's work on normative behavioural economics and Lyons' work in competition economics. The Financial Conduct Authority has discussed this

concept with them as they develop their 'fair value' agenda, and the Penrose Report recommended that transactional fairness be incorporated into CMA guidelines.

Kühn co-authored a chapter, 'The competition analysis of vertical restraints in multi-sided markets', in the OECD's 2018 report, *Rethinking Antitrust Tools for Multi-Sided Platforms*, and was a member of the American Bar Association's Task Force on National Interest and Competition Law.

Davies, Kuhn, Lyons, Sugden and Turocy have been contributors to bespoke workshops CCP offers to its subscription members (Section 3). In the current cycle, BIS/BEIS, Ofgem, Ofwat, the Financial Conduct Authority, the Competition and Markets Authority, and the National Infrastructure Commission have all sent delegations to Norwich for workshops on topics of their choosing.

Banuri was a co-author of the World Bank's 2015 *World Development Report: Mind, Society, and Behaviour*. This report has been instrumental in bringing behavioural science and experiments into the work of development institutions. Banuri demonstrated biases within development practitioners, which has led to a number of development agencies and governments undertaking similar studies; he has been advising the German Institute for Development Evaluation (DEval) on this topic. Banuri and collaborators at the World Bank contributed to the 2017 *World Development Report* with the supporting working paper 'The governance game', which provided experimental evidence on how institutions can improve governance.

Brunnschweiler, with Päivi Lujala (University of Oulu/NTNU) and Maarten Voors (Wageningen University), supported three Ghanaian NGOs, led by the Kumasi Institute of Technology, Energy and Environment (KITE) and its Director Ishmael Edjekumhene, in designing and carrying out a large field experiment in 2016-2017 on the effectiveness of transparency measures in oil and gas revenue management. The project presented its findings at three policy events (Accra, April 2018 and May 2019; Oslo, June 2018), which have led to changes to Ghana's information dissemination strategy and feedback gathering, and facilitated the exchange among stakeholders on how to improve accountability in petroleum revenue management in Ghana in the future.

In keeping with UEA's commitment as a civic university, we look to work with local and regional collaborators. Sitzia collaborated with Norwich City Council on the 'Can challenge', a pilot project to investigate how to translate theoretical and empirical findings on behaviour in contests to encourage recycling behaviour. Brunnschweiler and Turocy, in collaboration with a PGR student, worked with the Norwich Foodbank to implement a field experiment on designing messaging to encourage donations of in-demand items within local grocery stores.

Patel has been working to translate behavioural insights to encourage update of flu vaccinations. He collaborated with HC-One Care Homes to provide evidence-based advice on devising staff flu vaccination policies, which led to their adoption of an opt-out declaration form which has resulted in a significant increase in update of the vaccine by staff. He also provided advice to Day Lewis Pharmacy to support their redesign of their vaccination text-message strategy.

Turocy and Rose Meleady (School of Psychology) are academic leads on a Knowledge Transfer Partnership begun in Spring 2020 with Anglian Water, to embed the capacity to develop, implement and test behaviour change interventions across the business. The two-year project is developing a toolkit to guide the design of interventions alongside a curated evidence base to support design choices. The partnership will deliver at least two interventions during its lifespan, and establish a Centre for Excellence in Behaviour Change at Anglian to implement future interventions and share knowledge across the water sector nationally and internationally.

Engagement with the broader public

Following on from our attainment of our Athena SWAN bronze award (Section 3), we recognised that addressing large gender gap in the discipline requires actions at every stage of the pipeline. The EDE committee has initiated an annual one-day outreach conference aimed at female pupils in years 10 through 12, to dispel misconceptions about economics and inspire them to consider economics as a career. The conference, held for the second time in July 2020, has been supported by the Royal Economic Society, with the participation of several colleagues, including the Head of School. We have been encouraging contributions linked to equality and diversity on our staff and student blog and our newly-launched podcast.

To showcase our own expertise and communicate the breadth of topics which economists study, we have begun participating in the annual Norwich Science Festival. In 2019, the behavioural economics group presented a session illustrating some key findings on individual-decision making, using a series of TV documentary-style short videos produced in collaboration with a local filmmaker and shot on location at Norwich landmarks. In 2020, Banuri published his eBook, *Good Decisions for Strange Situations*, aimed at a general-interest audience, translating findings from behavioural science into advice for personal decision-making in exceptional circumstances such as the pandemic.

Conferences and workshops

Our strategic funding and support for the development of workshops and conferences (Section 2) has led to several series which have attracted outside collaboration and funding and established themselves on the calendar in their respective fields.

Since 2015 we have hosted our summer **Workshop on Behavioural Game Theory**, in conjunction with the behavioural game theory PhD summer school. Bayesian persuasion, communication, information transmission, and psychological game theory have been featured annual topics, with Pierpaolo Battigalli, Jordi Brandts, Gary Charness, Martin Dufwenberg, Erik Eyster, Alessandro Lizzeri, and Maria Montero contributing keynote talks.

Turocy co-founded and co-organises the **Contests: Theory and Evidence** conference, co-supported by CBESS. Five editions have been held in Norwich from 2015 to 2019, with an online version in 2020 in which presentations by early career researchers were prioritised. This is the leading international conference series in this active field, attracting attendees from over 50 institutions around the world.

Patel co-founded, with Martin Dufwenberg (Arizona), the **Workshop on Psychological Game Theory**, the first such international workshop series in that field. Four instalments have been held: 2016 (Gothenburg), 2017 (UEA), 2018 (Soletto, co-organised with Giuseppe Attanasi and Pierpaolo Battigalli), and 2019 (Copenhagen, co-organised with Alexander Sebald). In addition

to UEA support, the workshop has received approximately £50k in funding from the Society for the Advancement of Behavioral Economics, the International Associate for Research in Economic Psychology, and the Jan Wallander and Tom Hedelius Foundation. Workshop sizes have ranged from 20 to 100 participants, and are accompanied by a summer school attended by 30 to 50 students per year.

Polanski and collaborators at the University of Basque Country (UPV) and at the University Malaga (UM) founded the annual **Bilbao-Malaga-Norwich (BiNoMa) Workshop on Economics of Networks**. Four instalments have been held so far: 2016 (UEA), 2017 (UM), 2018 (UPV), and 2019, with Queen's University Belfast joining the network. BiNoMa workshops have been attended by between 20 to 30 participants ranging from PhD students to world-leading experts in the field. In addition to UEA support, the workshop has received financial and logistical support from the organizing universities and from various sponsors.

Hugh-Jones organised the **Cultural Transmission and Social Norms** workshop series, including researchers from economics, history, sociology, and psychology, including Joseph Henrich (Anthropology, Harvard); Cristina Bicchieri (Philosophy, Pennsylvania); Jonathan Rose (History, Drew University); Pete Richerson (Evolutionary anthropology, UCSD); Alberto Bisin (Economics, NYU). The first two editions, 2016 and 2017, were held in Norwich, and the 2018 edition was hosted by the Massachusetts Institute of Technology, with the 2017 and 2018 workshops co-organised with Fabian Winter (Max Planck Institute Bonn).

In addition to our internally-funded conferences and workshops, we are active on the organizing committees of other national and international conferences. BEDERG and CBESS have organised the annual **Behavioural Development Economics: Lab in the Field** PhD workshop since 2014. Banuri co-organised, with BEDERG and DEV, the 2017 edition of the Symposium on Economic Experiments in Developing Countries (SEEDC) conference held at UEA in 2017, and was on organising committee for the 2018 edition held at Wageningen. Brunnschweiler and Valente have co-organised three editions (2016, 2018, 2020) of the biannual Monte Verità Conference on Sustainable Resource Use and Economic Dynamics (SURED), with colleagues from ETH Zurich, Tilburg University, and City University of Hong Kong. Turocy was on the organising committee for the 2020 Economic Science Association Global Online Around-the-Clock World Meetings.

Moffatt has developed a masterclass based on *Experimetrics* which is offered annually at UEA, and additionally in a one-off format during this cycle at University of Osnabruck, Universidad del Rosario (Colombia), Texas A&M, Portsmouth, and National Taiwan University. This is a two-day course intended for 20-30 participants, covering the most practically useful methods from the experimetrics toolbox via hands-on programming exercises on real datasets.

Contributions to the discipline

Editorship roles during this cycle include Cooper (editor-in-chief, *Experimental Economics*; advisory editor, *Games and Economic Behavior*; guest editor, *Journal of the Economic Science Association*); Di Maria (co-editor, *Resource and Energy Economics*); Moffatt (editorial board, *Journal of Risk and Financial Management*); Patel (guest editor, *Journal of Economic Behavior & Organization*); Sugden (editorial board, *Theory and Decision*, *Journal of Economic Psychology*, *Journal of Institutional Economics*, *Economics and Philosophy*, *International Review of Economics*, *Journal of Social Ontology*, *Philosophy and Economics*, *Utilitas*).

Brunnschweiler has twice been on the nominating committee for the European Association of Environmental and Resource Economists Erik Kempe Award for the best paper published by an author affiliated to a European research institution in the field of environmental and resource economics. Kühn is a member of the Executive Committee of the European Association for Research in Industrial Economics. Turocy is Vice President for Information for the Economic Science Association; as part of the Association's response to the pandemic, Turocy initiated and co-organised a summer series of online seminars by early career researchers who missed out on the opportunity to present at the Association's cancelled 2020 in-person international meetings. Poulsen served on the ESRC peer review college 2015-19, Di Maria is a member of the ESRC GCRF peer review college, and Turocy is a member of the UKRI Future Leaders Fellowship peer review college. In 2020, Koh was a member of a panel on job market experiences and advice, organised by the American Economic Association's committee on the status of LGBTQ+ individuals in the profession.

D'Exelle is a member of the advisory board of the Field Lab Uganda, a company who provide the expertise and implementation support for lab-in-the-field experiments; the company originates from the many lab-in-the-field experiments UEA researchers (primarily in BEDERG) have conducted. Banuri serves on the board of advisors for the behavioural laboratory at the American University in Cairo.

Keynote talks

Banuri has given several keynote talks on incentives and motivation of public officials to policy professionals and high-level public officials interested in updating their recruitment and retention strategies, including at the Inter-American Development Bank (2017), the OECD Working Party of Senior Public Integrity Officials (2017), Consortium for Development Policy Research (Lahore, 2018), and the National School for Public Policy (Lahore, 2020). Di Maria was a plenary speaker at the Florence School of Regulation Climate Annual Conference (2018) and the TSE Environmental Regulation and Industrial Performance workshop (Toulouse, 2018). Kühn was keynote speaker at the Annual Bergen Competition Policy conference (2016). Lyons was plenary speaker at the Association for Competition Economics conference (Bocconi 2015). Moffatt was plenary speaker at the Experimetrix Workshop (Alicante, 2015) and the Sydney Workshop on Experimental Economics and Theory (2019). Sugden has been keynote speaker at the Annual Conference of the Association for Heterodox Economics (Southampton, 2015), Economics, Health and Happiness (University of Applied Sciences and Arts of Southern Switzerland, 2016); the International Meeting of Economic Science Association (Jerusalem 2016), Prizes and Virtues workshop (LUMSA, Rome, 2017); the Happiness, Capabilities and Opportunities conference (University of Naples, 2018); Dealing with normative issues in behavioural welfare economics symposium (Erasmus Institute for Philosophy and Economics, 2019); and the Scientific Understanding and Representation Workshop and the Philosophy of Social Science Roundtable (Emory University, 2020). Tvede was keynote speaker at Jornadas Latino Americanas de Teoria Economia (Brasilia, 2016).