

**Institution:** University of St Andrews



**Unit of Assessment:** UoA 16: Economics and Econometrics

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

#### *(a) Achievement of strategic aims for research and impact during the assessment period*

The School of Economics and Finance was established as an autonomous unit within the University of St Andrews in 2004. Since inception, our principal, long-term aim has been to establish research excellence across a broad cross-section of the discipline and a strong reputation for UG, PGT and PGR provision. At the start of the census period the School had considerable research strengths in Microeconomic Theory, especially Behavioural Economics, Decision Theory and Experimental (built around senior staff: Costa Gomes, Manzini, Mariotti, Ulph) and Macroeconomics (built around senior staff: Sutherland, Evans, Hughes Hallett, McCrorie). The key strategic aims at that stage were:

1. To strengthen and sustain existing research excellence in the School while establishing new strengths in currently under-represented areas –principally Applied Microeconomics;
2. To create a stimulating and diverse environment in which young appointees can develop and thrive;
3. To develop a sustainable PGR programme, with a longer-term goal of establishing a thriving and sustainable graduate school.

During the REF period the School has appointed three new professors (Ponsatí, Zapechelnyuk and Jaeger) and eighteen new lecturers to build and strengthen vibrant research teams in what are now three areas: Microeconomic Theory, Macroeconomics and Applied Microeconomics. Ponsatí and Zapechelnyuk have provided new leadership in Economic Theory. Jaeger's appointment was strategically linked to lectureship vacancies with a view to building a strong, new research group in Applied Micro. Three new lecturers in this area were appointed from the 2020 job market to take up appointment in 2020/21 –further junior recruitment in the area is planned. The key aims in building this new group is to encourage grant capture and Impact development; foster and grow synergies with other schools in St Andrews; and to develop interdisciplinary research associated with the School, in line with University objectives.

Within the three general research groupings, a number of specific and distinctive research themes have developed. The Micro Theory group now has particular expertise relating to heterogeneity and ambiguity in strategic thinking and decision making; peer influences on decision making; and the implications of consumer indecisiveness. A second theme is the analysis of regulation and taxation in relation to firms, labour markets and the environment. The Macro group has developed distinctive research strengths relating to the role of financial market imperfections in macroeconomic dynamics –in particular the role of international financial markets in transmitting macroeconomic shocks and policy impacts. There is also a strong focus on expectations and learning –with researchers working on both the macro and micro implications of bounded rationality and learning. The Applied Micro group has a particular focus on the determinants and implications of migration; and the interaction between migration, political dynamics and development. It has also developed a theme relating to human capital accumulation and its links with health, education and welfare.

Underpinning the School's strategic aims over the REF period has been the development of a recruitment strategy based on the annual European and US job markets for academic economists. This has required careful coordination with, and the adaptation of, the University's standard recruitment practices. This has significantly advanced the School's approach to recruitment, and has proved highly effective in developing the School's research culture. The School now has a new cohort of highly motivated and well-trained researchers across a broad range of subject areas. This in itself has transformed the research culture of the School.

Alongside adopting discipline-standard recruitment practices, the School has developed staff probation and annual review processes over the REF period, which dovetail with the University's promotions arrangements (see Institution-Level Environment Statement, ILES, 3.2). This has resulted in a significant increase in successful promotions applications from members of the School (7 compared with 2 in the previous period). This facilitated the retention and development of some key mid-career staff who will provide future leadership in the School.

In 2019, the School made a successful application for an Athena SWAN Bronze award. This formed a crucial part of the process of developing an equality, diversity and inclusion (EDI) strategy for the School. EDI has thus been a key focus in recruitment and staff development activities. There has been a significant increase in the proportion of female staff members (in research active posts) –from 21% to 32% over the census period.

In terms of Impact strategy, the development of Macro and Applied Micro groups has purposely created a strong team of researchers with clear Impact potential that will develop over the next REF cycle. This provides the basis for a future strategy that, while still led by senior staff, ensures the development of junior staff over the next five years. Impact potential has become an important factor in recruitment and staff development decisions.

Consolidation and development of PGT programmes in Economics and Finance over the REF period has provided an improved environment for PGR recruitment and training. PGT numbers are now at a good and sustainable level with an improving balance between Economics and Finance students, and improved student academic quality overall. Alongside this, the establishment of PGR scholarships funded directly from the School operational budget provides a much-improved funding environment for PGR students. This has been greatly enhanced by the development of a new University-funded fee waiver scheme and the conversion of one vacant lectureship into three fully funded ongoing PGR scholarships.

The COVID-19 pandemic created substantial uncertainty and disruption during 2020. Robust income streams have meant all the above planned developments have survived and the School remains in a strong position to continue its strategic development.

*(b) Strategic aims and goals for research and impact*

The strategic aims for the next REF period build on achievements over the last 5 years. They have been developed in a wider University context, emphasising the University's aims to be a *globally linked institution* which delivers *world-leading research*, while *promoting and supporting diversity* in its staff and student population. The School's strategy for the next REF period shares these broad aims.

Under current plans, the School aims to grow by approximately 30% in terms of staff and student numbers. This will create a critical mass to sustain significant and more strongly defined research groups across existing strengths in Micro Theory, Macro and Applied Micro, and to develop a stronger Finance group. The groupings will remain broadly balanced and appointments will be made at all levels. Over the medium term, the growth will establish the School as a core element in the University's Social Sciences hub in line with its planned GBP75,000,000 infrastructure investment.

Staff growth will allow further development of PGT teaching and a stronger emphasis on advanced PGR teaching and training that will move the School towards the best international standards. The medium-term aim is to grow PGR numbers to a steady-state population of 20-25FTE.

The School's future Impact strategy aims to develop a strong and sustainable core of policy engagement and Impact activity based on new research outputs and interdisciplinary collaboration with schools in St Andrews and beyond. While centred around the Applied Micro group, there will be contributions from all four groups, with continuing emphasis on developing the Impact capabilities of junior staff.

The School will implement its Athena SWAN action plan to maintain its Bronze status and submit a Silver award application within 5 years. We aim to make significant, further improvements in the gender balance of student and staff populations, particularly at the professorial level.

The University strategic plan identifies six key broad research themes: *Peace, Conflict and Security*; *Cultural Understanding*; *Evolution, Behaviour and Environment*; *Materials for the Modern World*; *Health, Infectious Disease and Wellbeing*; and *Sustainability*. In pursuing its broad strategic aims, the School's research groupings are well placed to contribute to all six themes. Colleagues working on game theory, political economy, international policy coordination, migration and economic development will contribute research relating to *Peace, Conflict and Security*; on migration, economic development and the economics of social life to *Cultural Understanding*; on decision theory, behavioural economics, behavioural finance, experimental economics and social learning to *Evolution, Behaviour and Environment*; on the economics of innovation, industrial organisation and law and economics to *Materials for the Modern World*; on the economics of education and migration to *Health, Infectious Disease and Wellbeing*; and on environmental and energy economics and migration to *Sustainability*. The planned Social Sciences hub will see interdisciplinary research pursued with the Schools of Management and International Relations. Staff in our Applied Micro group are collaborating with staff in the School of Geography and Sustainable Development; and we envisage our Micro theorists collaborating with staff in the Schools of Biology and Psychology.

*(c) How strategic aims relate to the structure of the unit*

The School operates as a single unit within a university of 19 schools. The Head of School (HoS) reports directly to the Deputy Principal of the University and is responsible for the overall management of School strategy and operations, including staffing, operational budgeting and work allocation. The HoS is supported within the School by a Management Group, which includes: a Director of Research (responsible for developing and managing the overall research

strategy of the School); a Director of PGR Students (responsible for developing PGR provision in the School); and a Director of PGT Students (responsible for managing and developing PGT programmes). The general membership of the Management Group is chosen to ensure diversity and representation across research areas, genders and levels of seniority within the School.

With a current complement of around 25FTE of research focused staff, the School's small size allows for informal and collegial leadership within subfields, rather than requiring formal research groups. As the School grows, more formal leadership structures may be introduced but we shall work to preserve the inclusive and collegial environment we now enjoy.

The School has an EDI Officer who chairs the School EDI Committee (membership of which includes the HoS and Director of Research). The EDI Committee implements the School's Athena SWAN action plan and will develop, in due course, the School's Silver Award submission. The School is also supportive of university-wide HR policy, including its membership of the Advance HE Race Equality Charter and its work towards becoming a Disability Confident Employer.

The School strongly supports university-wide initiatives to develop a culture of research integrity, and key documents and policies are presented and discussed at departmental meetings. The School has a Research and Teaching Ethics Committee that operates within the University's Research and Teaching Ethics framework. Any research involving human subjects (including surveys, experimental exercises, or processing of related data) must receive prior approval by the School and University Ethics Committees.

*(d) How strategic aims will be taken forward.*

Towards fulfilment of medium term objectives, the School has actively begun planning its move to highly attractive new premises. The University has acquired a prime town-centre site that will be the focus of a planned GBP75,000,000 building programme over the next 5 years. The School will be co-located on this site with the Schools of Management and International Relations, which will become the main hub for Social Science schools in the University. The new development therefore represents a major University investment in physical infrastructure for the Social Sciences at St Andrews. It will provide the School with purpose-built new facilities with substantial extra office space, including dedicated office space for PGR students and grant-funded research staff, study space for PGT students, state-of-the-art teaching rooms and a significantly improved econometrics/experimental laboratory. The location provides an excellent context within which to implement the School's future strategy. The extra physical space creates capacity for staff and student growth, consistent with the School strategy to grow by 30%.

The strengthening and growth of the Applied Micro group plays a key role in the School's strategic aims. Applied Micro –in the form of empirical research on the economics of education, health and migration - will provide a significant body of research with clear Impact potential. Applied Micro is an area of research which (relative to other areas of economics) can access major sources of research funding –particularly government departments, non-governmental organisations and international policy organisations. This will provide significant opportunities to improve the School's research funding record. Applied Micro also offers significant opportunities for the School to develop and expand its contribution to the University's key interdisciplinary

themes (outlined above) –many of which most naturally link with economics through Applied Micro.

The School's recruitment and staff development policies will continue in the form developed in the previous REF cycle. Thus, junior recruitment will focus on the international job market for academic economists and will follow search and interview procedures compatible with standard practice in the discipline. Probation, annual review and promotions procedures will continue to support the development of junior staff, with a view to retaining key staff, supporting career advancement and developing future leadership for the School and the discipline.

The School's strategic aim to develop and expand PGR provision and numbers will be aided, as described, by the provision of new office space and improved econometric/experimental lab facilities. Growth in staff numbers will significantly increase PGR supervision capacity. And the expansion of the Applied Micro group will provide a substantial increase in the coverage of subject areas increasingly attractive to prospective PGR students.

The recruitment of PGR students will be significantly aided by the continued rollout of a University funded fee waiver scheme (which has resulted in an allocation of 14 fee-waiver tokens to the School) and the conversion of a lectureship post to three ongoing fully funded PGR scholarships. These fee waivers and scholarships have been supplemented by a further allocation of funding from the School's operational budget which, taken together, have so far allowed the School to offer a total of 6 new, fully funded PGR scholarships.

The expansion of the School will allow us to develop PGT programmes to provide an expanded range of optional modules. The School will also be able to develop advanced PGR training in the form of specialist modules to be taken in the first year of research. This will allow the School to bridge the gap between one-year MSc level training and the advanced PGR training that has become the norm in leading PGR Economics programmes.

These developments all provide an excellent basis for the School's strategic objective to expand the PGR population to 20-25FTE over the next REF cycle.

#### *Developing Impact*

The School's Impact strategy sees *engagement* as the first, essential step on the road to Impact, leaving individual colleagues the freedom to work in their specific fields and ensure conversion of engagement into actual Impact. Established staff advise others (often junior staff) who are nascent in the policy arena. Key users of our research are primarily policymakers, including central banks, regulatory authorities and government departments

Our approach is first to try to develop links and collaborations with key people and institutions. In order to promote *engagement*, we have in the past relied on academics with established connections but some staff (e.g. Leighton, and the new appointments in Applied Micro) are now being recruited with Impact being a key element of their appointment.

In this REF cycle, the School's Impact Case Studies (ICS) are based on the work of practised senior colleagues, Ulph and Evans, who have long histories of working with policymakers in influential roles.

Evans has extensive connections with high-level policymakers in the Fed and ECB system. An example of how Evans's research on monetary policy has resulted in Impact via these connections is highlighted in one of the School's ICS, which focuses on a particular aspect of Fed interest rate policy in the period 2016-19.

Ulph has directly engaged in high-level policy work across three areas –a Pay Review Body for NHS staff, the Scottish Fiscal Commission and the UK Competition Appeals Tribunal. Another of the School's ICS highlights examples of how Ulph's research on labour markets and incentives resulted in Impact through the NHS Pay Review Body. Our third ICS highlights examples of how Ulph's work on taxation and fiscal oversight has resulted in Impact via his work as an appointed Commissioner of the Scottish Fiscal Commission.

The School's ICS illustrate significant examples of impact arising from the work of two senior and experienced researchers, but there is also development of Impact across the School, not least among junior colleagues.

One recent recruit, Leighton, is engaged in three developing pieces of Impact. Firstly, unpaid work and careers in science: a paper published in June this year has been covered by two media outlets and presented to policy organisations. There is considerable discussion about the role unpaid work can play in reducing diversity in professional fields, and this work may have policy Impact. Secondly, bilingual story book intervention: working with Save the Children to evaluate an intervention based around story books. And thirdly, Early Child Development in low-resource settings with an ongoing intervention being implemented by Save the Children in Tanzania. This research is almost certain to be incorporated into the intervention within the next couple of years, with there being active possibilities of influencing similar programmes in other countries, beyond nationwide early child development efforts within Tanzania.

Stefanski is working on energy policy and energy storage technology. He is constructing a novel database of directly measured fossil-fuel subsidies at both national and subnational levels based on country-specific patterns in carbon emission-to-output ratios, known as emission intensities. The measures reveal hitherto unnoticed contributions the subsidies have made to increased emissions and lower growth. La Manna is analysing the academic publishing market using BitViews, a blockchain application that does for scholarly articles what Bitcoin does for money transfers. Jaeger has multiple projects in health, education and migration. In macro and econometrics, the University granted De Groot two years of unpaid leave to work and develop Impact at the European Central Bank; and Petrova was working on time-varying parameter models with a view towards enhancing the specification of the Bank of England's COMPASS model.

**Section 2. People***(a) Staffing strategy and staff development**Recruitment*

As we have progressed with our aim to establish research excellence across a broad cross-section of the discipline, the School has undergone some restructuring since REF2014, just as it did in the previous census period. Three senior recruits –Jaeger, Ponsatí and Zapechelnyuk– arrived as already strongly established professors. Jaeger was recruited from CUNY last year to build a research cluster in Applied Micro; and to develop Impact activity in the coming years. The University tied a number of lectureships to his post. Jaeger has diverse interests, including migration, education, health and terrorism. Upon arrival, he became a Fellow of the HANDA Centre for the Study of Terrorism and Political Violence, an international centre associated with the School of International Relations in St Andrews, as a first step in fostering inter-school, interdisciplinary work that will see fruition in the next REF period. Ponsatí and Zapechelnyuk were hired to strengthen and develop Micro Theory. Ponsatí specializes in Game Theory and Political Economy, with a focus on models of Bargaining and Voting. Ponsatí was also directly recruited to the role of HoS, having been Director of the Institute for Economic Analysis (IAE-CSIC) at UAB-Barcelona from 2006-12, She was succeeded in this role by Sutherland in 2017. Zapechelnyuk arrived with considerable international experience, with research interests in communication and information design, optimal contracts and robust decision theory.

Hiring on the international job market was a key development in this REF cycle. Among Category A staff, Knowles (PhD Rochester) and Merkurieva (PhD Wisconsin-Madison) arrived from the U.S., and Leighton (PhD Toulouse), Negri (PhD CORE) and Zhang (PhD LSE) from leading European institutions. Impact potential was a key element in Leighton's appointment. This group is bolstered by three lectureship hires made to the cluster in Applied Micro in March 2020 (who arrived in the academic year 2020-21). We also recruited three permanent members of staff specifically in Finance and related areas (Iannino, Psaradellis and Tuneshev). They offer the interior of a group that will be developed in the next REF cycle, and bring resilience to important teaching needs. We currently have two fixed-term lecturers (Moiseeva and Cunha) whose positions notionally derive from the replacement of staff temporarily released from permanent contracts, in one case to facilitate secondment to the European Central Bank and another to cover for a staff member seconded to the Deans' Office (Smith).

Our recruitment strategy has been shaped by the aim to hire permanent staff with clear leadership attributes in research. In the junior market, new appointments are offered on a permanent basis only if they satisfy our long-term criteria. On this basis, with strong university support (ILES, 3.2), we have sought to populate the School with promising young staff who are equipped with high-level doctoral training and are working on research topics at the current frontier of the discipline. Not least, they should show energy, enthusiasm, commitment and collegiality. They must apply the same principles to support research-led teaching as they do in pure research. And while such staff might pursue difficult and challenging work that embodies some risk (and are encouraged to an extent to do so), they must over time offer significant promise and demonstrate they have a post-thesis agenda that continues to be at the research frontier of the discipline.

A difficulty that emerged with some force during the census period is that, having successfully begun to make appointments consistent with long-term aims, we found other universities are keen to employ our staff. Such interest may offer junior staff a route to early promotion. The School and University jointly made the decision to make permanent appointments and offer promotions only using criteria consistent with long-term aims. While this approach meant some short-term costs were borne in staff losses, it has helped to solidify a consistency and sustainability in our environment over time. Staff departures created the opportunity to rebalance the School and begin building a strong research cluster in Applied Micro. As the School expands over the next REF cycle, we will take a similar, more direct cluster-building approach and bring more structure and depth to our Micro Theory, Macro and Finance groups.

#### *Staff Induction and Probation*

In especially the last two years, the School has been establishing more explicit, systematic processes for supporting the induction and development of academic staff.

At the start of employment, each new staff member has a one-to-one meeting with the HoS, Director of Teaching, Director of Research and School Manager. There is a School Staff Handbook, which is comprehensive, updated regularly and is required reading for all staff members.

The University Academic Review and Development Scheme (ARD) sets a 4-year probationary period for all standard academic appointments on the education and research track. The HoS is required to discuss and set indicative targets for new appointees, and appoints a mentor for the probationary period, usually a senior colleague with research interests in the general area of the appointee.

The ARD also specifies an annual review process that continues throughout employment. The annual review process provides a regular check on progress towards successful completion of the probationary period. During the fourth year, the School conducts a more extensive review to determine if the staff member has successfully completed probation. This involves a comprehensive written report and portfolio of research outputs, teaching activities, grant applications, service and administrative activities, which is reviewed by the School Academic Review Panel comprising the readers and full-time professors in the School. The Review Panel makes an advisory recommendation to the HoS about whether the reviewee has successfully completed probation. In cases of concern, the Review Panel may recommend an extension of the probationary period or, in extreme cases, that the reviewee's employment be terminated. In turn, the HoS makes a recommendation to the Deputy Principal of the University, who makes a final decision about probation completion.

Probationary staff have a discounted weight in the School's work allocation model: their average teaching load is below the School's average and corresponds to approximately 2 modules per year. For many staff, this can be accommodated within one semester in each year. This allows probationary staff very significant time to establish and develop their research agendas. Probationary staff are not normally asked to take on major service roles, but they are encouraged to take on minor roles (for which they receive full credit) to build experience for a future promotions application.



The School currently has just two junior members of staff in fixed-term research and education positions (i.e. where research is included as a contractual obligation). All other fixed-term junior positions are teaching focused and were created when short-term teaching needs arose. Such posts cover teaching but they also support research by keeping workloads down and protecting staff from unexpected module switches when colleagues leave the School. The current fixed-term research and education positions are a legacy of a previous contract structure that is no longer considered best practice in St Andrews. It is envisaged no further positions of this type will be created once the current contracts expire.

#### *Annual Reviews*

The ARD continues beyond the probationary period. In fact, the annual review process is a requirement for all academic staff at all grades. Each year, each staff member completes a short form summarising research, teaching and service activities over the previous year. Each staff member then has a one-to-one review meeting with the HoS to discuss the completed form and review priorities for the coming year. The review meeting is also an opportunity to discuss longer term career objectives, areas of success and areas which need development and training.

The annual review and probationary processes provide regular opportunities to identify and discuss training requirements with individual staff members. There are a number of routes by which training can be accessed. The University provides a wide range of courses that provide training in general competencies, including important training in EDI awareness, awareness of unconscious bias, and good practice in recruitment and selection. EDI training is compulsory for all staff on recruitment panels and involved in preparations for REF2021. Courses in management and leadership skills are also provided via the University; the School provides additional support to staff wishing to participate in externally provided leadership courses. Training in subject specific research skills is also supported. Individual staff members can request travel funding and leave to attend masterclasses and short courses covering research topics or methodologies directly relevant to the development of their personal research agenda.

#### *Promotions*

The promotions process is organised at university level according to a fixed annual timetable. Applications for promotion are initiated by individual staff members and do not require the approval of the School. However, applicants are encouraged to discuss their application with the HoS, prior to submission. At the request of the applicant, draft applications can be circulated to senior colleagues to gather advice.

Once applications are submitted, the University gathers reports from referees. The HoS is also required to provide a report on each applicant. University policy requires that, prior to submitting a report, the HoS consults with a gender inclusive group of senior staff within the School to gather opinions on the research, teaching and service performance of each applicant.

In the last two years, the HoS has issued a general invitation for one-to-one meetings with staff who are considering a promotions application either immediately or in future years. These meetings have provided an additional forum for staff to discuss their research activities and plans. The HoS has also held general meetings for all staff to describe and discuss the application process, providing a forum for discussions of the levels of achievement necessary in

research, teaching and service to build a successful application for promotion. In the current period, there were 7 promotions compared with 2 in the previous period.

#### *Sabbatical*

All academic staff are able to apply for sabbatical at the rate of one semester in eight. The HoS considers applications in relation to the general workload allocation process and, if there are doubts about the feasibility of accommodating all applications, the HoS consults a panel of senior colleagues. The HoS then makes an informed recommendation to the Vice Principal (Research and Innovation) who makes a final decision.

#### *Emphasis on the broad nature of research contribution*

At every level and at each stage in the probation, annual review, promotions and sabbatical cycle, the School emphasises the diverse nature of potential research contributions. In addition to excellent research outputs in economics or finance, valuable contributions to research activities may come in the form of impact, grant applications, PGR supervision, organisation of networking and outreach events and fostering of interdisciplinary research activity. These activities are explicitly encouraged, highlighted and rewarded during the probationary, annual review, and promotions processes. The aim is to develop and encourage a sense of shared responsibility for the creation of a thriving research environment in the School and the wider discipline.

#### *(b) Support mechanisms for, and evidence of the training and supervision of, PGR students*

Until comparatively recently (up to 2012) PGR provision in the School of Economics and Finance existed entirely within the Scottish Doctoral Programme in Economics. This is a long-established collaborative doctoral programme involving a group of eight economics departments at Scottish universities. Prior to 2012, no PGT programme in Economics was run locally at St Andrews. This implied that, in spite of offering a rich environment for UG students, there was near-absence of a graduate culture in Economics at St Andrews (and at most other Scottish Economics departments).

In REF2014, we noted the School and University had come to the difficult conclusion that the Scottish Doctoral Programme (in its then form) had deficiencies that were hindering our development. Thus, the School decided to set up its own dedicated MSc Economics programme, as the first element of a long-term strategy to build a PGR programme of value.

The establishment of an entirely new PGT/PGR programme is a slow process, which inevitably starts off with small numbers of students. The new PGT programme in Economics first ran in AY2012/13. Student numbers have only now reached a sustainable level of approximately 15FTE per year and a second programme –MSc in Finance and Economics– has been developed which shares some modules with the Economics programme and a pre-existing MSc in Finance programme and adds a further 10-15 students to the annual cohort. Total PGT student numbers are now at a level and quality which provides a good basis for PGR student recruitment. The first 2 PGR students who were recruited from the new PGT programme have completed their doctoral degrees within the last two years. The School is therefore only now beginning to see the benefits of the new programme.

While the School's PGT/PGR focus is mainly on our new programmes, the School does still participate in the Scottish Doctoral Programme. This remains an important link for the School because the Scottish Doctoral Programme forms the economics pathway in the Scottish Graduate School in the Social Sciences –which is the recognised ESRC doctoral training route in Scotland. St Andrews staff continue to participate in teaching on the PGT element of the Scottish Doctoral Programme and the Pathway Convenor for economics (Costa-Gomes) is currently located here. We therefore continue to play an important role in PGR provision within economics in Scotland. In turn, this allows PGR students in St Andrews to access ESRC funding, to participate in PGR networking activities in Scotland and, most importantly, to access research training in the form of enrolment in PGT modules taught in the Scottish Doctoral Programme.

PGR training in Scotland and the Scottish Doctoral Programme are likely to see further significant developments over the coming years –in particular with a move to develop a wider set of advanced training modules aimed specifically at PGR students. In St Andrews, as the School grows, we aim to expand the range of specialist optional modules on our PGT programmes and to begin the development of advanced PGR training modules, based on the specialist research expertise located in St Andrews. Our PGR students will therefore benefit from an expanded range of advanced modules, both locally and at the Scottish level.

A second very important development of PGR provision in the latter part of the current REF cycle is the provision of funded PGR studentships. As mentioned above, the University has recently introduced a fee-waiver arrangement which will allow the School to offer fee waivers to up to 14 PGR students (regardless of their nationality). More importantly, the School has raised sufficient funding within its operational budget (via private donations, revenue payments generated by the Scottish Graduate Programmes, and the sacrifice of a vacant lectureship) to offer 6 fully funded PGR scholarships at the standard ESRC stipend. The School also participates in the competition for funded interdisciplinary scholarships provided by the University. The offer of fee waivers and fully funded stipends are very significant new developments in the School's PGR arrangements which are designed to produce a step-change in the number of and quality of PGR student recruits to the PGR programme.

The management and administration of the School's PGR programme is the responsibility of the Director of PGR Studies. The Director is responsible for overseeing PGR admissions and allocation to supervisors. Each PGR student has a main supervisor and a secondary supervisor. At the point of admission, the PGR director, in consultation with supervisors, will determine what PGR research training is required for each new student. A bespoke programme of module enrolments (either locally in St Andrews or within the Scottish Doctoral Programme) will be determined at that stage. The PGR Director operates a cycle of annual reviews, where the progress of each student is assessed by a review panel. Successful completion of any research training modules is a condition of progression.

General skills training (for instance in academic writing) is available via the University and PGR students are encouraged (or where necessary, required) to attend such courses.

*(c) Support and promotion of equality and diversity.*

Improvement of the gender balance of the School's student and staff populations was a key strategic priority during the current REF cycle and is a key strategic aim for the next REF cycle. The School's EDI strategy is based around its Athena SWAN Bronze Action Plan. The School received its Athena SWAN Bronze award in October 2019.

Key aspects of the Action Plan include:

- The formation of an EDI committee chaired by the School EDI officer. The committee membership includes the HoS and Director of Research. The EDI officer is a member of the School Management Group.
- Ensure appointments to School management positions result from a fair and transparent process taking due account of the gender balance of the School Management Group
- Regular monitoring of staff and student data for EDI issues - gender balance of all student admissions; gender balance of student attainment; gender balance of staff recruitment; promotion; work allocation etc –with a commitment to take rectifying action when biases are identified
- EDI training for all staff involved in management, admissions, recruitment and REF preparations
- Review and strengthening of all school policies on flexible working, work allocation, support for maternity leave, organisation and format of social events
- Review all assessment procedures to ensure that they are fair to students and staff from diverse backgrounds
- Review and improve PGR admissions and outreach procedures to encourage a diverse range of PGR entrants
- Improve and strength careers support for PGR students to improve the diversity of progression from PGR study to academic careers
- Establish a clear and consistent policy on the use of fixed-term academic appointments
- Change in research seminar schedule to be compatible with core hours policy
- Review of outreach activities to ensure they appeal to a diversity of potential students and staff
- Recent changes in probation, annual review and promotions support are all to a significant extent motivated by EDI considerations. For instance, annual review and promotions meetings are designed to highlight the diversity of potential routes to career advancement and to ensure all staff have access to appropriate information and career support.

The School benefited significantly from the *process* of achieving the Bronze award. It is committed to implement the Athena SWAN action plan over the next 4 years and aims to submit a Silver award application within 5 years.

The preparation of the School's REF submission followed the EDI requirements set out in the University's Institutional Code of Practice. Final decisions about output selection were made by the University's UOA Executive Panel based on quality assessments supplied by the School's Director of Research. The School's assessment of outputs was based on the views of a panel of senior staff and followed the institutional Code of Practice in terms of the gender balance of the assessment panel, the EDI training of panel members, the timetable of assessments and appropriate consultation with individual staff members in relation to their individual research

outputs. The gender balance of authorship of outputs was monitored to detect any gender bias in the assessment and attribution of outputs.

#### *Maternity and parental leave and support for flexible working*

A key part of the Athena SWAN action plan is the development of explicit policies on arrangements for maternity and parental leave, and flexible working. Workload allocation is tailored to suit the preferred schedule of the staff member concerned. Workload relief can be applied for before leave (for example to allow a particular research activity to take priority in advance of leave), upon return from leave, or both. The total amount of workload relief is at least proportional to the length of proposed leave period. For full-time staff with caring responsibilities, requests relating to the teaching timetable are accommodated as far as possible. For instance, staff with caring responsibilities can have teaching scheduled within core hours, concentrated into fewer days and/or concentrated into a single semester. Working remotely in normal times is fully supported, where requested and where practical.

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

#### *(a) Research income, infrastructure and facilities pertaining to research and research impact.*

ESRC grants pertaining to the current REF cycle include Zapechelnyuk as PI on a Micro project *Theoretical Foundation and Design of Persuasion Mechanisms*; Manzini as PI on the Micro project *Choice with Errors*; and Sutherland as PI on the Macro project *The Macroeconomics of Financial Globalisation*. Zapechelnyuk's work analyses the problems of optimal persuasion design and the protection of individuals from detrimental manipulation by a persuader.

An AXA scholarship awarded to Ulph –one of only 24 such scholarships awarded worldwide at the time– funded joint work with a PhD student. Stefanski participated in a six-figure SFC-funded project on *Innovation Centre for Energy Storage*, whose PI is in the School of Chemistry. Most staff were awarded small grants during the REF period.

#### *Physical Infrastructure*

The School is currently located in a unique and attractive building; however, there is little remaining capacity and its structure places a constraint on a number of important activities. Thus, as described above, a central component underpinning the School's future research strategy will be the move to the Social Sciences hub to support office accommodation for a proposed 30% expansion in staff numbers, office accommodation for a larger PGR cohort and an expanded experimental/econometrics lab. The new building will be a step-change in the quality and extent of physical space for research in the School. The School will be moving into this new building along with two other Social Science schools –the School of Management and the School of International Relations (ILES, 4.2). This will provide important support for interdisciplinary research on finance, banking, migration, political economy and other topics.

#### *Computing facilities*

All staff have basic desktop computing facilities as standard. Staff who require more extensive computing power are provided with higher-specification workstations. The School also runs its

own dedicated server, Octomore, giving parallel computing capability to all staff and PhD students. Centralised High-Performance Computing facilities are available via the University's HPC Cluster, Kennedy, which provides 2500 computing cores. A suite of standard software is available to all staff –including Matlab, Stata etc. The School has a half-time IT officer (Artimof) who manages all IT and computing facilities in the School.

The School also runs an Experimental Economics laboratory, co-directed by Costa-Gomes and Gerasimou. The lab supports their personal research, PhD research, UG and PG teaching in the experimental area, and the research of some staff in other schools in the University.

#### *Research funding*

The School provides an annual research allowance to all staff of £1500. All new academic staff are additionally given start-up funding in the form of a personal research budget of £8000. These budgets can be used to support any aspect of research, including travel, hardware, software, data, research assistance and experimental expenses.

Support for external research grant applications is provided at the University and School levels. At the University level, the Research Business Development and Contracts (RBDC) Office and the Finance Advice and Support (FAS) team provide dedicated advice and support for identifying funding sources, drafting applications and costings. A regular newsletter provides updates on funding sources and calls and a member of staff from the RBDC Office visits the School on a regular basis to provide drop-in advice sessions. The University also runs the Organisational and Staff Development Services (OSDS) which provides training workshops in funding applications and project management.

At the School level, support and advice is freely available (both in general and for specific draft applications) from the HoS, Director of Research, the School Manager (for budgeting advice), and other senior colleagues with experience of research funding. A number of senior colleagues are past members of research council funding panels (e.g. Sutherland, Ulph) and are able to provide highly relevant insights into the assessment process. The School maintains an archive of successful funding proposals available as a resource for all staff.

It is a priority for the School to improve grant capture and so the need to engage in funding applications is strongly emphasised by the HoS during individual probationary and Annual Review meetings, discussions around promotions and, in general, in School strategic planning discussions. To further incentivise applications, in 2018/19 arrangements were introduced to give grant applicants an additional draw from the School's operational budget to add to their personal research allowance. These incentive arrangements (which operate alongside the individual start-up budgets provided to new recruits) can also play the role of providing seed-corn funding for the development of larger projects.

The School is keen to encourage and support all credible grant application activity (even if applications are eventually unsuccessful). The development of applications provides valuable experience in thinking and planning regardless of the eventual outcome, and the School is careful to ensure there are no negative consequences of failed grant applications. Furthermore, it is emphasised that unsuccessful applications are a valuable starting point for revised

applications to other funding organisations for which all the support mechanisms described above are available.

*Support for open access and open data*

The University's PURE system provides a zero-cost framework for compliance with open-access and open-data requirements. All researchers in the School are encouraged to up-load pre-publication final manuscripts to the PURE system and to conform to best practice in relation to open data. The Digital Research Team manages the cataloguing and archiving in accordance with standard open-access practice (ILES, 2.4).

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

*(a) Research collaborations, networks and partnerships*

Almost all of our 23.4FTE staff collaborate with non-academic and wider audiences (ILES, 2.3 and 2.8). A selected list of co-authors of papers eligible for submission to the current exercise is:

Amir (University of Iowa), Arifovic (Simon Fraser), Barberà and Beviá (both Universitat Autònoma de Barcelona), Benhabib (NYU), Bokan (Croatian National Bank), Branch (UC Irvine), Cardona (UIB), Čopič (UCLA), Crawford (Oxford), Sir Partha Dasgupta (Oxford), de Oliveira (Penn State), Denti (MIT), Figuerola-Ferretti (ICADE), Fournier (University of Illinois at Urbana-Champaign), Devereux (UBC), Freeman (Simon Fraser), Gilbert (SAIS Bologna Center, Johns Hopkins U), Guesnerie (Paris School of Economics & Collège de France), Gehrig (Vienna), Honkapohja (Aalto University School of Business & Bank of Finland), Kapetanios (KCL), Katsoulacos (Athens University of Economics and Business), Kolotilin (UNSW Australia), Kostyshyna (Bank of Canada), Masolo (Bank of England), McGough (University of Oregon), Mitra (Birmingham), Morelli (Bocconi), Motchenkova (Vrije Universiteit Amsterdam & Tinbergen Institute), Mylovanov (Pittsburgh), Nolan (Glasgow), Palazzo (Bank of Italy), Paraskevopoulos (Bankia), Renou (QMUL), Richter (FRB Dallas), Schlag (Vienna), Souza (PUC-Rio), Straub (Toulouse School of Economics), Throckmorton (College of William & Mary), Alistair Ulph (Manchester), Waldron (Bank of England), Yoshimoto (Glasgow), Zultan (Ben-Gurion University of the Negev).

Sutherland and Ulph are elected fellows of the Scotland's interdisciplinary national academy, the Royal Society of Edinburgh, as was Hughes Hallett. Jaeger and Sutherland are Research Fellows of the Centre for Economic Policy Research. Jaeger is a Research Fellow of the National Bureau of Economic Research and a Fellow of IZA, CESifo and CReAM. Negri is a member of the Women in Political Economy network. Polisson became a Research Fellow at the IFS in 2015 and Stefanski is an External Research Associate of the Oxford Centre for Resource Rich Economies.

*(b) Links with research users and beneficiaries*

From 2010-2017, Ulph was Director of the Scottish Institute for Research in Economics (SIRE), an initiative set up by the Scottish Funding Council involving ten universities to promote Economics research within Scotland (ILES, 1). SIRE helped foster the development of high quality Economics research across Scotland and contributed to policy through knowledge exchange and CPD activities. From 2015, Ulph has been one of two economist members of the NHS Pay Review Body. In 2017, he became a Member of the Competition Appeals Tribunal,

and in 2018 was appointed as one of the four Commissioners of the Scottish Fiscal Commission, the independent fiscal institution which produces the economic and fiscal forecasts used to set the Scottish Government's Budget. He was awarded a CBE in 2016 for services to Economics and Social Sciences. At the beginning of the REF period, Hughes Hallett was a member of Scotland's Council of Economic Advisers which advises ministers on improving the competitiveness of the Scottish economy and tackling inequality. He was also a member of Scotland's First Minister's Sustainable Growth Commission.

Many staff have been research visitors over the census period. For example, Evans has been a visitor at the St Louis Fed; Sutherland at the Bank for International Settlements and the Central Bank of Ireland. Leighton, though not long out of her PhD, is a research advisor for Save the Children and ASPIRE; Cunha, an early-career lecturer, is a research collaborator on a project with the Bank of England.

(c) *Wider activities and contributions to the research base, economy and society.*

The School hosted a number of workshops and conferences designed to foster collaboration at all levels, confirming its role as a site of activity in all areas of the discipline. In 2014, Cuhadaroglu organized a SIRE Workshop within the *Behaviours, Incentives and Contracts* research programme, with lead presentation by Faruk Gul (Princeton), designed to widen the interaction in the Micro area among faculty and students from the Scottish universities. In 2015, Stefanski ran a two-day Royal Economic Society supported workshop on *Structural Transformation*. Four field-leading researchers (Herrendorf, Arizona State; Storesletten, Oslo; Valentinyi, Cardiff; and Zhu, Toronto) joined eight young economists and 35 other delegates from across Europe to discuss applied topics, including: the nature of entrepreneurship in China; the role of transport infrastructure in fostering growth; the measurement of fossil-fuel subsidies; and the efficiency of commuting on the London underground.

In March 2016, Gerasimou organized the SIRE-funded *Symposium on the Analysis of Revealed Preference* (SARP), which provides a forum for discussing the latest developments in theoretical and empirical revealed preference analysis. This was the inaugural SARP, attended by around 40 people from more than ten countries. Keynote speakers were: Börgers (Michigan), Echenique (Caltech), Mariotti (QMUL), Polemarchakis (Warwick) and Quah (Oxford). SARP has established itself as the world-leading specialized conference for researchers in this area and is now a biennial event. The second SARP was jointly organized by Oxford and St Andrews, and was held at Nuffield College, Oxford in June 2018 with support from the Royal Economic Society. The third SARP conference is planned to take place in St Andrews in 2021. Evans had year-to-year involvement on the Programme Committee of another annual conference inaugurated in St Andrews: *Expectations in Dynamic Macroeconomic Models*. The conference has taken place at the Bank of Finland, the St Louis Fed and the Barcelona GSE. Evans co-organized the conference at the University of Oregon in 2015. McCrorie was on the Organizing Committee of the European Conference of the Econom[etr]ics Community held in Scotland in 2015.

A number of workshops were organized by the Centre for Dynamic Macroeconomic Analysis (CDMA), which were directed at both staff and PhD students in Scotland and beyond. In May 2016, McCrorie organized a workshop in *Time Series Econometrics* that included the 3<sup>rd</sup> SIRE Econometrics Lecture –the School has hosted all three– entitled “J.D. Sargan and 21<sup>st</sup> Century Econometrics” delivered by Peter C.B. Phillips (Yale), a world-leading econometrician. McCrorie offered a contributed talk alongside externally contributed talks by Giraitis (QMUL), Magdalinos (Southampton) and Wang (Chinese University of Hong Kong).



In 2016, McCrorie and Petrova organized a CDMA workshop on *Big Data, Machine Learning and Predictability Testing*. The keynote speaker was Victor Chernozhukov (Massachusetts Institute of Technology), a world-leading figure in the area. This workshop involved staff from the Scottish universities and provided focussed staff training in a rapidly developing field. With support from the International Association for Applied Econometrics, the School hosted a follow-up workshop, on *Machine Learning and Big Data in Econometrics*, in May 2019. This workshop, which was attended by staff from four different schools within the University, had some of the leading UK-based contributors to the field, including Kapetanios (KCL), Kristensen (UCL), Magdalinos (Southampton) and Weidner (then UCL). In March 2017, the CDMA and School jointly ran a one-day training event for staff and for PhD students in the Scottish Graduate Programme in Economics: *An Introduction to Non-Linear Solution and Estimation Techniques*, led by Throckmorton (College of William and Mary). The CDMA and School also ran a two-day workshop on *Time-Varying Uncertainty in Macro* in September 2017. The keynote speakers were Fabio Canova (Norwegian Business School) and Wouter den Haan (LSE). Speakers included policymakers and bankers from the IMF, the Federal Reserve Board, the Bank of England and the Banque de France. It also ran a mini-workshop in *Macroeconomics and Econometrics* in September 2018. The speakers were Seppo Honkapohja (Aalto School of Business and immediate past Deputy Governor of the Bank of Finland) and Katsuto Tanaka (Gakushuin University) who was an academic visitor in the School during Summer 2018.

Petrova was a co-organiser of the *European Conference on Bayesian Econometrics*, held in St Andrews in September 2019. The conference featured over 70 participants from around the World, including academic economists, statisticians, central bankers and policymakers. Keynote papers were presented by Marco Del Negro (Federal Reserve Bank of New York); Petros Dellaportas (UCL); Sylvia Kaufmann (Study Centre Gerzensee); and Veronika Ročková (University of Chicago Booth School of Business). Other invited speakers included Monica Billio (Universita Ca' Foscari Venice); Gael Martin (Monash University); Haroon Mumtaz (QMUL); and Davide Pettenuzzo (Brandeis University).

Jaeger is Co-Editor, *International Journal for Re-Views in Empirical Economics* and was a member of the Programme Committee for Society of Labor Economists (annual meeting 2020) and Conference Organizer, *Exploring the Breadth of Labor Economics*, A Conference in Honor of Dan Hamermesh, (IZA Bonn, 2019). Throughout the REF period, Evans was Associate Editor of the *Journal of Economic Dynamics and Control* and was Associate Editor, then from August 2018, Co-Editor, of *Macroeconomic Dynamics*. In 2014, he gave a keynote talk at the Barcelona GSE's Theoretical and Experimental Macroeconomics Conference; an invited plenary talk at the Workshop of the Australasian Macroeconometric Society in 2015. His presentation at a July 2017 Bank of England conference is available as a VideoVox interview "Pessimism and the ZLB" (<https://www.youtube.com/watch?v=Y4zMzzSbLnA>). Evans also gave the UC Riverside Distinguished Speaker Seminar on "Adaptive Learning and Monetary Policy" in 2018. McCrorie is an Associate Editor of the *Journal of Time Series Analysis*. He gave an invited lecture to staff and doctoral students on "High Frequency Econometrics" at the Chinese University of Hong Kong in 2016. Since 2010, Ulph has been a member of the Programme Committee for the European Association of Environmental and Resource Economists (EAERE) Annual Conference and, since 2006, a member of the Scientific Committee of the Competition and Regulation European Summer School in Economics (CRESSE) which oversees the annual CRESSE conference.