

**Institution: University of Exeter** 

**Unit of Assessment: 16 (Economics and Econometrics)** 

Section 1. Unit context and structure, research and impact strategy

## Context & Structure

The Economics Department at the University of Exeter is on an exciting **upward trajectory of ambitious directed growth**. It produces internationally high quality and impactful research across the majority of sub-fields of economics, with a strong emphasis on **stretching the boundaries of the discipline** and attracting **interdisciplinary funding**. The department has **expanded 50%** over the REF period: from 28 Full-Time Equivalent Positions (**FTE**) (categorised as research & teaching) in 2013/14 to 38 in 2019/20 and 43 in 2020/21. In parallel, quality indicators rose substantially, e.g. research income increased from £269,295 in 2013/14 to £828,918 in 2019/20, more than doubling per FTE. The choice to grow – including the size of the doctoral program – allows a heightened focus on precisely those topics and methods that have exceptional current and future potential. Pushing boundaries is not a conservative strategy, but one that holds the promise of major benefits for the department, the institution, and society at large.

The rationale for growth and for boundary stretching is the aspiration to pursue **intellectually rigorous**, **innovative**, **global research**, undergirded by **fundamental economic perspectives** yet **multi-disciplinary in nature** and applied – meaning truly **outward-looking**. In practice, this includes environmental and natural resource economics; organisations and institutions; human capital and labour markets; individual, household, firm, and social decision-making; gender; and development economics. Given the complementary importance of methodology, staff in the department utilise a mix of approaches ranging from time-series and spatial econometrics, to experiments (both lab and field) and other causal inference techniques, to regression analysis of administrative and survey data, to machine learning and big data. External partnerships range from multi-national firms to small businesses, governments at all levels, and local farmers. Economics at Exeter is a **dynamic department with a vision of excellence in academic output and training**, as well as **influence on society**.

Climate change and ecological change represent critical global challenges that **leverage existing** and growing strengths in sustainability research. Recognising the importance of environmental economics, in 2015, the Unit attracted the comprehensive Land, Environment, Economics, & Policy (LEEP) Institute, which regularly influences UK natural resource policy at the highest level. This endeavour was crowned with the 2020 appointment of the Dragon Capital Chair in Biodiversity Economics (*Groom*), for which £1.6 million has been committed to fund research addressing the correlation between **biodiversity and the economy**. Another central topic is **inequity and development**, where the Unit has again stretched boundaries. For instance, since 2018, the Economics Department has hired an expert on social inequality and cooperation, who holds a PhD in evolutionary biology (*Hauser*); an expert on the ethics of Al who holds a PhD in computer science (*Awad*); and an expert on behavioural public policy from the World Bank, who works with the governments of Cameroon, Egypt, Iraq, Malaysia, Mexico, Kenya, and Latvia (*Jamison*).



## Relationship to institution

The Economics department sits within University of Exeter Business School (UEBS), thereby encouraging research and other **collaborations that cross disciplinary boundaries**. The other departments within the school are Finance & Accounting; Management; and Science, Innovation, Technology, & Entrepreneurship (SITE), leading to fruitful formal and informal interchange of ideas, data, best practices and joint students and projects. Tangibly, since 2018 this has led to five co-authored papers in leading journals in economics, finance, leadership, psychology, and management. In addition, Economics staff actively work with academics across the university (e.g. in Human Geography, Law, Philosophy, Politics, and Psychology), including a large health economics group in the College of Medicine and Health, and with others around the world - see the list of partnerships and resultant impacts in Section 4.

Another concrete advantage for Economics of being situated in UEBS is the ability to benefit from its well-developed programs, processes, and resources. The School has recently become **one of less than 1% of all business schools worldwide to be triple accredited**, and the University has started an initiative called 'Project Business' to invest heavily in the future – including dozens of new staff positions – with a particular focus on Economics. UEBS has a centralised Research Strategy Group (RSG), led by the Associate Dean for Research & Impact, with members including the Directors of Research (DOR) for the four departments, the various Centre Directors, the Directors of Impact and of post-graduate research (PGR) for UEBS, and staff focused on funding and external partner engagement. This allows for a coordinated strategic focus and the prompt marshalling of logistical resources when necessary. This School-wide structure also promotes the communal accomplishment of goals and the importance of external impact – for instance highlighting work undertaken jointly by staff from Economics and SITE to help reduce waiting times in the NHS.

#### Internal organisation

Within the Economics department, the design is purposefully a **single cohesive entity without formal divisions**, encouraging intermingling and communication, including porous boundaries with the two research centres. **LEEP** (Land, Environment, Economics, & Policy), as mentioned above and led by *Bateman* and *Day*, has had major funding (£4.8 million) from the Natural Environment Research Council (NERC) and works closely with policy-making bodies such as Defra to shape the future of the environment in the UK and globally, in addition to publishing foundational research. The Tax Administration Research Centre (**TARC**), which is led by *Kotsogiannis* and has had major funding (£1.8 million) from the Economic and Social Research Council (ESRC), collaborates with HMRC but also has active engagements with the tax authorities of Bulgaria, Greece, and Rwanda. Individual staff members also engage regularly with UEBS Centres for Leadership, for Entrepreneurship, and for Simulation, Analytics, & Modelling, as well as with Index (the Initiative in the Digital Economy) – an outpost of UEBS that is based in London – in addition to centres and institutes throughout the university, such as the Institute for Data Science and Artificial Intelligence (**IDSAI**).

Economics at Exeter prioritises a **culture of collegiality**, which means supporting colleagues and rewarding their successes, including cake for journal acceptances and hosting meals for all staff at local restaurants. A recently introduced annual 'Research Day' mini-retreat gathers the entire department to share best practices and topics they are most excited about. During the winter



sequence of visits by job candidates there is always an open buffet lunch, which is an excellent opportunity for staff and PGRs to interact and catch up with one another, as well as get to know the candidate more informally. These opportunities (and the overall approach) are especially important since the goal is to **facilitate outside-the-box exchanges and projects**. There is a new series of informal 'research & doughnuts' presentations aimed at undergraduates, which provides a chance for staff to practice motivating and explaining their work to a keen but less technical audience – and a chance for students to engage with stimulating frontier research while they consider post-graduation options. Postgraduate research students are very much included in this culture and are encouraged to attend all department events such as lunches with job candidates.

### Growth trajectory

The number of academic research staff has increased substantially over the REF period, with further growth planned (and approved). This has involved a **change not just in size but in direction**, actively guided by a dynamic new Dean (and Deputy Dean) and Head of Department (HoD). Nationalities of staff span the globe, from Canada to Colombia to Kenya to Pakistan to Mexico to Syria. All of this has directly expanded capacity, but it has also facilitated the **desire and ability to push into new research territories**.

This upward trajectory is a strategic investment in excellence, as reflected in successful bids for grants and other funding which have risen at an **average annual rate of 23.5% per FTE** since 2013 (see Section 3). Quality is also apparent in publishing: in addition to the best field journals across all areas of economics – and in other disciplines, such as *Organisational Behaviour & Human Decision Processes*, *Artificial Intelligence*, *Nature Human Behaviour*, *Nature Communications*, *Nature Food*, and *Social Science & Medicine* – since 2016, staff have published excellent papers in general-interest outlets such as:

- > AER, Econometrica, QJE, REStud
- ➤ J Econometrics, AEJ: Applied, AEJ: Macro, REStat, JEEA, EJ
- Management Science, PNAS, Nature, Leadership Quarterly

## Strategy

The overarching research goal of the Economics department is to produce outputs of the **highest quality and influence**. High-priority complementary goals include capacity-building, especially for PGRs and ECRs, and positive sustainable benefits for society. These high-level agendas, outlined in more detail below, **build on and complement the overall strategies of the University and especially UEBS.** 

The mission statement of UEBS is "to deliver outstanding and innovative business education and research that addresses the major challenges confronting businesses and society." Its corresponding strategy involves distinctive and **innovative high-calibre international research that engages with and fundamentally improves the world** we live and work in. One component of this is transparency, including making datasets publicly available and a commitment (with resources) to data integrity and to open access publishing (more on both in Section 3). While fully utilizing and building on the impressive resources and reputation of the university, UEBS maintains a high degree of autonomy in terms of research budget, faculty hiring, PGR procedures, and ethics review, amongst others.



UEBS has been growing rapidly, not just in Economics, and all departments are focused on novel but ambitious approaches incorporating technology & data science, multi-disciplinary research in areas such as sustainability and social organisation, and **external partnerships to influence policy**. Just as the school leverages its position within the university while maintaining a degree of independence, the department leverages its position within the school while also charting its own path involving quantitative applied work that pushes the traditional definition of the field in new directions. This agenda remains true to **the skills and philosophy of the economics profession**, while taking advantage of the broader UEBS framework to work and attract funding and publish across a variety of disciplines. For instance, *Fonseca* has worked on the topic of gossip with a colleague in Management (*Peters*), leading to outputs in both *Games & Economic Behavior* and in *Psychological Science*.

The strategic approach to equitably hiring talented researchers from diverse backgrounds (see Section 2), has been validated by the capacity to rapidly respond to the COVID-19 pandemic (see Section 4), for example with high-quality **applied policy-relevant work**. For instance, a new hire (*Sansone*) published a paper on the [under-]representation of sexual minorities in STEM fields, which was prominently highlighted by outlets such as *The Guardian* and *Times Higher Education* and had the 73<sup>rd</sup> highest attention score on Altmetric for 2020, across all disciplines, despite only appearing in November.

#### Sub-fields

Exeter Economics has in recent history been best known for its highly regarded research in behavioural, social, and experimental economics, as well as in economic theory. This is evident in the profiles of many staff (*Chakravarty*, *Fonseca*, *Grosskopf*, *Kaplan*, *Lindsay*, *Sarin*) and continues to be an area of strength via hiring since 2014 (*Chen*, *Hauser*, *Nei*, *Pearce*, *Reinstein*, *Robinson-Cortés*). A strategic decision was made, after REF 2014, to move beyond existing strengths in order to distinctively stretch the limits of the field as a whole. Every department needs to do the basics extremely well but also take a stand and choose priorities. The criteria for the Unit, to be able to chart a realistic course toward world-leading excellence, were:

- a) building on strengths rather than starting completely fresh;
- b) directly engaging with the problems of the world; and
- c) catalysing innovative solutions by spanning disciplines.

This naturally led to a focus on **rigorous applied empirical research** across a range of sectors, but especially those which are likely to grow and to use inputs and techniques from experimental, behavioural, and theoretical economics. Having accomplished the vital step of hiring high-calibre faculty; and having invested in facilities, infrastructure, support services; as well as a commitment to continued future resources, the Unit seeks to be an economics department specifically known for **crossing disciplines to make deep intellectual and practical progress on policy-relevant questions** related to business, the environment, social welfare, families, inequality, and growth. Key current and future growth areas include:

- ➤ Environment, agriculture, and natural resources: hires *Bateman*, *Binner*, *Brucal*, *Day*, *Eisenbarth*, *Groom*, and *Heyes* since 2014, joining *McCorriston*
- Development and institutions: hires Banerjee, Dyer, Ip, Jamison, Mahmud, and Meraglia since 2014, joining Fernandes, Kotsogiannis, and Zissimos



- ➤ Labour, health, and education: hires *Mumcu*, *Oreffice*, *Quintana-Domeque*, *Sansone*, and *Zhang* since 2014
- Macroeconomics and finance: hires Keller, Troshkin, and Weber since 2014, joining Cooke and Neira.

These applied and emerging fields are rigorously empirical, in the sense that they make central use of existing and novel data from a variety of sources. The Unit has also **invested in methodologists**, from applied econometricians to specialists in machine learning (with hires Awad, Cavaliere, Kim, Kripfganz, and Kumar since 2014). UEBS hosts a new Research Methods Centre, described in more detail in Section 3, to support all staff and PGRs in making use of the latest techniques. Furthermore, Economics (Hauser) leads the business theme within IDSAI, a major university initiative linked to the Alan Turing Institute.

## Interdisciplinarity and applied work

The pandemic has highlighted the necessity of **looking toward the problems of the future**, whether health or environment or technology or social inequality, and doing what is needed now to contribute to solving them. The fundamental questions of the next generation are likely to be difficult to answer cleanly, instead **requiring new approaches** to theory, a mix of data, and a thoughtful holistic conceptual framework to hold it all together in a compelling manner.

One concrete metric where the Unit is pushing boundaries is the percentage of publications that are in journals not categorised as purely economics (by the Association of Business Schools; using Scopus data yields similar trends). The 3-year rolling average for this number has **increased by 41%** over the REF period. The majority of these are in other social science and business journals, as well as natural sciences, and they reflect changes on both the extensive (hiring) and intensive (selection of topic and collaborators) margins. Another relevant indicator is the interdisciplinary tag for REF itself, which has been applied to almost 40% of Exeter's submitted outputs in UoA16.

We will also continue the trajectory of managed growth, building on the hiring of eight new faculty (six junior and two senior) in the 2019-20 season, by recruiting top scholars at all levels. These will primarily be in the fields outlined above, but also in closely related areas with similar characteristics, such as applied theory (e.g. welfare economics); public policy; technology & innovation; and/or culture & economics. Impact-specific training is also being integrated for PGRs and ECRs.

To accomplish all this and to mitigate accompanying risks, in addition to a basic **flexibility of implementation** and commitment of resources, it will be necessary to integrate ever more fully across UEBS and especially the University. For instance, Economics will make valuable contributions to the University of Exeter's recently declared 'climate and environmental emergency' (which acknowledges the crisis of climate change and promises to help combat it) – and instigate stimulating new research in the process. Graduate students can and should take classes from a cross-section of departments. Increasingly research will be done in medium or large interdisciplinary teams, hence both students and faculty need to be ready to step into these roles. This can be achieved via experience (e.g. organizing informal networks to brainstorm, in preparation for urgent grants or policy requests); via seed funding of pilot projects and proofs-of-



concept; via mentorship and formal training; and via a **collaborative joint approach** to building a healthy and high-quality research culture.

Central to this framework is an **energetic and developing PGR programme** (see Section 2), both to stay at the forefront of knowledge today and to train future researchers and practitioners; the Unit now offers a rigorous new 2+3 MRes+PhD programme, with internally-funded scholarships, in line with other elite departments in the UK and US.

### Section 2. People

Hiring & Promotion

The growth trajectory of the department has accommodated a recruitment strategy of searching for the **best candidates across fields**, referring not only to research but also to teaching, public-goods provision, and impact. With respect to the latter, recent hires arrived with a well-developed base of projects already involving applied translational activities and with high potential for impact. There has been a general focus on applied economics and multi-disciplinary work, as described in the previous section, but this has been explicitly broadly construed in pursuit of excellence. The successful recruitment campaigns have been globally competitive: the new hires listed above include staff with PhDs from Caltech, U Chicago, Harvard, MIT, Princeton, Stanford, Toulouse, UC Berkeley, and UCL; and with postdocs at Harvard, MIT, Oxford, and Yale.

Hires have come at both junior levels (Lecturer, Senior Lecturer) and senior levels (Associate Professor, Professor). This involves thorough participation in the standard junior job market, but also **selective active targeting** of potential senior staff. As part of the latter process, the Economics department has worked proactively to promote gender balance among staff by creating a list of female candidates to approach in 2020 to see if they might be interested in joining the faculty, which began by manually looking through all publications in top research outlets in the previous five years. Two of the resulting discussions are live and proceeding promisingly. Even before that exhaustive search, evidence-based best practices such as **diverse mixed panels**, **structured interviews**, **and head-to-head comparisons** were standard. Consequently, the share of female candidates interviewed and flown-out during the most recent job market cycles was 40%, and 10 (out of 28) hires since 2014 have been women.

Finally, the department is taking more advantage of its two Distinguished Research Professors (*Cavaliere*, *Heyes*), who are part-time at Exeter. Specifically they join the daily life of the department by giving research seminars & methodology workshops; by giving lectures in the MRes program; by mentoring staff and PhD students; by serving as internal reviewers for the annual research monitoring exercise; and by facilitating international connections via their networks. For instance, given that the only full-time senior econometrician has just retired, *Cavaliere* stepped in to **guide early-career researchers** on both substance and the publication process, and is involved in every step of the day-to-day process for recruiting. Meanwhile *Heyes* complements and contributes to the growing strength in environmental economics.

Clarity and transparency

**Promotion criteria are well-defined** in the award-winning <u>Exeter Academic</u>; the University's career development programme. Within Economics, to pass the 3-year probation period, new



Lecturers are expected to produce one world-leading output or two internationally excellent outputs and to apply for grant income. To be promoted to Senior Lecturer (SL) (typically after a further two years), the same again is expected. In both cases, if the quantity and quality are in place before the expected time horizon – and if teaching and departmental service are equally above the bar – there is nothing to stop a flexible early decision. For instance, *Hauser* was hired as Senior Lecturer straight from a post-doc and was quickly promoted to Associate Professor after an impressive sequence of publications and other contributions. Other 'home-grown' successes in this period include: *Chakravarty*, who was also promoted to AP; *Fernandes*, who was promoted early to SL; eight others promoted to SL; and *Pearce*, who was hired as Lecturer upon completing his PhD at Exeter. There is **no arbitrary a priori constraint** on the number of promotions in any given year or of staff at any given level, which drastically diminishes competition between staff and also allows the optimal decision to be made individually in every case.

UEBS is committed to supporting and nurturing its academic staff to succeed at all levels and has introduced bespoke annual individual development plans to facilitate such progression. These plans clearly describe a combination of *what* the individual objectives are; *how* they can be accomplished; and *which* types of additional support are required. The fundamental goal is for every single member of staff to succeed (see following sub-section), while maintaining a **commitment to excellence** so as to attract stellar talent. The staffing process at UEBS follows the core principle that everyone has a critical contribution to make, and that everyone should be supported to reach their full potential and ensure the school's success. All hiring and promotion processes abide by recognised **best practices for diversity & inclusion** (see further below), including the responsible use of metrics. For instance, Exeter implements the principles of the San Francisco Declaration on Research Assessment (DORA).

#### Development & Support

All members of the Economics department benefit from a variety of resources and structures in place to allow them to flourish and produce their best work, fully aligned with the Researcher Development Concordat (see Institutional-level Environment Statement 2.10 and 3.5-7). Staff are matched with Academic Leads to provide individual mentorship and advice on career development, with respect to Exeter but also more broadly. Success can mean different things to different people, this includes anything from where to submit a particular paper or respond to editorial comments, to how to balance research with teaching and service responsibilities. The Academic Lead system, along the lines of a 'critical friend', provides a separate source of feedback from the line manager (typically the HoD), specific to career stage and circumstances. Meanwhile, the annual Performance & Development Review (PDR) is preceded by an individual contribution meeting (held with the HoD), and the goal is to embed a culture of continuous reflection and review, looking back but more importantly looking forward and valuing individuals, throughout the department.

UEBS has recently begun conducting an annual review of academic performance among staff. This was partly implemented to ensure **equity and consistency** in the formal feedback process, and to ensure **360-degree accountability** to the strategic aims of the school and of the individual departments. However, it is also able to systematically identify – using metrics in line with Exeter Academic, such as research output, teaching, external funding, impact, PhD supervision, and general citizenship – a small number of staff whose performance is below potential. In those cases (even for Professors) a Performance Improvement Plan is put in place, with clear goals to be met,



with whatever support (e.g. individual coaching) is necessary to meet them. The annual review also identifies high performers, who can be directed to apply for the next university-wide rounds of promotion or for whom retention mechanisms can be instituted if needed. The "employee voice" is heard via regular formal staff surveys such as CROS and PIRLS (see Institutional Statement 3.17) as well as informally via departmental meetings – including with the VC – all of which has been especially instrumental in developing supportive and tailored wellbeing policies during the pandemic.

Individual outputs go through a review process that takes place annually and consists of receiving a descriptive rating as well as substantive comments from both an internal and external senior scholar. The final grade is determined by a diverse internal panel which ensures consistency across staff profiles, with an appeals process if necessary. These reviews are used for multiple purposes: informing performance evaluations – judging publications on their own merits rather than simply via journal reputations; allocating workload hours for high-productivity researchers; one input for guiding REF submissions; and providing concrete feedback to staff on their portfolios. This process involves a nontrivial commitment of resources, but it improves fairness by promoting objectivity.

Annual responsibilities are determined by a workload allocation model, with hours clearly allocated for research, lecturing, tutoring / supervision, and service obligations such as committee membership. Additional hours are **awarded for exceptionally high-quality research** (e.g. to complete a revision that shows high promise), for high-quality externally funded research, and for work on impact case studies, each of which implies a lessening of other tasks. This approach has the effect of signalling but also encouraging the strategic goals of the department and the institution, and it catalyses transparent and effective discussions between staff and the HoD about the prioritisation of time. In addition, the University has a formal recognition scheme, aptly named 'Above & Beyond', for affirming and rewarding (monetarily or otherwise) those who surpass their assigned duties.

Equality, diversity, and inclusivity (EDI)

The University holds Athena SWAN Silver status for advancing the careers of women (see also Institutional Statement 3.14-17), and UEBS – which is in the process of applying separately for Athena SWAN accreditation – is a member of both the *Globally Responsible Leadership Initiative* and the UN's *Principles of Responsible Management Education*. The School, which recently created a Chief Diversity Officer, has an Inclusivity Group, co-chaired by the Deputy Dean and the Director of College Operations, with two active staff members from Economics (*Fonseca* and *Poen*); the group's PGR representative is also from Economics (*Delafield*). The Group reviews data and feedback from a wide variety of sources in order to monitor progress, to support and promote new policies and procedures, and to escalate ideas and issues to the university-wide inclusivity body. With regard to staff progression in particular, proactive steps are taken each year to evaluate pay equity and to address any gaps between groups. Meanwhile the selection of REF outputs follows a transparent process, including de-bias training for all panellists (who included female and BAME representatives), and the relative male/female ratio of submitted papers to male/female headcount is 1.05 for juniors (L/SL) and 1.03 for seniors (AP/P).

The structured hiring practices described above **substantially raised the percentage of female members of staff** (from 17% in 2014 to 26% in 2020), doubling their numbers within both the



junior (L/SL) and senior (AP/P) levels. This approach has also increased the ethnic and nationality diversity of the department – which is important in its own right and serves the strategic purpose of stretching boundaries and encouraging non-traditional avenues of thought. All new staff go through an induction that involves well-being, EDI awareness, and knowledge of flexible work options. Researchers in the department also study directly relevant topics: gender and competition; sexual orientation and STEM fields; the unequal burden of COVID on minorities; etc.

Work-life balance is extremely important, and hours tend to be very flexible including accommodation within teaching timetables and meeting schedules for those with caring responsibilities or health conditions; see Institutional Statement 3.4. For instance, the weekly departmental seminar, late on Friday afternoons, had been difficult for some staff and students with care duties and was proactively moved to earlier in the day. The generous parental leave policy of 52 weeks (26 at full pay) can be shared across parents. Given that COVID added extra burdens (teaching and care-taking) for everyone, various administrative tasks (e.g. annual performance paperwork) were streamlined or eliminated. Finally, there is a rejuvenated 'study leave' sabbatical policy to which eligible staff can apply in order to jumpstart new research projects and agendas, serving in part to proactively encourage exceptional 'blue-sky' research ideas. This is just one aspect of the explicit commitment to promote ambitious lines of work that may require extra time for investment and for yielding results, due to their interdisciplinary nature and/or engagement with external partners.

### Formal support structures

Development opportunities include the School's Research Methods Centre and the Centre for Excellence in Teaching & Learning (both described in more detail in Section 3). The department maximises inclusion through processes such as the aforementioned annual Research Day for the entire department to discuss their current projects and to **share best practices** such as how to present effectively and how to respond to reviewers. Media training for promoting research and gaining policy traction is also provided. Much development and support happens in less formal settings, and an abundance of opportunities are available for all staff. These include, for example, a bottom-up reading group on machine learning; interaction with Distinguished Research Professors (as mentioned above) and with seminar speakers from around the world; and multiple locally hosted conferences (see Section 4).

The first point of contact for direct support is typically the Academic Lead or the Director of Research for Economics, but several others share responsibility for providing resources and guidance as needed – for instance the Director of Impact for the School and the newly created Director of Research Ethics, which expands the previous role of Ethics Officer – in recognition of its importance. All staff are given a baseline personal development account for conference and/or co-author travel, pilot data collection, and other development needs, but there are **multiple other sources of internal funding** available. These cover everything from journal submission and open-access fees, to copy-editing, to 'seed corn' funding for getting riskier but ambitious new ideas off the ground, to Impact Accelerator grants for building relationships with external partners. For instance, the latter scheme has given £10-20,000 each for collaborations on charitable giving with non-profits (*Reinstein*); on female entrepreneurship with an Indian micro-finance bank (*Chakravarty* and *Kumar*); and on applying market design principles with environmental organisations (*Lindsay*). The Director of Impact, partly by liaising with the IIB (Innovation, Impact, and Business) team within the university, **supports impact via access to travel and financial** 



**support but also partnership opportunities** – including logistical advice that can be especially important for ECRs as they gain experience.

An active team of professional services staff supports grant applications and external partnerships, with separate groups who specialise in and have extensive experience involving diverse entities, as befits the strategy of stretching boundaries: EU funding agencies, traditional UK funding agencies; the business and government / non-profit communities; and trusts & foundations. The School's **internal peer review policy yields timely expert constructive criticism**, ensuring that applications are as strong as possible, which primarily benefits the applicants but also maintains the university's reputation with funders and donors. Finally, a new program aims to provide access to part-time undergraduate research interns, which not only helps faculty but also builds capacity in the students and feeds into the updated MRes programme.

Early career researchers receive additional support that give them every opportunity to thrive, including a reduced teaching load and concomitantly higher time allocated for research, as well as the potential for 'top-ups' of their personal development account and access to a variety of separate funding opportunities set aside solely for them; see Institutional Statement 3.8. An example is the International Advisory Board (IAB) scheme, which is focused on business-oriented research and also counts toward performance expectations around research income. This is especially important for junior staff, for whom it serves as a natural source for modest but catalysing grants in the amount of £5-10,000. The recent focus on growth has produced a large number of active ECRs, who serve as a resource and sounding-board for one another. Furthermore, the new MRes programme (described below) supplies a growing pool of high-quality graduate students for ECRs and other staff to collaborate with. Finally, junior researchers are also in charge of inviting speakers for the departmental seminar series. This allows them to determine what research is most relevant, to build their networks and interact directly with senior international scholars, and to gain practical experience in working as part of an organisational team.

### PGRs (and Postdoctoral Fellows)

Research students and postdocs are **fully included in the intellectual life of the economics department** at Exeter, and in particular can avail themselves of almost all the resources, including: training sessions through the Research Methods Centre; professional services support for grant proposals and ethics review; seminars and conferences; the annual 'Research Day' and other internal activities. In addition to the departmental Directors of Research and of Impact, there are dedicated senior staff for both the MRes program and the PhD program – with workload hours allocated for both roles and for doctoral supervision. Each student, following full inductions at both the university and school level, has at least two academic supervisors in addition to a shared point of contact for pastoral support. There is also a PGR director for UEBS as a whole, as well as an entire Doctoral College of professional staff within the university, in addition to the wide variety of resources available to all students (e.g. Wellbeing, Sports, Culture, and so on); see Institutional Statement 3.9-13. One recent innovation has been the introduction of a **weekly graduate student workshop**, where students are required to present regularly and can receive constructive feedback on work-in-progress (and valuable presentation experience) from a mix of fellow PGRs as well as faculty.

In line with the strong focus on quality, the graduate research program has been **completely** revamped and updated over the last several years. Beginning in 2019, the Unit now offers a



'2+3' model with a full two-year MRes followed by the traditional PhD dissertation with a well-defined and structured upgrade and viva process. This is typical of the best international programs, especially in the United States, but is offered by relatively few UK universities. The first year is comprised of core work in micro, macro, econometrics, and research methods, while in the second year they choose from advanced field-specific modules in micro, macro, and econometrics / research methods. Students can also take advantage of specialised training offered by the research centres affiliated with the department (LEEP and TARC). A total of 71 students finished over the REF period, comprising more than 50% ethnic minority and almost 30% female, and there are currently 19 doctoral students from a wide range of backgrounds being supervised by Economics staff. The number of completions per FTE declined as the number of faculty grew (a strategic decision about what comes first), but it should now increase with the significant investments and improved selectivity. Furthermore, the new upgrade process comes early in the DPhil in order to provide feedback at a useful stage and to catch issues in time to overcome them, increasing the completion rate.

Following best international practice, Exeter now offers three to five internal five-year scholarships per Economics cohort, available to all students and fully funded by UEBS, with a structured process allowing accommodation of all protected characteristics, including a diverse selection panel. These are complemented by university sources, as well as external studentships from the ESRC Southwest DTP, international sponsors such as governments and central banks, and elsewhere, leading to a planned (within three years) steady-state intake of 8-10 students per year. These various elements are already attracting high-quality students from a variety of backgrounds. All students are also provided with direct support in the form of desk space (near one another) and funding for travel, conference participation, and some data collection. In the most recent PRES feedback survey, 100% of students were satisfied with their supervision and available resources and 95% or more were satisfied with their progress and assessment; research skills; and professional development.

Fixed-term postdoctoral fellows are expected to contribute to the research projects that they are affiliated with and funded by, and they are also encouraged (and supported) to pursue their own research when possible. One of the LEEP research fellows (*Faccioli*) has published multiple recent articles in highly recognised environmental economics journals, above and beyond her current grant projects. Meanwhile one of the TARC fellows (*Grimshaw*), who also received his PhD from Exeter, won the 2017-18 Hutton Prize for Excellence, which is awarded to "recognise and encourage the next generation of young professionals to put ethical conduct at the forefront of business, government and the professions." A postdoc at LEEP (*Lee*) won a 2020 UKRI Research Translation Fellowship to perform simulated valuation modelling while embedded within Defra's policy design team. Meanwhile recent PhD graduates receive extensive job market support and have gone on to academic placements (either postdocs or lectureships) at Freiburg, Innsbruck, London School of Hygiene & Tropical Medicine, Shanghai, and Warwick, as well as to non-academic jobs such as the IMF and the Korean Central Bank. They have also published in *Econometrica*, *Experimental Economics*, *JEBO*, *JEDC*, *Economics Letters*, and *Management Science*.

#### Section 3. Income, infrastructure and facilities

Income



Befitting its growth and ambitious forward strategy, Exeter Economics has seen a **substantial increase in research income**. Official grant income rose from under £270,000 in each of 2013/14 and 2014/15, to a high of over £1 million in 2017/18, and it has stayed above £820,000 annually in the last two years, thus more than tripling over the REF period (and more than doubling per FTE). The goal is to continue this robust positive trajectory, through further expansions in the faculty size but also through enhanced applications and success rates, including applied work with myriad external partners such as the United Nations, AstraZeneca, the Met Office, and governments from Australia to Brazil to Cameroon and beyond. Indeed, the total value of grants awarded has averaged over £2 millon per year since 2018.

Previously this funding came essentially entirely from UK research councils, which naturally have continued to be major supporters. However, in recent years these have been augmented by funds from industry; from UK charities and independent bodies; from the EU; and from non-EU sources. This is a result not only of the tactical diversification in bids, but also of the much **broader range of both fundamental topics and applied work being pursued**. According to Scopus, the number of distinct funders named on at least three outputs between 2013-15 was only *two* (ESRC and NERC), while for 2015-17 it was *five* and for 2017-19 it was *nine* – adding bodies such as EPSRC, Wellcome Trust, ERC, the EC's 7<sup>th</sup> Framework Programme, and the Ecological Society of America. This diversity arises from the goal of stretching boundaries but at the same time **builds resilience for the future** and maximises impact (see Section 4).

The goal of the department is for all staff to participate in not only research and teaching, but also grant applications and creating impact. For funding, the expectation is that everyone, including ECRs, should aim to secure a minimum amount from external sources. To enable this, the department, school, and university provide an **expert and comprehensive support structure** via both senior faculty members and professional services staff, with particular attention paid to ensure equity and inclusion for everyone (see Section 2). There exists help not only with costing and other administrative requirements but also with inception of ideas, matching individual staff to active alerts of opportunities; arranging internal peer reviews in addition to their own substantive feedback on proposals; mock interviews; training; and advisory sessions. For instance, this was invaluable in the successful recent UKRI Future Leaders Fellowship cycle (£1.09 million to *Hauser*).

Research Services, who coordinate applications to EU, UKRI, Leverhulme, and related funders, and 'Innovation, Impact & Business' (IIB), who coordinate applications with the private sector and with government entities, both support this activity; see Institutional Statement 4.5-10. Each has a staff member assigned to the Economics Department who gets to **know the research interests of all economics faculty individually**. There are also university-wide 'Funder Advisory Networks' for each major funding body such as ESRC, with active participation by economists where pertinent including for Global Challenges Research Fund (GCRF). These networks are co-led by an experienced faculty member and by a specialised member of the dedicated Research Services team of professional staff, so that the latest information about upcoming calls can be circulated, which is especially crucial given the trend toward increasingly large collaborations and short deadlines.

Infrastructure



Beyond frameworks in place to optimise efficient generation of income, the Department of Economics strives to provide its staff with an environment which is conducive to maximising their potential. Investment in infrastructure therefore goes hand-in-hand with significant investment into attracting staff, as well as providing all staff with the resources and supporting mechanisms that they need to excel in their research (see Section 2). Much of this infrastructure is organisational, while some of it is more tangible. Regarding the former, UEBS hosts multiple centres to which all researchers have access. They provide a forum for knowledge-exchange, dissemination of results, collaboration, joint grant submissions, workshops, and seminars. Of the four which are most relevant for Economics, two are focused on training and capacity and two are substantively thematic.

- The Research Methods Centre aims to develop the core research methods base within academic staff and PGR students. It facilitates cutting-edge interdisciplinary interactions between staff and experts in research methods from other colleges, research centres, and outside the University. The centre arranges workshops, events, and speakers to introduce new methods as well as to develop existing methodological knowledge of the academic staff and research students. Events have included extended trainings on natural language processing, experimental methods, Bayesian statistics, qualitative analysis (including NVivo), Python, machine learning, online data collection, and the behind-the-scenes of publishing.
- The Centre for Excellence in Teaching and Learning promotes best practices in research-led teaching and supports research in teaching methods and practice by staff actively engaged in original pedagogical research (*Cortinhas*, *Rogers*). There is also a popular final-year undergraduate dissertation option for the best students, which leads some of them into graduate economics programmes.
- The Tax Administration Research Centre: Tax administration inherently spans several disciplines, and TARC was established at the outset as an interdisciplinary centre. This is one of the features of the centre that secured its initial joint funding of £1.99 million from the ESRC and HMRC in 2013; since then it has received over £1.03 million in additional funding. TARC researchers are drawn from Accounting (including the deputy director), Anthropology, Economics (including the director), Law, and Psychology. In 2018, a joint appointment was made between UEBS and Law. The Centre includes distinguished international fellows such as Michael Keen (IMF) and James Poterba (MIT), as well as hosting dozens of visitors, post-doctoral fellows, and doctoral students. In addition to producing academic publications, there is a strong focus on engaging with policymakers via reports, workshops, and masterclasses. TARC also publishes an international journal, the *Journal of Tax Administration*.
- The Land, Environment, Economics and Policy Institute. LEEP aims to develop knowledge and understanding to inform governments, businesses and communities about how land and the environment are managed and used; the policies that affect this; the impact upon people, and how policy should be better designed, appraised and evaluated. LEEP builds upon an established and internationally acclaimed track record of research excellence combining world-leading expertise in environmental economics and economic modelling. Together with international research partners, LEEP brings together experts from the diversity of economic and natural sciences needed to provide an integrated



understanding of the ways in which these complex systems interact globally. This truly multidisciplinary approach includes collaborations with other groups on campus (including the Circular Economy, Earth Sciences, and Politics) and externally. The most recent Professorial hire is *Groom* from LSE, who is the new Dragon Capital Chair in Biodiversity Economics, funded in part by a £1 million external endowment. The LEEP Institute sits in offices adjacent to the Economics Department, just refurbished with a £470,000 investment from the University and Business School.

TARC and LEEP each host seminar series where internal and external scholars present their work. The department as a whole has a very active weekly seminar series where internationally renowned scholars are invited to give talks about their latest stimulating research and to meet with both faculty and post-graduate students. Across UEBS and University, staff are frequently invited to give and attend seminars in Education, Finance & Accounting, Management, Medicine, Politics, and Psychology. The department runs its own working paper series, including subsidised copyediting services. In addition, the extensive university library has a budget to **pay for full open-access rights** for promising new publications (i.e. those of outstanding scholarship and/or with potential for media attention and impact); in the first six months of 2020 they paid over £5,000 for Gold access for five papers from Economics. Repository downloads for the department increased from less than 1000 in 2014 to more than 5000 annually since 2018. It also hosts a fully customisable online data-management planning tool, which facilitates compliance with various funder requirements but also generally proper data hygiene techniques.

#### **Facilities**

All staff are provided with offices on the main Streatham Park campus in Exeter, a Green Flag Award-winning space. The Occupational Health group facilitates productive and sustainable physical environments, including for those with disabilities. UEBS consists of three adjoining buildings, with most faculty offices in one of them while the others incorporate modern teaching and student facilities; administrative offices; a cafeteria; and the FEELE lab (see below) and other research-specific spaces. This proximity encourages easy **interaction between all members of the community**. All staff are provided with high-specification computers that can be accessed remotely. If required, staff receive specialised workstation computers to allow working with large data and can receive access to an on-campus high-performance machine (supercomputer). A specialist IT team supports staff in the building with hardware and software needs. Staff have access to a large range of software, journals and working papers, and databases (e.g. Bloomberg, Thomson Reuters).

The Finance and Economics Experimental Laboratory at Exeter (FEELE) is a **state-of-the-art laboratory for research in experimental social science**, located in the Department of Economics. It has 32 networked terminals and two experimenter servers, in the process of transitioning to a cloud-based server, following a £33,600 investment by UEBS. Each terminal is equipped with sensors to measure skin conductance, heart rate, and facial expressions for emotional response. This allows researchers to move beyond traditional economics tasks that focus solely on decisions themselves, additionally engaging with neuroscientific and psychological processes that provide evidence on mechanisms. A full-time lab manager provides support for programming and for subject recruiting, so that staff and PGR students can make full use of this valuable resource. The laboratory also enables economics experiments to be an integral part of



the teaching practice at UEBS. From 2016-19 an average of 4332 participants per year made hundreds of thousands of controlled choices in the lab.

## Research Ethics & Data Integrity

UEBS and the Economics Department in particular take **research integrity** extremely seriously, leading by example not only in research but also in education, community engagement, corporate partnerships, and day-to-day operations. The FEELE lab adheres to the ethical standards of the Economic Science Association, as well as the ethical guidelines set forth by the ESRC. Researchers using the FEELE lab must obtain ethics approval from an institutional ethics board prior to collecting data. In 2017, the ethical review of student and staff research was greatly simplified for both applicants and reviewers via a new online e-Ethics system, and UEBS volunteered to pilot-test an improved version of the system before it is rolled out across the university in 2021.

In 2018-19, UEBS conducted a comprehensive review of its operating procedures, creating a new Research Ethics Policy and establishing a new position of Director of Research Ethics. As part of this update, a Research Ethics Committee was formed, including representatives with highly diverse expertise in order to facilitate review of non-traditional and transdisciplinary projects. The committee was created to follow best practices outlined in the Research Integrity Concordat (see Institutional Statement 2.9), and it has already been successful in directing proposals toward the channel which properly reflects the level of risk of the research, as well as in streamlining the resulting review procedure.

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

Collaborating externally





Research staff at the Department of Economics collaborate on projects with a wide network of national and international academics, government institutions, businesses, public charities, and NGOs; the graphic above represents groups working with LEEP in particular. Economists at all levels also collaborate with colleagues inside the department and University. UEBS and Economics Department foster collaborations through events hosted at Exeter as well as encouraging and supporting staff to participate in the wider research community. Members of the department have interacted with the economics research community by: giving seminars (including 40+ keynotes and plenaries), presenting at conferences, as invited panellists, and by organizing conferences and conference sessions – including at summer schools for PhD students and ECRs, and as a co-leader of the BIOECON (BIOdiversity and Economics for CONservation) network.

Exeter economists collaborate with a number of major external research partners. These have led to guidance and policy reports for the HMRC and the Rwanda Revenue Authority (*Kotsogiannis*), with the World Bank and the Government of Malawi (*Jamison*), and with the Behavioural Insights Team (*Hauser*). The Southwest Partnership for Environment and Economic Prosperity (SWEEP) is a cross-university five-year multi-million pound initiative funded by NERC and led by LEEP at Exeter. They are partnering with and **coordinating between 200 firms, organisations, and government bodies** in the local region. LEEP are also pioneering a methodological innovation to analyse land-use patterns and provide decision support services based on both satellite and economic data, in one of the first set of awards (2018) from the cross-disciplinary Alan Turing Institute.

#### Collaborating within the field

The Department is very active in hosting seminar series, workshops, and conferences; since 2014, the Department has hosted more than 200 research visitors for seminars and short-term visits. This is exemplified by the new Alan Krueger annual memorial lecture: the first speaker, Joshua Angrist (MIT) was scheduled to come in March 2020 and is now planned for 2021. Faculty at all levels, as well as research students, benefit from the strong international networks of staff and from the active and stimulating environment when academics visit, including global research leaders such as Abhijit Banerjee (MIT), Bruce Hansen (Wisconsin), Charles Manski (Northwestern), Daniel Hamermesh (UT Austin), and Gary Charness (UC Santa Barbara).

Conferences were hosted in Exeter by TARC (yearly 2014 to 2020) and LEEP (2019) which included scholars, policymakers, and other decision makers from national and international institutions. LEEP also organized the <a href="SWEEP Expo">SWEEP Expo</a> in October 2020, which brought together the heads of multiple Government Agencies, MPs, and Directors and Executives from across more than 200 industry partners. The Expo integrated young staff and post-docs into leading events in order to demonstrate the **transition from research to application and impact**. Meanwhile, workshops related to behavioural and experimental economics were hosted in 2016 and 2017, and the department was scheduled to host over 100 national and international participants at the annual European meeting of the Economic Science Association (ESA) in 2020; this has been postponed by one year due to COVID-19. In additional to external scholars, behavioural connections included interdisciplinary **activities with the Medical School which resulted in a large grant collaboration**: £1,941,038 from the EC to support employment of older and disabled workers by small & medium businesses in Cornwall. The Department hosted the 2017 Corporate Finance Conference as well as workshops in Empirical Research in Financial Accounting (2017)



and Macroeconomics (2016). Funded internally by UEBS, with invited speakers such as Nobuhiro Kiyotaki (Princeton) and Hugo Hopenhayn (UCLA), the latter led to a collaboration between Hopenhayn and two junior members of staff (*Neira* and *Singhania*), which has resulted in a research paper that received media attention and is currently under revision at *Econometrica*.

Staff members are also actively involved in research networks that promote particular research areas and **bring together scholars and decision-makers** in their respective fields. Examples include Institutions Trade & Economic Development (InsTED), led by *Zissimos*, and the University-wide partnership with the University of Queensland, Australia, established through the QUEX Institute. Through this partnership funding for collaborative research is available, and joint research interests in Economics have been established. Economics at Exeter is well placed to take advantage of this opportunity, in part due to the fact that the Environment & Sustainability Theme Leader for QUEX is a member of the department (*Bateman*). Staff are also affiliated with notable groups at Harvard (Women & Public Policy Program; Program for Evolutionary Dynamics), MIT (Jameel Poverty Action Lab), and Oxford (Global Priorities Institute).

### Global impact

**Demonstrable societal impact** has been formalised in the submitted Impact Case Studies, which reflect a deep-seated cross-disciplinary approach, but staff are also influencing many other organisations, whether in local communities or in large national or international settings. For instance, *Groom* is guiding policy-relevant discounting procedures for the United Nations as well as the finance ministries of France, Netherlands, and UK. *Jamison* is implementing and evaluating behavioural interventions with ministries of education (Mexico), health (Cameroon and Nigeria), and small business (Egypt and Kenya). Other notable examples include:

- Eisenbarth: World Trade Organization
- Szabolcs: Bank of Canada
- Chen & Fonseca: HMRC
- Kotsogiannis: Tax administration in Greece
- Hauser: UK Government Equalities Office
- Troshkin: Federal Reserve Bank of St Louis
- Heyes: UN Environment Programme; Government of Ontario
- Lindsay & LEEP: reverse auction advice to water companies, the forestry commission, and DEFRA
- LEEP: Economic and biodiversity sustainability in Indonesia

Exeter economists respond rapidly to wider phenomena, including COVID-19; indeed, the University of Exeter received the third-highest amount of funding nationally under the ESRC COVID ideas scheme. The pandemic has led to 34 unique new research projects among staff and collaborators, including seven papers that are already published. More broadly, showcasing the focus on impactful applied work, it has also led to policy activities (e.g. *Quintana-Domeque* advising the Barcelona medical council and *Bateman* co-authoring a report for the UK Government's Natural Capital Committee on implementing a green recovery from the current recession); direct public outreach (e.g. *Jamison* writing in the *Washington Post* regarding lockdowns in developing countries); special attention to equity (e.g. heavily downloaded gender and ethnicity analysis by *Oreffice* & *Quintana-Domeque*, some of whose research on mental health was cited multiple times in Public Health England's wellbeing surveillance report); and topical workshops bringing together academics and policy-makers (hosted by both LEEP and



TARC). Two different specialised COVID datasets on behavioural responses and the distributions of impacts, consisting of 7500 online respondents across six countries, were pioneered by members of the department and made **publicly available for anyone to access**.

The Economics Department (in particular *Rogers*) has creatively engaged in research and external engagement on blockchain: working with Nchain, the global leader in advisory, research, and development of blockchain technologies, and with several well-connected alumni, the department is **establishing a 'FinTech Hub'** that both researchers and students will be able to leverage by connecting to major actors in the industry and to their data. This has also led to the development of a popular and innovative undergraduate module 'Bitcoin, Money & Trust' that includes a series of guest lectures from the blockchain industry, and to a new MSc in FinTech that launched in Sept 2020.

Members of staff are **attuned to the needs of real-world organisations** and actively consult for governments, NGOs, and firms across a wide range of subject areas (for example *Groom*: OECD, UN International Seabed Authority, World Water Council; *Hauser*: MoreThanNow, Behavioural Insights Team; *Ip*: Australia & New Zealand Banking Group, Australian Health Practitioner Regulation Agency, Fire and Emergency Services of Western Australia; *Jamison*: GiveWell, Jameel Poverty Action Lab, World Bank; *McCorriston*: UN Food and Agriculture Organization; *Quintana-Domeque*: Brazilian National Council of Technological and Scientific Development).

### Impact on the profession

Through active editorial and referee work, staff are contributing to the economics discipline, but also to interdisciplinary research. In addition to reviewing for dozens of journals, the department hosts numerous Editors (Bateman: Environmental and Resource Economics; Kotsogiannis: CESifo Economic Studies; McCorriston: European Review of Agricultural Economics; Quintana-Domegue: Oxford Bulletin of Economics and Statistics; Stiefenhofer. Mathematical and Statistical Economics); Co-Editors (Cavaliere: Econometric Theory; Fonseca: Journal of Economics and Management Strategy; Heyes: Environmental and Resource Economics; Kotsogiannis: Journal of Tax Administration, Public Finance Analysis; Oreffice: Review of Economics of the Household); and Associate Editors (Cavaliere: Econometrics Journal, Journal of Time Series Analysis, Journal of Econometrics; Chen: Leadership Quarterly; Groom: Food Security; Grosskopf: Journal of Economic Psychology, International Journal of Game Theory; Heyes: Journal of Regulatory Economics; Jamison: Behavioral Science & Policy; Kaplan: Journal of Behavioural and Experimental Economics; Quintana-Domegue: Journal of the Spanish Economic Association, Economics & Human Biology; Zissimos: European Journal of Political Economy). Members have also been invited to guest-edit multiple special issues on cuttingedge topics such as "market-based environmental regulation."

In 2012, the Exeter Prize was created as an annual award for the best published paper in the previous year within Experimental Economics, Decision Theory, and/or Behavioural Economics. This widely publicised prize brings **recognition not only to the Unit, but also to the top research in the world**. The winners visit Exeter and receive the physical and monetary prize at a full-day thematic workshop where other scholars present related work. Workshops often involve multidisciplinary research, e.g. the 2019 workshop, centred on a paper in a finance journal, was jointly hosted with the Finance Department. Previous winning papers have come from psychology and management in addition to economics. The quality and quantity of nominations, from eminent



scholars worldwide, has steadily increased over time, with a record 43 outstanding publications from 2019 long-listed for the (virtual) 2020 edition of the prize.

The impact of Exeter economists has been recognised across multiple dimensions, including the recent election of Bateman (h-index of 80 arising from over 27,000 total citations) to become a Fellow of the British Academy; Hauser receiving a prestigious UKRI Future Leaders Fellowship; and a fellowship award from the European Association of Agricultural Economists to McCorriston. A paper by Chen was recognised as one of the three best in Leadership Quarterly for 2019, while a paper by Jamison in American Economic Review won the World Bank's prize for policy-relevant fundamental research and was hailed by the Financial Times as having "received the most references in policy documents produced by governments and organisations outside academia" amongst all business school research published globally from 2015-19. A website that gathers human decisions on moral dilemmas faced by driverless cars, developed by Awad, has been visited by over six million unique individuals from 230 countries and has been featured everywhere from museums to the front page of Reddit. The resulting paper, published in *Nature*, has an Altmetric attention score of 3400 and roughly **one billion** total views. These represent only a few highlights deriving from the successful research strategy of boundary-stretching, rigorous, impactful, exceptional-quality growth – and the exciting next steps are yet to come.