
Annual Report for the Centre for Competition Policy 1 January – 31 December 2018

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CCP, Earlham Hall, University of East Anglia, Norwich NR4 7TJ

This report is an abridged version of the Annual Report 2018 submitted to the University of East Anglia in January 2018

The objective of CCP, as stated in its constitution, is to undertake high quality independent academic research into competition and regulation policy and its impact on companies and others. Its output is in the public domain and contributes both to the development of policy and to understanding business responses.

1 Introduction

The Centre for Competition Policy (CCP) is a joint venture between the School of Economics (ECO), the School of Law (LAW), Norwich Business School (NBS) and the School of Politics, Philosophy, Language and Communication Studies (PPL). CCP has established itself as a leading internationally recognised research centre focused on competition, regulation and consumer policy.¹ Thorough enquiry in this field is necessarily multidisciplinary. In its research, CCP draws on models, theories and techniques from economics, law and political science. Economic analysis provides an understanding of how consumers, firms and markets operate, of when markets fail for lack of competition, of techniques which might be adopted to regulate behaviour and of the consequences of such policy interventions. Legal analysis is necessary to ensure the legislature and the courts establish and develop sound rules with which firms should comply, and which regulatory agencies can enforce and operate within. Political science provides an understanding of the design and development of policies, and insights into the bodies and institutions that implement them. Our research applies each of these disciplines individually and together to achieve real-world policy relevance without compromising academic rigour. We are planning to add computer science to the list of disciplines because the analysis of new digital markets requires a much keener appreciation of the technology and because this would give us access to new methods of data collection and analysis.

Following the decision by the Director Morten Hviid to step down from that role to become an ordinary member of CCP, one of the key tasks for the Centre in early 2018 was to find a new Director. Following a successful recruitment process, we will be welcoming the new Director, Sean Ennis in January 2019 when he takes up a chair in Norwich Business School. A preview of the vision of the new Director can be found in section 3 below.

As usual, we have had comings and goings in 2018. We have welcomed 5 new PhD students, 7 new faculty members, and 1 new Post Doc to the Centre. We have said goodbye to two faculty members, Enrique Fatas from ECO and Lily Samkharadze from NBS; and two CCP Research Associates Dave Reader and Glen Turner; and 2 PhD students. CCP founding Director, Catherine Waddams, has retired from UEA but will continue her involvement with CCP.

We have had two visitors stay with us this past year. Danilo Montesi, a Professor of Computer Science from the University of Bologna and Mira Marinova, a PhD candidate in Law from University of Reading. We said goodbye to Dongmyong Kim, who returned to Korea after spending two years with CCP as a researcher.

The Steering Group, which supports the director and consists of the director and one member from each of the sponsoring schools, was joined this year by Sally Broughton Micova as PPL's representative

¹ Competition policy provides a broad framework for the manner in which firms can interact, while regulation sets industry-specific rules. Markets with many alternative suppliers typically provide consumers with products and services they want at the best possible prices. In such markets, competition policy provides little restraint on business behaviour, the exception being on cartel practices, which are nearly always harmful. When fewer firms participate in a market, however, it is appropriate to constrain a range of anticompetitive business practices. Competition law provides the general framework for this. In cases where entry and competition cannot erode market power, at least in the medium term, policy options include direct (sectoral) regulation of the firms' behaviour.

and Farasat Bokhari as ECO's representative. In addition, the steering group consists of Amelia Fletcher (NBS) and Sebastian Peyer (LAW).

CCP also relocated office space this year and has moved from the Elizabeth Fry Building, where it has been housed for the past five years, to the renovated stable block and adjacent new building at Earlham Hall. We are expecting to move again next summer.

Summary of activities January to December 2018

In 2018 CCP members published **32** articles, **four** book chapters, **one** book and **13** working papers. Members have given **41** presentations to external academic audiences and a further **20** to predominantly practitioner audiences. CCP has responded to **12** public consultations, written **6** blog posts, sent **341** tweets and been quoted in the media **23** times (including external blogs). CCP has organised a PhD workshop and **30** seminars. In addition, CCP has under its membership scheme held **6** events with subscription members so far this year.

The 14th Annual Summer Conference took place on June 7th-8th. The topic was "Competition Policy and Industrial Policy: Is there a need for a new balance?". For many years, there has been a wide consensus that competition policy should not be used as an instrument to achieve industrial policy goals. This consensus has been increasingly challenged since the financial crisis. It has been criticized that merger policy has not allowed the emergence of national or European champions. In antitrust policy, part of the benefit of intervening against the large US-based internet companies is sometimes seen as the protection of the future interests of European industries. The restrictions arising from state aid policy are increasingly seen as obstacles to nurturing industry and protecting jobs instead of creating an industry dynamic that fosters growth. The summer conference contributed to this debate.

A two and a half year project on 'Equity and Justice in Energy Markets' led by Catherine Waddams and undertaken as part of the UK Energy Research Centre (UKERC) research programme, ended in October. The project concluded in a report drawing on research carried out by David Deller, Elizabeth Errington, Amelia Fletcher, Tom Hargreaves, Michael Harker, Noel Longhurst, David Reader and Glen Turner. The report was launched at an event held at Westminster with guest speakers Ofgem CEO Dermot Nolan and UKERC Director Jim Watson, and presentations from the authors. The event included lively debate from the 39 policy makers, practitioners and academics who attended.

In past years, CCP has organised a PhD workshop to take place just before the summer conference. This has put unnecessary strain on resources at this busy time of the year, and in 2017 it was decided to relocate this event to later in the academic year. The workshop took place in January 2018 with 6 CCP PhD students and 5 external PhD Students (University of Essex, Bocconi University, London School of Economics & Political Science, University of Leeds, University of Reading) presenting their research.

Funding

Two major grant applications to the ESRC were submitted in this period. The first with Hviid as PI was a submission to the ESRC Centres Competition 2018 for 5 years of funding under the title CCP2.0 - Competition and Consumers in the Digital Age. The second, with Kassim as PI, was a response to a "Governance after Brexit" call. The value of this second bid was close to £750k. In both cases, we have been informed that our application was unsuccessful. A smaller grant application on "Digital Business Models in the Shadow of Privacy and Security" has been made to the EPSRC and we await their decision.

Other contracts in this period include the, now completed, UK Energy Research Centre funded "Justice and Equity in Energy Markets"; the cross-institution ESRC-funded "Network for Integrated Behavioural Science - The Science of Consumer Behaviour"; a small BEUC (European Consumer Organisation)-funded piece of research on "Network Tariffs"; a project on "The playing field in audiovisual advertising: What does it look like and who's playing" funded by CERRE; a project for the Asia-Pacific Economic Cooperation (APEC) providing a "Comprehensive Review of Potentially Anti-Competitive Laws & Regulations". A bid to Anglian water on "Understanding water poverty" has been submitted.

Knowledge Exchange

The knowledge generated by CCP research is transmitted in various ways. The teaching delivered by CCP members on a variety of taught undergraduate and postgraduate courses is informed by CCP research. Postgraduate students are invited to participate in CCP events including our weekly seminars and the PhD students associated with the CCP have access to a wide range of academics for discussion and comments, and are expected to participate in CCP events.

In addition to teaching and supervision which takes place as part of normal University duties, CCP members have as in the past delivered several bespoke training courses to delegates outside UEA during the year.

A two-day course on the “Introduction to the economics of competition policy”, organised by Hviid and delivered with Fletcher, Lyons and Waddams, was run in London via the Government Economic Service (GES) in March 2018. A similar programme, which will also include the new director, Sean Ennis, will be delivered in January 2019.

Hviid and Fletcher delivered a one-day course in London to the Department of Works and Pension.

In October, Fletcher organised and delivered CCP’s annual two-day course on “Economics of Competition Policy for Economists”, together with Hviid and a number of practitioners. This is the fifth time this London-based course, aimed at participants from the public and private sector, has been delivered.

Engagement with stakeholders

During this period, the Intellectual Property Office’s membership of the CCP Subscription Membership Scheme lapsed, but we were joined by Citizens Advice (CitA), so our total number of members remains at 7. The addition of the CitA has required us to expand our definition of public sector to include non-profit organisations with statutory duties. Our current members are: BEIS, CitA, CMA, FCA, Ofgem, Ofcom and Ofwat. Membership benefits include a half-day event per year to draw on CCP expertise. In 2018 we held six half-day meetings/workshops.

Impact

CCP research contributes to a number of UEA graded impact case studies for the next Research Excellence Framework (REF 2021).

In **ECO**, four case studies linked to CCP members have been graded A-D

In **LAW**, six case studies linked to CCP members have been graded A-D

In **NBS**, three case studies linked to CCP members have been graded A-D

2 Summary of Activities by research theme

This year the Centre reports its research under three broad headings, Competition Policy; Regulation and Institutions; and Consumer Policy and Behaviour. The latter emphasises the increased importance of the insights derived from behavioural economics for the study of consumer behaviour. Below we highlight some of the research placed in the public domain this past year.

2.1 Competition Policy

Research on anticompetitive behaviours by firms which may harm consumers. This theme covers the core of traditional competition policy such as agreements, abuse of dominance/monopolisation and mergers. It also covers research aimed at uncovering how competition takes place in particular cases.

A number of papers consider various aspects of horizontal agreements, including hard-core cartels. Davies, Mariuzzo and Ormosi have published a paper quantifying the deterrent effect of cartel enforcement. Davis and Ormosi with co-authors investigate whether enforcement deters cartels. They show theoretically that if enforcement is effective in deterring and constraining cartels then there will be fewer cartels with low overcharges and fewer with high overcharges. Testing their theory, their results offer a first tentative confirmation of effective deterrence. Mariuzzo and Ormosi with co-authors consider the relative role of public and private (market-based) sanctions in deterring misconduct. They combine event study techniques, sentiment analysis, and classic econometrics to illustrate that in the context of cartels, public and private sanctions act as complements, but only if the cartel directly affects atomistic customers. Giosa's research is focused on bid-rigging and in one paper she asks whether splitting large public contracts into lots fosters competition in the long and short run, and enhances the participation of small and medium enterprises (SMEs) in public procurement proceedings.

Several papers consider aspects of merger policy. Bokhari and Mariuzzo's paper on demand estimation and merger simulations for drugs contrasts the use of three well-known demand systems to highlight the effect model choice has on merger simulations. Reader raises the concern that the resurrection of ministerial decision-making under the proposed UK reforms could act to deter foreign direct investment by creating perceptions of an assessment process based on subjective criteria. Looking at mergers in digital markets, Deutscher asks how one should measure privacy-related consumer harm in merger analysis. Davies, Mariuzzo and Ormosi together with CCP alumnus Bennato provide a relatively rare case study of an ex-post evaluation of the impact on innovation of two mergers in the world-wide hard disk drive (HDD) industry. Their main finding is that the mergers had a beneficial effect, associated with significantly increased R&D and patent activity as well as increased innovative productivity.

A number of papers consider taxation both because the intensity of competition affects the effect of the tax and because by observing the effect of tax changes on firm behaviour we can make inferences about the intensity of competition. Miravete with co-authors characterize the trade-off between consumption tax rates and tax revenue -- the Laffer curve -- while allowing for re-optimization by both consumers and firms with market power. Miravete with co-authors investigate whether national policies can be an effective replacement for tariffs to protect domestic industry. Their empirical research confirms that fuel taxation and emissions policies can be an effective alternative to tariffs, favouring domestic production and enabling these to earn additional profits. Mariuzzo and co-authors develop a theoretical model to study the effects of an ad valorem taxation regime differentiated according to product characteristics (quality) within an imperfectly competitive market. They test the theoretical prediction using data from the Irish automobile market during the period 2004-2008 and conclude that a differentiated taxation regime benefits consumers who value quality more, while it penalizes those more sensitive to price increments.

Other papers look at pricing and competition in vertically related markets. Kühn with co-author discuss the competition analysis of vertical restraints in multi-sided markets. Chakraborty investigates whether retailers manipulate prices to favour private label over brands and identifies pricing patterns, which are more indicative of retailers manipulating prices for the sake of segmenting consumers rather than displacing brands. Hviid and Jacques with co-author study vertical disintermediation in the music business. Mariuzzo studies how updates to mobile Apps are managed.

Finally, a number of papers have considered issues related to innovation. Bokhari and Yan have been working on two empirical papers, soon to be published as CCP working papers. The first looks at antibiotic consumption in the UK and the cost of shifting demand away from broad-spectrum drugs, which are more susceptible to antimicrobial resistance, towards the more narrow-spectrum antibiotics. The second looks at the evidence from UK pharma on the use of product proliferation as entry deterrence. This paper tests the hypothesis that firms launch additional products around end of market exclusivity protection to deter entry. It then checks if such a strategy is effective in deterring entry and/or if it helps preserve market shares post entry of a competitor.

2.2 Regulation and Institutions

Research on industries overseen by sector-specific economic regulators or subject to specific policy objectives such as cultural diversity. Research on the institutions tasked with the design and implementation of competition laws and economic regulation and their assessment.

Waddams Price traces the discussion of residential energy prices from the opening of markets in 1996 and removal of caps on retail prices in 2002 to the call for their reintroduction at the 2017 election. Price discrimination has been a policy issue at several points on this journey, and its interpretation has changed as the market has moved from monopoly supply to a market with many firms. The focus has moved from company offers to consumer response and outcomes, incorporating the demand side as well as the supply side. Deller and Waddams Price focus on a specific fuel policy, the winter fuel payment. They track the proportion of household expenditure devoted to energy between 1992 and 2014 and find that while households with a head aged over 80 have elevated energy expenditure shares (similar to households at the bottom of the income distribution), pensioners aged 65-70 have energy expenditure shares comparable to households at the middle of the income distribution. The research suggests that political considerations influenced both the recipients of support and the timing of interventions. Ormosi and co-authors use a capture-recapture approach to measure detection and deterrence arising from financial regulation. Examining pre- and post-financial crisis periods, they offer evidence that, whilst there was no statistically significant change in detection rates for breaches of financial regulation, there was a significant increase in the rate of deterrence after 2010.

Cultural creativity and diversity is affected by public policy and institutions. Street with co-author explores the role of intermediary institutions in promoting creativity and cultural diversity in the music industry, and the impact of cultural policy on the performance of those intermediaries. Hviid, Jacques and Street together with co-author published two papers on automated anti-piracy systems as copyright enforcement mechanism. They illustrate the problems which poorly designed algorithms can create for cultural diversity. Music streaming services depend on consumers being able to access music wherever they are, but such a system runs counter to the management of rights on a national basis and through collecting organisations which act as monopolies within their own territories. Street with co-author document various efforts by the EU to resolve these, showing them to be motivated by a deep-seated and persisting belief in the capacity of 'competition' to resolve problems that, they argue, actually lie elsewhere – in copyright policy itself.

Regulation is relevant for other parts of the economy. Amodu applies regulatory theory to sketch out some themes present in the context of regulating the private rented sector which tend to be ignored. Regulation for the purposes of this paper, is defined as the deployment of those practices relevant to controlling or shaping both the economic activity of renting out homes and the practices adopted by landlords, so that they adhere to Government aims and objectives.

In the area of private enforcement of competition rules, Peyer looks at private antitrust enforcement through the lens of tort law. In a paper to be published next year Peyer argues that the current English approach to private antitrust enforcement with its narrow focus on compensation is flawed. It does not reflect the variety of functions that have been assigned to the law of torts in general. It also limits the remedies that are made available to injured parties in the English courts which, in turn, reduces the effectiveness of competition law enforcement. Stephan critically analyses the European Commission's drive to encourage private enforcement of competition law, focusing on the purpose of the 2014 Damages Directive. He argues that the Directive is unlikely to significantly encourage private actions and may even be undermining the effectiveness of public enforcement.

2.3 Consumer Policy and Behaviour

Research focused on policy directly aimed at consumers, and research aimed at understanding consumer behaviour.

In the context of airline services, Korfiatis with co-authors explore the issue that not all opinions expressed online match customers' personal preferences, nor can firms use this information to deduce general conclusions. In another paper, Korfiatis and co-authors investigate factors predicting consumer 'behavioural intention' and 'use behaviour' towards mobile shopping apps, considering the impact of two manifestations of consumer's perceived risk: Privacy Risk and Security Risk.

The UKERC project culminated in the launch of a book on 'Fairness in Retail Energy Markets? Evidence from the UK'. The report presents findings under five broad themes: (i) how long-term outcomes contextualise the retail energy market's political salience; (ii) how distributional objectives feed into institutions; (iii) the multi-faceted nature of engagement with energy; (iv) the detailed experiences of those at risk of FP; and (v) how data/statistics can be improved. The project more generally led to publications by Deller on energy affordability in the EU and Hargreaves and Longhurst on the lived experience of energy vulnerability among social housing tenants. Since the early 2000s annual statistics on fuel poverty in England based on a model of household's energy expenditures have been published by the UK government. Deller and Waddams Price compare official fuel poverty rates with those based on consumers' self-reported energy expenditures from the Living Costs and Food Survey. They find that self-reported energy expenditures do not always under-report fuel poverty. Other outputs from this research package are reported in section 2.2 above. Further working papers by Deller and Waddams Price will be published in early 2019.

Other research on consumers in regulated sectors includes work on both water and energy. Based on a report for Anglian Water, Lu, Deller and Hviid published a paper on the potential effectiveness of Increasing Block Tariffs as well as non-price interventions to reduce demand for water. The paper highlights the challenges in designing an effective increasing block tariff and how such a tariff and behavioural interventions can interact positively to encourage water saving. Waddams Price and co-author examine characteristics associated with consumer (dis)engagement in the residential electricity market, introducing consumer attitudes and marketing recall as new factors. General attitudes are closely associated with electricity market activity, with considerable variation in the strength and statistical significance of these relationships, indicating very different motivations amongst consumers. Lu and Waddams Price published a report on how one might design distribution network tariffs that are fair for different consumer groups.

Sugden's new book, *The Community of Advantage*, asks how economists should do normative analysis. Normative analysis in economics has usually aimed at satisfying individuals' preferences. However, behavioural research shows that individuals' preferences, as revealed in choices, are often unstable, and vary according to contextual factors that seem irrelevant for welfare. Sugden advocates a kind of normative economics that does not use the concept of preference. Its recommendations are addressed, not to an imagined 'social planner', but to citizens, viewed as potential parties to mutually beneficial agreements. Its normative criterion is the provision of opportunities for individuals to participate in voluntary transactions. Using this approach, Sugden reconstructs many of the normative conclusions of the liberal tradition. He argues that a well-functioning market economy is an institution that individuals have reason to value, whether or not their preferences satisfy conventional axioms of rationality, and that individuals' motivations in such an economy can be cooperative rather than self-interested.

Sugden and Zheng published a paper on whether consumers take advantage of common pricing standards. Sugden and co-author investigate the presence of order effects across multiple valuation tasks for consumer goods, whereby earlier goods are valued more highly than later goods. Based on experiments, they find a particular importance of the first task; goods in the first task are valued significantly higher than later valued goods.

2.4 From contract research to publication

CCP undertakes a small amount of what is often termed contract research. We are always clear that the outcome of such research contracts should be placed in the public domain. We also have in place a funding model that provides some resource to the Principle Investigator on a contract research

project to turn the report into a publication, and to create a link between the research and any subsequent impact. Several published papers included in the activities of this year can be traced back to research which was not funded by a Research Council.

An example of the beneficial effects of carrying out contract research is provided by a small contract (< £20k) with Anglian Water which was agreed in February 2017 and completed in May 2017 by Deller, Hviid and Lu. The task was to provide a report on the use of price and non-price incentives for consumers to conserve water. This report is now available on CCP's website.

Following the report, Anglian Water organised a workshop with participants from industry and the water regulator, Ofwat. This led to an article summarising the report in the December 17 issue of The Water Report, a monthly publication launched in 2014 in response to UK water market reform. It also led to an invitation to present the research to Ofwat. We were hence in a position to disseminate the research directly and indirectly to the regulator and the industry. The report was revised as a working paper (18-1) and recently published in the peer-reviewed journal, Water Resources Management.

3 Looking forward

From January 1st 2019, the Centre will welcome its third Director. Professor Sean Ennis joins NBS from the OECD. As Director, he plans to maintain the focus of CCP on top quality, independent, multi-disciplinary and relevant research, with an ever-increasing mission to ensure a balance of applied work that not only addresses current policy questions but also feeds into policy questions of the future. He believes that the product and labour markets will change over the next decade to an extent unforeseen in the last 50 years, and that this is a key moment for research to have relevance to new and developing policy dilemmas. He wants to ensure the substantive focus of CCP addresses the myriad challenges surrounding digitalisation, noting that high-level political discussions of competition are in many ways stronger than ever before. He expects that CCP will continue to reflect the primary and varied interests of its members, while expanding its focus on fairness and vulnerable consumers, behavioural economics and environmental questions, maintaining its strength on utility regulation questions, and including a focus on financial and medical sectors.

Operationally, he plans a three-pronged strategy to (1) deepen relationships with policy makers, particularly in light of their regular turnover, which can be seen as a two-way street with direct communication to our researchers of useful insights from the policy makers' concerns that are relevant for researchers, as well as ensuring the research that is relevant is directly communicated to key policy makers; (2) explore new funding methods and partnerships, including increasingly with the private sector, foundations, and international research institutions on the one hand, as well as with other disciplines, such as computer scientists, on the other, and (3) enhance the focus on communications and outreach via media and conferences, for example by short videos, a press kit detailing areas of expertise of our members and holding the 2019 Annual Conference in London.

3.1 Conferences and workshops

The title of the CCP 15th Annual Conference will be "Machine Learning and AI as Business Tools: Threat or Blessing for Competition?" The power of modern computing including Machine Learning and AI represents a transformation in technology with potentially profound impact on the marketplace. Such disruptive innovation has the potential to fundamentally increase competition in all sectors of the economy. But there are also considerable concerns that exactly the same forces might allow greater exploitation of consumers by facilitating and even automating anticompetitive behaviour, and preying on consumers by taking advantage of limited attention, information processing, and boundedly rational behaviour. In this context, there is a pressing need for a better understanding of how competition is likely to evolve, how compliance can be ensured, and how to avoid long-term domination by a small number of powerful players.

The conference will touch on themes like algorithmic pricing and competition, targeted advertising and consumer protection, as well as the use of algorithms and AI to enhance the position of the consumer in the market. In addition, it will explore algorithms and AI as tools for enforcement and for academic research, and their potential role in improving how we monitor and evaluate markets. The conference is organised at the interface of social and computer sciences to bring insights from both disciplines to understanding the potential threats and blessings that AI might imply for competition.

We are considering making an offer to host a CLEEN workshop in 2019. CLEEN is a group of likeminded and similarly constituted European research centres and the aim of the workshop is to bring PhD students and new researchers together.

A one-day event on energy, marking the retirement of the Centre's founding Director, Catherine Waddams, will be organised for later in 2019.

3.2 Knowledge exchange

CCP research will continue to inform the teaching and supervision which members undertake at UEA. In January, we will run the economics course on the 'Introduction to the Economics of Competition Policy'. The course is now run through BEIS. We would hope to run this two-day course again in the autumn. In October, we will run the "Economics of Competition Policy for Economists" for the sixth time. We are planning to offer a two-day course on digital markets later in 2019.

3.3 Funding opportunities

The funding environment is becoming ever more challenging. While grant bidding has increased, this has not reached a level where, given current success rates, we can be reasonably sure to have funds from the UK Research Councils (RCUK). Even where we do, the expectations from RCUK of the institutional contribution are also increasing, leaving less overhead to fund CCP activities. An example of this is the expectation that in addition to the missing 20% (RCUK only pay 80% of the full economic cost) a further minimum of 5% as institutional contribution had to be found in the case of the CCP2.0 ESRC Centres Competition application.

In the last 6 months, we have seen an increase in the number of Invitations to Tender (ITT) for which we could bid. However, work relevant to CCP is still likely to be affected by Brexit negotiations and subsequent implementation. The impact of Brexit on our ability to carry out work for the EU is uncertain, as is any effect on EU funding more generally. We have increased our interaction with European partners and we have also looked beyond the EU for possible projects. One example is the current project related to the Philippines.

4 Appendices

4.1 KPI Tracker

| Measure | Annual KPI | 1 Jan – 31 Dec 2018 |
|--|--------------|---------------------|
| PEER REVIEWED JOURNAL ARTICLES | 20 | 32 |
| WORKING PAPERS | 15 | 13 |
| PROPORTION OF WP SUBMITTED TO JOURNALS | 75% | N/A |
| ACADEMIC PRESENTATIONS (Target = 67) | 1 per member | 62 |
| ACADEMIC EVENTS ORGANISED | 3 | 3 |
| CCP SEMINAR SPEAKERS | 30 | 30 |
| RESEARCH BULLETIN | 2 | 2 |
| POLICY BRIEFINGS/SUMMARIES – WP | 100% | 71.4% |
| POLICY BRIEFINGS/SUMMARIES – JOURNALS | 50% | 29% |
| POLICY BLOGS | 12 | 6 |
| PRACTITIONER PRESENTATIONS | 24 | 20 |
| RESPONSES TO CONSULTATIONS | 6 | 12 |
| MONITORED IMPACT CASE STUDY (target = 4) | 1 per school | 13 |
| TWEETS | 100 | 341 |
| MENTION IN MEDIA | 12 | 23 |
| RESEARCH STUDENTS ATTACHED TO CENTRE | 15 | 23 |
| RESEARCH ASSOCIATES [PT OR FT] | 5 | 2 |
| SUBSCRIPTION MEMBERS | 7 | 7 |
| UKRC OR SIMILAR GRANTS - APPLICATIONS | 3 | 3 |
| TRAINING EVENTS | 3 | 3 |

4.2 Appendix A: CCP year on year

| Year | 2018 | 3-year average 2015-17 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|----------------------------------|------------|---------------------------|-----------|------------|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Journal articles | 32 | 28.33 | 30 | 36 | 20 | 19 | 36 | 23 | 23 | 32 | 36 | 24 | 15 | 13 | 16 | 14 |
| Books | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 3 | 1 | 0 | 1 | 0 | 0 |
| Book chapters | 4 | 2.33 | 2 | 1 | 4 | 3 | 5 | 5 | 3 | 7 | 4 | 0 | 2 | 1 | 0 | 2 |
| CCP working papers [+ others] | 12 [+1] | 10 (+6.67) | 5 (+2) | 12 (+2) | 13 (+16) | 9 | 13 | 14 | 17 | 19 | 11 | 35 | 21 | 20 | 10 | 4 |
| Reports | 2 | 5.33 | 5 | 3 | 8 | 3 | 3 | 1 | 2 | 2 | 0 | 5 | 2 | 1 | 2 | 1 |
| CCP Blog posts | 6 | 15 | 10 | 22 | 13 | 10 | 18 | 30 | 29 | 35 | 9 | - | - | - | - | - |
| CCP events | 3 | 3 | 4 | 2 | 3 | 4 | 4 | 3 | 3 | 5 | 3 | 4 | 4 | 5 | 3 | 1 |
| CCP seminars | 30 | 37 | 35 | 35 | 41 | 36 | 35 | 36 | 31 | 39 | 32 | 29 | 27 | 39 | 33 | 12 |
| Responses to consultations | 12 | 9 | 7 | 9 | 11 | 10 | 10 | 10 | 11 | 6 | 2 | 1 | - | - | - | - |
| Faculty members | 37 | 32.67 | 32 | 35 | 31 | 27 | 28 | 26 | 24 | 21 | 19 | 16 | | | 13 | 12 |
| *RAs | 2 | 4.67 | 4 | 6 | 4 | 4 | 11 | 8 | 5 | 7 | 5 | 3 | | | 4 | 1 |
| *PhD students | 23 | 20.33 | 21 | 20 | 20 | 22 | 22 | 19 | 20 | 19 | 17 | 15 | | | 15 | 12 |

* Research Associates: Some double counting occurs where a CCP RA is also a CCP PhD student. RA count excludes RA's on short contracts.