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Citation

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Abstract: Against a background of the Irish government's concerns with Key Performance Indicators (KPIs) and the British government's wishes for a more quantitative Research Assessment Exercise (RAE), our study conducts a relative impact assessment of the study of politics, government, political science, and international relations in Ireland. Impact is measured as citations from the publications of permanent staff in eight Irish politics departments, based on data compiled in April 2008 from two leading academic indexes – ISI's Web of Science and Scopus – as well as the now popular Google Scholar. We discuss some of the criticisms that naturally arise in a study of this nature. Then, following similar exercises in other disciplines (e.g. economics), we use the impact measures to compare and rank individual scholars as well as departments. We also explore the extent to which the choice of different indexes, and different measures, influences the results that we obtain. While there are differences, in particular between indexes based purely on articles and those that access books and other material, the results from the different indexes are strongly correlated.

I OVERVIEW

Measuring the impact of academic research has attracted heightened interest as governments in Europe and elsewhere formulate policies to allocate resources to this increasingly competitive area. While formal

assessments such as the Research Assessment Exercise (RAE) in the United Kingdom are conducted to identify centres of research excellence, no such exercise currently exists in Ireland. A growing debate can be found in higher education in the Republic, however, about using Key Performance Indicators (KPIs) to assess the performance of third level institutions, and bibliometric methods feature in this debate. Several universities are planning their own exercises. Moreover, a renewed discussion can be found within the UK about the value of different means of assessing research impact within the RAE. While there are many aspects to the debate, at its heart lies the issue of whether to use peer review methods to assess research impact, or instead to rely on bibliometric data, based principally on citations of published research. While the current RAE is based on peer review, interest in bibliometric methods is growing.

Our study takes the bibliometric approach, using citation data from several sources to assess the relative impact of academic scholarship in political studies in Ireland. In this regard, our analysis is very similar to recent studies carried out on the Economics profession in Ireland (e.g. Ruane and Tol, 2007; Coupé and Walsh, 2003), exercises that compared both individual scholars and different departments on the basis of bibliometric data. No such study has previously been conducted for political studies, however, a field that we take to include the study of politics, government, political science, and international relations. Our objective in this study is hence straightforward: to assess political studies scholarship in Ireland according to relative impact, as measured by citations of published research using a number of different indexes and sources. The scope of our study extends to eight departments in these areas in Ireland, including two universities in Northern Ireland, and also includes a top British department as a benchmark. We included all permanent, full-time academic staff in each department working in the areas of politics, conducting the research during the month of April, 2008.

Our paper proceeds as follows. In Section II, we discuss the main issues involved in using bibliometrics to assess research impact in the social sciences, and identify some of the broad choices we faced in conducting this study. We discuss in Section III the four bibliometric sources we drew on for citation data and describe our data collection strategy in detail. In Section IV we present the results of our analysis applied to both individuals and departments. We end with a discussion of the results in the context of research assessment exercises and what these entail for the evaluation of the social sciences in Ireland.

II BIBLIOMETRICS IN THE SOCIAL SCIENCES

The use of bibliometric methods to assess scholarly output has grown considerably in recent years, particularly with the growth in easily available publication statistics through on-line sources. Of all of the bibliometric methods of assessing scholarly impact, it is citations that provide the most widely acknowledged measure. Used for a variety of purposes, citation databases such as the Social Science Citation Index provided by the Web of Science have long been used to trace scholarly debates and the dissemination of ideas and knowledge. It was quickly seen that citations could also be used to assess the impact of published work in a more quantitative manner, giving rise initially to a rating of different journals in terms of the typical impact of work published within them. This was particularly convenient for those journals that could boast high impact scores, and has given rise to a plethora of alternative impact scores, all based on citations. What can be calculated for journals, however, can also be calculated for any other unit, and so countries, universities, departments and individuals can also be treated in the same manner. Such measures are increasingly easy to obtain, but as always there are questions asked about what these measures actually mean, as well as concerns expressed about the various uses to which the citation data has been put. Some of these are generic, and apply as much to the field of physics as to politics. Others are more specific, and stem from the particular characteristics of political studies as a discipline or collection of disciplines. General concerns include the inference that can be drawn from the fact of a citation – is a citation critical, or complimentary? – and the inference that can be drawn from the number of citations. Someone suggested to us that the easiest way to become famous in German studies would be to write a very bad book about Goethe, since it would be much cited as a useful peg on which to hang a rebuttal. This may be true, but surely only for a very brief period. It would be of little credit to a discipline if it were to be either necessary or acceptable to continue to take time and space rebutting ideas that never gained acceptance in the first place.[1] Goethe is, of course, a topic of great interest in German studies, and this helps to illustrate the second concern: more citations are likely where more people are interested in an area. A paper on US presidential elections certainly has the potential to generate more citations than one about Irish presidential elections, but against this it should be said that it is also easier for the vast community of scholars interested in the US elections to

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[1] A research report carried out for UK Universities noted "There is frequent concern that some papers accumulate significant citation counts 'because they are wrong'. There is little evidence of this." Evidence Ltd., 2007.

ignore yet another paper on the topic than it is for the few scholars interested in Irish presidential elections to ignore work in that area. It is also harder to say something new or remarkable about the former.[2]

Part of the problem here lies in the difference between *impact* and *quality*.[3]

While impact is suggested by quality, the two are not equivalent, and in particular it is possible to imagine quality research with limited impact. It could be argued that a paper with very strong scholarly values was a good paper even if had little measurable impact, perhaps because it did little to extend a research frontier. A lesser paper in respect of these values, but perhaps with a new theoretical twist, could have a bigger impact. For some, that would make the latter paper of higher quality, because of a premium on originality, but there would surely not be universal agreement on this. Publication in high impact journals may be taken as a badge of quality because of the difficulty of getting a paper through the demanding double-blind referee process. But many papers published in the highest impact journals receive no citations, ever. When considering the impact of an individual article, therefore, the mere fact that it is published in a high-impact journal is no guarantee. Conversely, papers published in 'lesser' journals may garner far more citations, and in that sense have more impact.[4] Our view is that citations are a *useful, though not perfect*, measure of research quality. While research quality may be interpreted in many different ways, any research that makes a demonstrable impact through gaining numerous scholarly citations may be held to be of at least one type of quality simply by

[2] "There is a widespread but mistaken belief that the size of the scientific community that a journal serves significantly affects the journal's impact factor. This assumption overlooks the fact that while more authors produce more citations, these must be shared by a larger number of cited articles. Most articles in most fields are not well cited, whereas some articles in small fields may have unusual impact, especially where they have cross-disciplinary impact. It is well known that there is a skewed distribution of citations in most fields. The well-known 80/20 rule applies in that 20 per cent of articles may account for 80 per cent of the citations. To reiterate — the key determinants in impact are not the number of authors or articles in the field but, rather, the citation density and the age of the literature cited. The average number of citations per article and the immediacy of citations are the significant elements. The size of a field, however, will generally increase the number of "super-cited" papers." (Garfield, 2005, p. 6)

[3] We would certainly not disagree with the comment of Eugene Garfield, the originator of the Science Citation Index, who warned against "promiscuous and careless use of quantitative citation data for … evaluation". He went on to say, "It is preposterous to conclude blindly that the most cited author deserves a Nobel prize. " Quotations from Robert Merton's preface to Eugene Garfield's book, *Citation Indexing — Its Theory and Application in Science, Technology, and Humanities*, Institute for Scientific Information, 1979.

[4] For this reason, among others, the Australian Research Quality Framework rejected journal impact scores in favour of actual citation counts as one acceptable metric among many (Butler, 2008).

virtue of its impact on subsequent scholarship, whether or not citation is a necessary condition of quality.

Another set of generic concerns is more technical. These include the difficulty of adequately summarising the data collected. Like wealth, citations tend to be unevenly distributed. The typical distribution of citation data means that relatively few publications account for most of the citations. The average, as a summary measure, is a poor guide to the whole record. The treatment of self-citations is another issue: should such citations 'count'? And what about multiple-authored publications: should such work count equally with a single-authored work? The citation window is a third issue: how long a period is necessary for impact to be evaluated adequately, and if no limit is set, does this not unfairly privilege older work relative to more recent publications? We will deal with these below when explaining the methodology used in this paper. In each case we argue that our position is a sensible one, but we freely admit that alternative choices are possible and of course anyone is free to conduct a similar analysis based on different choices.

Specific concerns have also been raised about the use of citation scores in the social sciences and humanities, and these concerns are germane to the exercise here. There are two major ones. (For a more extensive review see Nederhof, 2006.) The first is that while science may be universalistic, the social sciences are not. Some studies take a national or local focus, while others look to more international topics; furthermore, a variety of different research paradigms tend to exist in social sciences and the humanities. These concerns in part go back to the general one raised earlier about how far anything of substance can be inferred from more or fewer citations, and our conclusions there can be applied again here. However, these observations about social science also lead to concerns about the adequacy of the databases that are available for bibliometric assessment. For a single discipline with a single 'language' we can expect the major journals all to be included in any decent database. But where a discipline is fragmented – with good reason perhaps – this is less likely to happen, with the consequence that any counting exercise may be biased to such an extent that its results are of no value. It is important, therefore, that the databases be broad enough to include both major journals in the discipline as a whole as well as those journals that are very well-regarded in significant subfields of the discipline. We will return to this issue when explaining the databases that are used here.

The second major difference between the sciences and the social sciences is that while the "hard" scientific community relies overwhelmingly on journals, social science publication depends much more heavily on other media. This includes, most importantly, books, but also in some areas a variety of reports and other 'grey' publications that are not included in the usual data

sources.[5] If publication of high-impact scholarly research in a field primarily occurs in books, then standard article-based citation indexes will fail to register this kind of research. In our approach to measuring research impact in political studies described below, we try to take this issue into account by including two measures that cover book citations as well as the more standard metrics based on journal articles.

III CITATION INDEXES USED IN OUR STUDY

Given the very real possibility that reliance on a single citation index would likely influence our results in a particular direction, we draw on four distinct sources of bibliometric data to compile our assessment. These consisted of two sets of citation data drawn from the Social Science Citation Index available through the ISI Web of Science, maintained by Thomson Scientific; citation data going back to 1996 from Elsevier's Scopus database; and citation data on articles, books, and other web-available sources such as conference and working papers from Google Scholar. Rather than burden the main paper with the excruciating details of our data collection procedure, we have moved this description to the Appendix. What follows below is rather a more general description of the four data sources we drew upon in collecting our data.

ISI Web of Science SSCI Index
The Social Science Citation index is the database most widely and traditionally used for citation analysis. Its primary strengths are its reputation for accuracy and its extensive coverage in time of a wide range of journals. Its major weakness for our purposes is that ISI does not include books or chapters in books, but only articles in ISI-listed journals that cite articles in other ISI-listed journals. Another weakness is that even while its coverage of journals is extensive (and improving, see van Leeuwen, 2006),[6] its limitations may be significant. Particularly germane to our study is the fact

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[5] "The observed publication culture in some of the social sciences disciplines clearly indicates that the interpretation of bibliometric scores based on the limited output in SSCI-covered journals is at least vulnerable for over interpretation. However, as long as it is clear to the users of bibliometric results to what extent the results are based on ISI-covered material, the bibliometric data can be useful in any evaluation process, because it is better to know at least something of a small portion of the output, than to have no insight in the impact of these papers at all." (van Leeuwen, 2006).

[6] It is also the case that the share of the journal output of non-US scientists has increased since 1990 in the social sciences, as covered by the SSCI (van Leeuwen 2006).

that the two significant journals in Irish political studies are not included: *Irish Political Studies* and (at least since 2000 when it was dropped from ISI) *The Economic and Social Review.* ISI claims it does not want universal coverage, only universal coverage in terms of the 'A' ranked journals. We looked at ISI coverage of 92 top journals as assessed in a recent expert survey of political scientists carried out by Iain McLean and others (McLean *et al.,* 2009). Even though nearly all of these are included now, not all back issues are referenced. *West European Politics,* for instance, was first included only in 2001. Of the 92 journals ranked in the survey, ISI includes 78 per cent and excludes only 2 of the UK's top 30 and 4 of the US top 30, only one of which is rated relatively highly in both the US *and* the UK. (This is *Politics and Society*, ranked 29th in the US and 34th in the UK.)

In addition to the standard ISI measures of article citations to other ISI articles, we also made use of the "Cited Reference Search" (CRS) facility for including citations in ISI articles to non-ISI material, including books as well as any Irish journals not included in the ISI's main citation database. For each reference cited in any ISI-indexed journal article, an additional entry is recorded by ISI, even when the cited item is not itself an ISI-indexed journal article. In the CRS data we collected, for instance, just over 60 per cent of the cited references were to books. In addition, because the CRS citations include references to non-ISI journals, it would also include significant journals for Irish political studies, such as *Irish Political Studies* and *The Economic and Social Review*. The major downside of the CRS is the unreliability of the data caused by the failure to enter second and subsequent authors, as well as the apparently haphazard manner in which article and journal titles are recorded in the database. So, to ensure Marsh as well as Gallagher gets due credit for *Days of Blue Loyalty* it is necessary when compiling total citations for Marsh also to search for work by Gallagher. This is particularly serious when it comes to co-authored chapters in edited books. CRS cannot easily separate the citation count that should be due to Sinnott for a chapter written by Sinnott and Marsh if Marsh is an editor of the volume itself, because CRS will record the book title and not the separate chapter title. Even more so than with Google Scholar (see below), furthermore, the CRS tends to list multiple, ostensibly separate entries for the same publication, based on minor differences in spelling the title or different formats used to enter journal titles. Only by checking each citing article for the precise wording of the reference can we tell exactly what is being referenced. In our analysis we made the decision to credit book editors with all references to the book. We certainly understate such citations, as we did not check ISI-CRS for the names of all chapter authors.

Scopus

Scopus[7] is similar to ISI. It currently serves as the basis for the *Times Higher Education Supplement* rankings of the research output of universities worldwide. Again, it is very reputable, but has similar weaknesses to ISI. However, it accesses a slightly different set of journals and some studies have shown it picks up more citations than does ISI (Dess, 2006, reported in Norris and Oppenheim, 2007). Among top-ranked political science journals, it provides significantly more inclusive coverage than ISI, with 100 per cent coverage of both the UK and US top 40 and 94 per cent of the top 92 (based on McLean, *et al.,* 2008). Like ISI, it does not include *Irish Political Studies,* although it does index *The Economic and Social Review.* Its main limitation is the fact that its coverage extends only to 1996. While Scopus is reportedly planning to add coverage of earlier years, it covered only citations since 1996 at the time of our study. In the overall index, this restriction in scope slightly penalises citations to articles written before 1996, although we see no substantive reason to downweight arbitrarily citations to articles published since 1996 by excluding Scopus altogether.[8]

Google Scholar

A recent assessment of the value of a bibliometric approach to evaluation in the social sciences suggested that "… perhaps the most promising option concerning bibliometric monitoring combines analysis of both articles in ISI source journals and non-ISI publications" (Nederhof, 2006). Herein lies the great advantage of Google Scholar:[9] in addition to the fact that it is fast and freely available, it literally combs through the Web to include a very wide range of publications, including those found in ISI and Scopus but also covering many, many more. Google Scholar has by far the largest database in terms of scope of coverage, including not only published articles but also books, book chapters, and conference papers. Critically for our purposes in measuring the impact of books, Google Scholar includes not only citations to books from articles but also, in many cases, citations to books in other books. Unlike CRS, it also picks up co-authors and co-editors without any difficulty and distinguishes chapters in edited books. Its principal weakness is that its results make no distinctions based on the location of the citation, for example

[7] http://www.scopus.com
[8] In our tests, excluding the Scopus total citations and *H*-index scores from the computation of the overall score did not change the top five-ranked scholars, although it did slightly affect the positioning within the top 5 (in particular, Michael Gallagher moved to the first-ranked position). The full replication dataset and code are available from the http://www.kenbenoit.net should anyone wish to test alternative constructions of any summary indexes or verify our calculations.
[9] http://scholar.google.com

including those from the *American Political Science Review* alongside those from working papers posted on individual scholars' websites.[10] While the reliability of its searches has improved markedly in recent years, the degree of centralised quality control Google exercises over its citation data is unknown – perhaps one of the reasons that its service is still officially listed as "Beta" despite being several years old. Finally, Google's results – and those compiled by the software we used to collect these results, Harzing's *Publish or Perish* (see Appendix for details) – often split a single publication into separate listings of slightly differently recorded items, rendering unreliable the unit-based summary statistics produced by *Publish or Perish* (such as the *H*-index, described below).

IV DATA COLLECTION METHODOLOGY AND MEASURES

Our data collection consisted of three steps. First, we identified all universities in Ireland (North and South) that had departments in political studies, defined as the fields of political science, politics, government, or international relations. While the two universities in Northern Ireland inhabit a different higher educational system and have their own (UK-based) RAE, it was felt that their scholarship was sufficiently similar to that in the Republic of Ireland both in focus and in structure to warrant inclusion. Table 1 lists the institutions, departments, and web pages of the units included in our study. Our second step was to identify all individual scholars in each unit, from a combination of the unit's web page and in several cases contacting administrative officers or secretaries working in the units. The key criterion for inclusion was that a scholar be employed on a full-time and permanent basis in each unit. (This decision excluded scholars working on contracts of limited duration.) In all, this led to the inclusion of 107 individuals from the eight departments. Finally, we searched each of the four databases for citations of each person's work.

As indicated above we were confronted with a number of choices about measurement. We made no provision for self-citation, following the recommendations against removing or controlling for self-citation from a recently published major report for Universities UK ((Evidence Ltd., 2007, p. 25) that found there is nothing undesirable about either of these features

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[10] In a number of papers, Jacso (2005, pp. 1537-1547) has discussed the limitations of *Google Scholar*. He has concluded that it is unreliable and unpredictable in the results it returns, both in its links to the sources it has found and in its coverage (see also Myhill, 2005; Notess, 2005). It is evident, however, that many feel that *Google Scholar* has the potential to become a useful source of scholarly information provided its shortcomings are addressed" (Norris and Oppenheim 2007).

Table 1: *Institutions and Units Considered in the Assessment Exercise.*

Institution	*Unit/Web Site*
Dublin City University	School of Law and Government, Government Group *http://www.dcu.ie/info/staff.php3?query=law*
NUI Cork	Government (College of Business and Law) *http://www.ucc.ie/en/government/Staff/*
NUI Galway	Department of Political Science and Sociology *http://www.nuigalway.ie/soc/staff/index.html*
Queen's University Belfast	School of Politics, International Studies and Philosophy *http://www.qub.ac.uk/schools/SchoolofPolitics* *InternationalStudiesandPhilosophy/Staff/*
Trinity College	Department of Political Science *http://www.politics.tcd.ie/staff.php*
University College Dublin	School of Politics and International Relations *http://www.ucd.ie/spire/staff.html*
University of Limerick	Department of Politics and Public Administration *http://www.ul.ie/ppa/Politics/Faculty.htm*
University of Ulster	School of Economics and Politics *http://www2.ulster.ac.uk/staff/dept-ecp.html*
For comparison: University of Essex	Department of Government *http://www.essex.ac.uk/government/*

and so to adjust in some way for them would itself be undesirable. Other evidence (Fowler and Aksnes, 2007) indicates a high correlation between multiple self-citation and additional non-self cites, leading us to believe that controlling for or even removing self-citations would make no significant difference to our results. Our own tests also show a high correlation between citations including and excluding self-citations: those who cite themselves more are also more cited by others.[11] While both Scopus and ISI do allow adjustment for self-citations easily (although whether this is always accurate we do not know) but there is no such provision within either Google Scholar or the CRS.

Another choice we made was not to penalise for co-authored works. We would argue that downweighting such items, such as dividing by the number of authors, would penalise the sort of cooperation that Irish and EU funding agencies are seeking to encourage and that is often vital to higher quality work. This does cause a problem when results are aggregated at, for instance,

[11] For instance, the Pearson's *r* correlation between the total Scopus citations and the total Scopus citations excluding self-citations was 0.997.

a departmental level, since a paper with three authors that is cited once counts as three citations to a department rather than one. In hindsight, we would have allowed for this when aggregating, although it is not possible to correct this retrospectively. However, with the exception of Gallagher and Marsh's *Candidate Selection in Comparative Perspective*, we are not aware of any highly cited items which are coauthered or coedited by departmental colleagues and so do not believe this decision makes much difference to our results.

In summarising the data on citations we adopted a number of different methods. First, we relied in part on total citation counts, over the lifetime to date of publications. This is not universally accepted as a useful measure because it reflects, in part, total output. However, we use it along with other methods that make some allowance for this. Second, where possible, as it is for Scopus and ISI records, we used the calculated Hirsch '*H*-index' (Hirsch, 2005). The *H*-index is defined as h if h of a scholar's N papers have at least h citations each, and the other $(N - h)$ papers have at most h citations each. In other words, a scholar with an index of h has published h papers each of which has been cited by others at least h times. The *H*-index thus reflects both the number of publications and the number of citations per publication, and is widely used in bibliometrics (although not without criticism: see Evidence Ltd., 2007, p. 18) as a better summary measure than total citations.[12] The average is also a very poor way to summarise impact, since it is well known that citations invariably follow a very skewed distribution with a small proportion of papers accounting for most citations in a discipline in general and usually also in the record of an individual. Third, we made an attempt to adjust total citations by a measure of the length of a person's professional life, defined as the time since their first publication. The date when a PhD was conferred was considered as an alternative, but as PhD date was unavailable for a high proportion of academics included in this exercise, this choice was not feasible.

Our measures led to the creation of four distinct sets of scores used to rank both individual scholars and departments. All scores consist of the sum of several components (detailed below), where higher numbers indicate greater impact, and are divided by the top-ranking score in each index and multiplied by 100 to scale the range from 0 to 100, where 100 is defined by the first-ranked scholar or department in each index. The indexes and their components are summarised as follows:

[12] Because of the widespread problems of mis-specified citations indicated above, the 'h scores' provided by *Publish or Perish* were not used.

Table 2: Ranking of Top 30 Impact Politics Scholars in Ireland

Overall Rank	Name	Institution	Title	Overall Score	Articles				Books		Yearly Impact		Google Scholar		ISI Citations	ISI H-Index	Scopus Citations	Scopus H-Index
					Total (Google) Years	Rank	Score	Rank	Cited Ref. Search Citations	Rank	Cites per Year	Rank	Total Citations	Rank				
1	Benoit, Kenneth	TCD	Professor	100.0	15	24	100.0	1	34	33	47.47	1	712	5	146	7	183	7
2	Gallagher, Michael	TCD	Professor	91.1	34	4	61.0	3	349	1	33.09	2	1125	1	176	7	20	2
3	Marsh, Michael	TCD	Professor	90.9	30	9	83.4	2	175	6	28.27	3	848	2	200	6	99	5
4	Laffan, Brigid	UCD	Professor	67.8	26	16	56.5	4	129	8	27.69	4	720	4	74	4	83	5
5	Sinnott, Richard	UCD	Professor	61.0	30	10	43.4	8	181	5	25.00	6	750	3	35	5	29	4
6	Elgie, Robert	DCU	Professor	47.4	18	20	39.2	9	111	11	21.83	9	393	7	29	4	32	4
7	Thomson, Robert	TCD	Lecturer	46.2	10	30	45.4	6	44	25	23.50	7	235	15	48	4	57	4
8	Walsh, Paul Patrick	UCD	Professor	46.0	20	18	47.3	5	0	76	19.30	10	386	9	31	4	59	5
9	Garry, John	QUB	Lecturer	45.1	14	27	44.6	7	12	42	22.86	8	320	10	75	3	79	3
10	Lodge, Tom	UL	Professor	41.5	31	6	25.7	14	227	4	13.48	11	418	6	26	3	21	2
11	Barry, John	QUB	Reader	41.0	14	28	26.8	13	110	13	27.64	5	387	8	21	3	33	3
12	Wilford, Richard	QUB	Professor	30.6	33	5	27.3	12	67	19	9.12	19	301	11	14	3	17	3
13	Todd, Jennifer	UCD	Ass. Professor	29.7	27	15	22.2	19	113	10	10.41	14	281	12	13	1	35	3
14	Guelke, Adrian	QUB	Professor	28.3	36	3	24.4	15	121	9	5.47	33	197	18	14	2	23	3
15	Bew, Paul	QUB	Professor	28.3	31	7	4.1	60	349	1	8.03	21	249	14	2	1	0	0
16	Coakley, John	UCD	Ass. Professor	26.8	29	12	23.5	16	47	23	9.69	17	281	12	26	3	6	2
17	Garvin, Tom	UCD	Professor	25.9	39	1	21.1	20	148	7	3.69	45	144	26	43	4	0	0
18	Edmondson, Ricca	Galway	Sr. Lecturer	25.7	28	13	30.3	10	16	39	4.86	39	136	28	32	4	21	2
19	Hainsworth, Paul	Ulster	Sr. Lecturer	22.5	28	14	17.8	25	91	15	6.61	26	185	19	11	2	7	2
20	McCall, Cathal	QUB	Lecturer	22.1	19	19	29.2	11	11	43	2.26	60	43	51	16	3	28	3
21	Patterson, Henry	Ulster	Professor	22.0	30	11	4.0	65	248	3	7.13	25	214	17	1	1	0	0
22	Robinson, Neil	UL	Sr. Lecturer	19.9	18	21	23.2	17	22	36	4.28	40	77	41	16	3	13	2
23	Cottey, Andrew	UCC	Sr. Lecturer	18.2	15	25	14.5	34	23	35	11.20	13	168	21	7	1	14	2
24	McGowan, Lee	QUB	Sr. Lecturer	18.1	16	23	16.3	29	5	54	10.31	15	165	22	22	2	13	1
25	Phinnemore, David	QUB	Sr. Lecturer	17.8	15	26	18.0	23	6	52	8.20	20	123	30	11	2	8	2
26	McMenamin, Iain	DCU	Sr. Lecturer	17.7	11	29	22.8	18	1	64	3.73	44	41	52	11	2	15	3
27	Arthur, Paul	Ulster	Professor	17.4	37	2	13.4	37	84	16	3.89	43	144	26	12	2	2	1
28	Thain, Colin	Ulster	Professor	16.9	25	17	14.2	36	59	20	5.20	35	130	29	20	3	0	0
29	Galligan, Yvonne	QUB	Reader	16.4	17	22	15.3	31	35	30	6.18	27	105	35	0	0	0	0
30	Collins, Neil	UCC	Professor	16.0	31	8	13.3	38	6	52	7.42	24	230	16	9	2	4	1

Overall score. This is calculated as the sum of all of the constituent citation measures in Table 2: total ISI and Scopus, the ISI and Scopus *H*-indexes, total Google Scholar citations, total yearly impact (Google Scholar citations per year, see below), and the total number of book citations from ISI's Cited Reference Search.[13] Given that this compound measure yielded raw values whose interpretation was not readily apparent, we rescaled the score from 0-100 where the top-ranked individual or department's score was given a value of 100.

Article Score. The article score includes total ISI citations and total Scopus citations. This score was also rescaled from 0-100. For scoring departments on the article index, *H*-indexes were not used.

Book score. The book score is simply the book citations from the Cited Reference Search.

Yearly impact score. This is measured as the total Google Scholar citations divided by the total year span of the Google Scholar-listed publications (where the latter also appears in Table 2).

A rank column was also added to the total Google Scholar publications, to indicate overall performance on citations of any kind, whether articles, books, or web-based publications.

V RESULTS

Our results can be looked at in three different ways: by individual scholar, by department, and finally, using the data on book citations from the Cited Reference Search, a ranking of the top-cited books.

Individuals

To score and rank individuals, we constructed a total score based on all of our constituent measures, and rescaled this to a 0-100 metric where the top-ranked individual was given the score of 100. Table 2 lists the top 30 political studies scholars in Ireland according to our ranking, along with the four other rankings based on articles, books, overall yearly impact, and total Google Scholar citations. Several patterns are worth noting in these results.

[13] Each constituent score was rescaled to a proportion of the top-ranked scholar's score, then added together to create the overall score. If a scholar had ranked top on all seven constituent measures, therefore, he or she could have received a maximum of 7.0. The same methodology was used to create the overall department scores in Table 3, with differences in the constituent scores noted below.

First, with the exception of the book scores based only on book citations in the Cited Reference Search, the top-ranked scholars are reasonably stable across different rankings, with the top ten overall scholars being ranked generally in the top 10 of each constituent ranking. The exception is the citation count ranking for books based on the Cited Reference Search, which gave a quite different picture; in particular, the first-ranked scholar overall ranks only 33rd on the book measure.

Second, the values for each ranking show marked inequalities, with the top handful of scholars being responsible for most of the citations, a pattern echoing similar findings from other fields and contexts. Garfield (2005) notes the fact that typically 80 per cent of citations come from 20 per cent of the papers and Katz (1999) shows how across a number of subject areas (largely in Science) in the UK, 50 per cent of citations come from between 5-10 per cent of papers, 5.5 per cent in the Economics/Business area and a similar figure in Education/Psychology. In every ranking, only the top five scholars exceed a score of 50 per cent of the maximum value. In total Google Citations, the top 10-ranked scholars (or 9.3 per cent of the total) on this index were responsible for nearly half (49.2 per cent) of all citations. For Scopus and ISI citations, this inequality was even more pronounced: the top 10-ranked scholars in each index were responsible for 59 per cent and 66 per cent respectively of all citations. In general, our results showed that citations and citation-based measures followed power-law distributions similar to those found in other fields (Gupta *et al.,* 2005). This pattern is clearly seen in Figure 1, which plots the yearly impact scores by rank for the top 50 per cent of scholars ranked according to yearly impact, and whose slope increases sharply as it approaches the upper percentiles in the ranking. Similar plots of the other data exhibit nearly identical curvatures. The conclusion is that in Ireland, as has been shown in other contexts, the work of a relatively small proportion of scholars receives the vast bulk of scholarly citations.

Third, the academic positions of the top-ranked scholars correspond well to their rank in the overall index. Of the top 30 scholars in the overall index, nearly all are Senior Lecturers or higher. Of the top ten, eight were professors in April 2008. Of the top seventeen ranked scholars, all but two were at least Associate Professor or Reader.

Figure 2 examines article publications in more detail, plotting Scopus total citations by ISI Total Citations. The axes are shown on a base 10 logarithmic scale to reduce the extreme skew found in the data, and the counts have been augmented by adding one so that the zero counts are also plotted. Finally, a small amount of jitter was added to the points so that overlapping values would display distinctly. The pattern confirms the article ranking from the table and shows the top-ranked overall scholars clearly inhabiting the upper

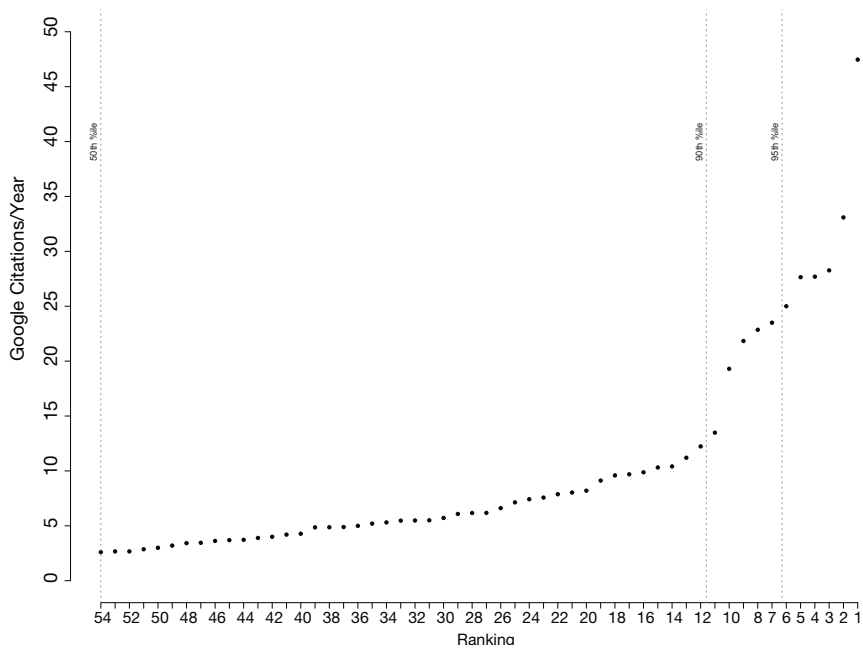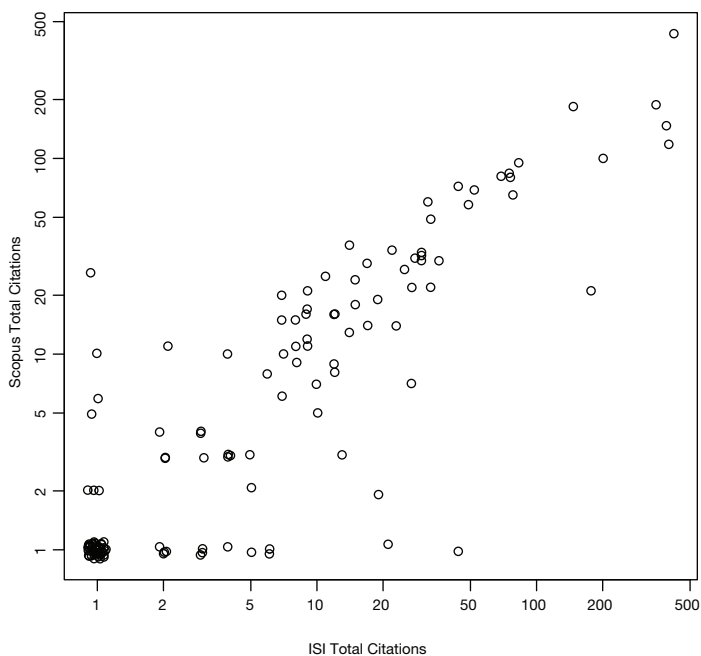Figure 1: *Yearly Impact Profile of Top 50 per cent of Individual Scholars*

Figure 2: *Citations Measured on Scopus and ISI by Individual Scholar*

region of the graph. Because the scale is logarithmic, actual citation distances are much farther apart than they appear. The main reason for scholars scoring differently on Scopus versus ISI has to do with the 1996 cutoff date with Scopus: scholars whose largest numbers of citations in ISI occurred before 1996 did not show up in Scopus which counts only citations from articles published from 1996 onward. The other remarkable feature of Figure 2 is the large cluster of zeros shown at the lower left of the graph: of the 107 scholars in our study, 44 per cent (47) had zero ISI citations, and 49 per cent (52) had zero Scopus citations.

While high citation numbers for an individual can be driven by a few very highly cited publications, the *H*-index is designed to characterise the

Figure 3: *H-Index Profiles, Scopus v. ISI, Individual Scholars*
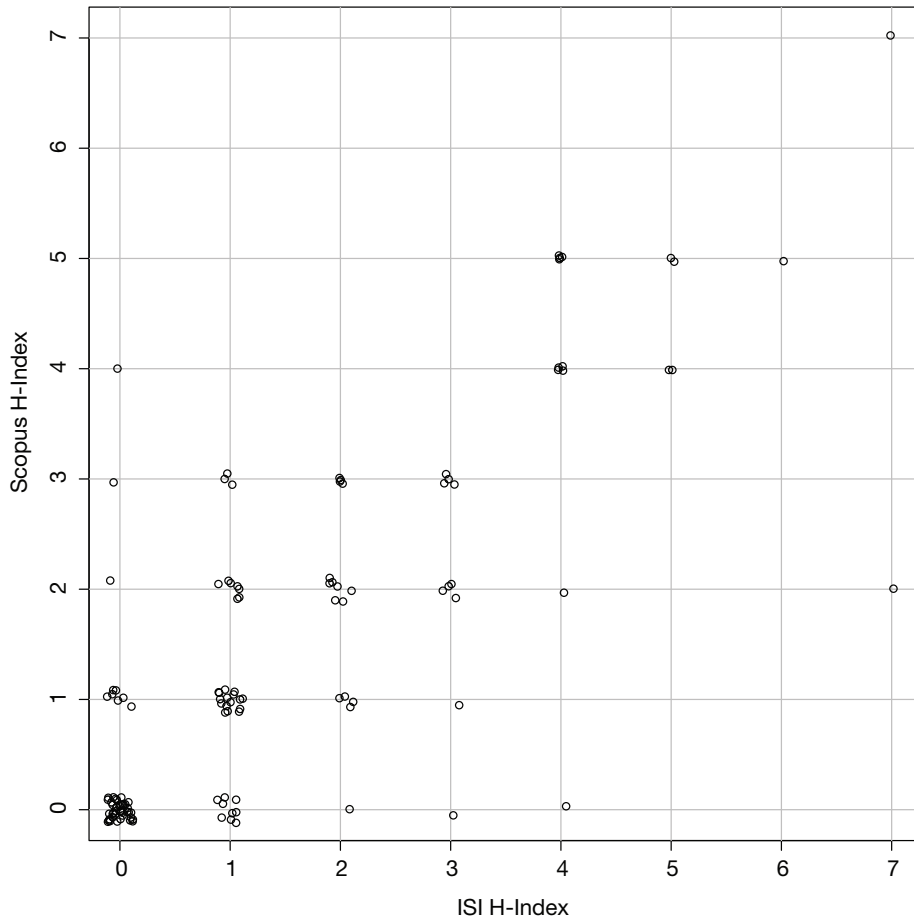
distribution of publications with high citation frequency. Figure 3 portrays the two-dimensional Scopus versus ISI *H*-indexes for all scholars in our study. The patterns echo those from Figure 2 in terms of the placement of individual scholars' values. Figure 3 also exhibits a large cluster of values at zero on both indexes, reflecting the zero citations already mentioned by a large proportion of individuals. In all, 38 scholars or well over a third of all scholars in political studies in Ireland had not received a single citation for any article in either index.

Departments

In addition to individual scholars, we also scored and ranked the departmental units listed in Table 1, by aggregating the results of the individual scholars listed in April 2008 as being permanent, full-time staff in each unit included in the survey. Departmental performance can be assessed in several ways.[14] Here we chose the two simplest: one based on total citations (the sum from all scholars in a department) as well as a per capita measure. The latter controls for size, necessary since departments differ widely in their numbers of staff: from 6 at DCU to 33 at Queen's in our sample. Table 3 presents the results of both the total and per capita departmental scores and rankings.

When total citations only are considered – the top panel in Table 3 – then Trinity College ranks first, followed by UCD and Queen's, on both overall indexes and on the article index. When book citations alone are examined, however, Queen's ranks first, followed by UCD. UCD also ranked first in total Google Scholar Citations. Of course, total numbers are strongly influenced by size, and since size varies widely among different departments, we regard the per capita measures as a more appropriate means of profiling the different departments. The bottom panel of Table 3 compares departmental impact scores where the total has been divided by the number of staff listed in the third column. In per capita terms, the top-ranked department on every measure was Trinity College. The second-ranked department was Ulster, which like Trinity had eight full-time, permanent staff in politics at the time of our survey. Ulster also ranked second in both book citations per capita and median yearly impact measures by Google citations/year. UCD ranked second when the overall score excluded books, and second in per capita articles and in Google Scholar citations.

[14] An alternative, easily accomplished with Scopus and ISI, is the assess departments by the institutional affiliation of authors *at the time of publication,* taking a fixed time window. We suggest that this would make little difference here as almost all of the more highly cited scholars have spent most of their professional lives at their current institution.

Table 3: *Rankings of Departments*

Overall Rank with Books	Institution	Total Staff	Overall Score with Books	Overall Rank without Books	Overall Score without Books	Articles Rank	Articles Score	Books Rank	Books Cited Ref. Search Citations	Yearly Impact Rank	Yearly Impact Total Google Cites/Total Years	Google Scholar Citations Rank	Google Scholar Total Citations	ISI Citations	Scopus Citations
TOTAL															
1	TCD	8	100.0	1	100.0	1	100.0	3	636	1	21.27	2	3042	583	386
2	UCD	20	72.2	2	66.2	2	57.7	2	733	2	9.30	1	3320	250	280
3	QUB	33	71.3	3	55.7	3	53.8	1	1158	5	5.00	3	2899	228	264
4	UL	12	26.3	4	20.9	4	15.6	5	416	4	5.03	4	891	64	78
6	DCU	6	17.7	5	17.5	6	11.6	7	121	3	6.59	6	481	46	59
5	Ulster	8	24.8	6	15.2	7	5.6	4	590	7	4.63	5	885	50	10
7	Galway	10	14.1	7	12.8	5	14.3	6	149	8	2.22	8	370	67	66
8	UCC	10	10.1	8	10.9	8	3.8	8	30	6	4.77	7	420	17	18
PER CAPITA															
–	Essex	25	103.5	–	103.5	–	117.8	–	–	–	12.82	–	358.4	82.9	58.9
1	TCD	8	100.0	1	100.0	1	100.0	1	79.50	1	14.50	1	380.3	72.9	48.3
2	Ulster	8	34.7	3	19.0	7	5.7	2	73.75	2	4.55	3	110.6	6.3	1.3
3	UCD	20	33.2	2	29.7	2	22.9	3	36.65	3	3.95	2	166.0	12.5	14.0
4	QUB	33	22.9	4	17.1	4	12.9	4	35.09	4	2.67	4	87.8	6.9	8.0
5	UL	12	20.5	6	14.3	6	10.3	5	34.67	5	2.28	6	74.3	5.3	6.5
6	DCU	6	18.4	5	16.6	3	15.3	6	20.17	6	2.07	5	80.2	7.7	9.8
7	Galway	10	12.0	7	10.2	5	11.4	7	14.90	7	1.24	8	37.0	6.7	6.6
8	UCC	10	4.7	8	5.0	8	3.0	8	3.00	8	0.33	7	42.0	1.7	1.8

Overall and article scores consist of the sum of institution's value on each included measure divided by the top-ranked score in that measure, x 100.

"Overall rank without books" includes the scores for Productivity, Google Citations, ISI Citations, and Scopus Citations.

"Overall rank with books" includes components of Overall rank (non-CRS) plus Total CRS Book citations.

Article score includes ISI and Scopus citations.

Book rank is total CRS book citations.

Productivity score is based on the median staff member's Google citations/Google years (for per capita), and the Total Google cites by Total Google years for the department for Total table.

Table 4: *Top-Cited Books According to ISI's Cited Reference Search*

Author	Institution	Citations	Title	Year(s)
Lodge, Tom	UL	171	Black Politics in South Africa since 1945	1983
Gallagher, Michael, M. Laver and P. Mair	TCD	88	Representative Government in Modern Europe	1991-2005
Gallagher, Michael and Michael Marsh	TCD/TCD	86	Candidate Selection in Comparative Perspective	1988
Ruane, J. and Jennifer Todd	UCD	73	The Dynamics of Conflict in Northern Ireland	1996
Sinnott, Richard	UCD	63	Public Opinion and Internationalised Governance	1995
Garvin, Tom	UCD	62	The Evolution of Irish Nationalist Politics	1981
Bew, Paul, P. Gibbon and Henry Patterson	QUB/Ulster	57	The State in Northern Ireland, 1921-1972	1980
Bew, Paul	QUB	54	Land and the National Question in Ireland, 1858-82	1979
Morriss, Peter	Galway	49	Power: A Philosophical Analysis	1987
Barry, John	QUB	43	Rethinking Green Politics: Nature, Virtue and Progress	1999
Patterson, Henry	Ulster	41	Class Conflict and Sectarianism	1980
Moxon-Browne, Edward	UL	41	Nation, Class, and Creed in Northern Ireland	1983
Gallagher, Michael	TCD	40	The Referendum Experience in Europe	1996
Sinnott, Richard	UCD	39	People and Parliament in the European Union	1998
Bew, Paul	QUB	38	Conflict and Conciliation in Ireland, 1890-1910	1987
Thain, Colin	Ulster	36	The Treasury and Whitehall	1995
Garvin, Tom	UCD	36	Nationalist Revolutionaries in Ireland, 1858-1928	1987
Walker, Brian	QUB	36	Parliamentary Election Results in Ireland, 1801-1922	1978
Thomson, Robert et al.	TCD	34	The European Union Decides	2006
English, Richard	QUB	33	Armed Struggle: The History of the IRA	2003

Note: Years may be plural because multiple editions are counted as one work.

As a benchmark we have also included data compiled in our exercise on the Department of Government at the University of Essex. As Essex is widely considered to be among the best politics departments in Britain, and received the best score in the current RAE, using this department for a reference is setting the bar quite high. In addition, with 25 full-time, permanent staff, it is also larger than all of the departments in our study except Queen's. Because we did not compile CRS data for Essex, we have constructed a separate "overall" score to compare Essex with the Irish departments without the book citation counts. In per capita terms, Essex is ahead of TCD, but just barely, with 103.5 per cent of TCD's score. Its score is also higher on articles, but again not by much, at 117.8 per cent. On Google Scholar-based measures, TCD is actually higher per capita than Essex: almost 2 Google cites/year higher than Essex, and about 22 Google citations higher per capita. When just total values are considered, Essex has a clear lead in the overall score, which is to be expected from its size. Once again however, TCD leads in yearly impact, which is the total Google citations for the department divided by the total years of all staff members.

Figure 4: *Citation Profile of Departments on Google Scholar*
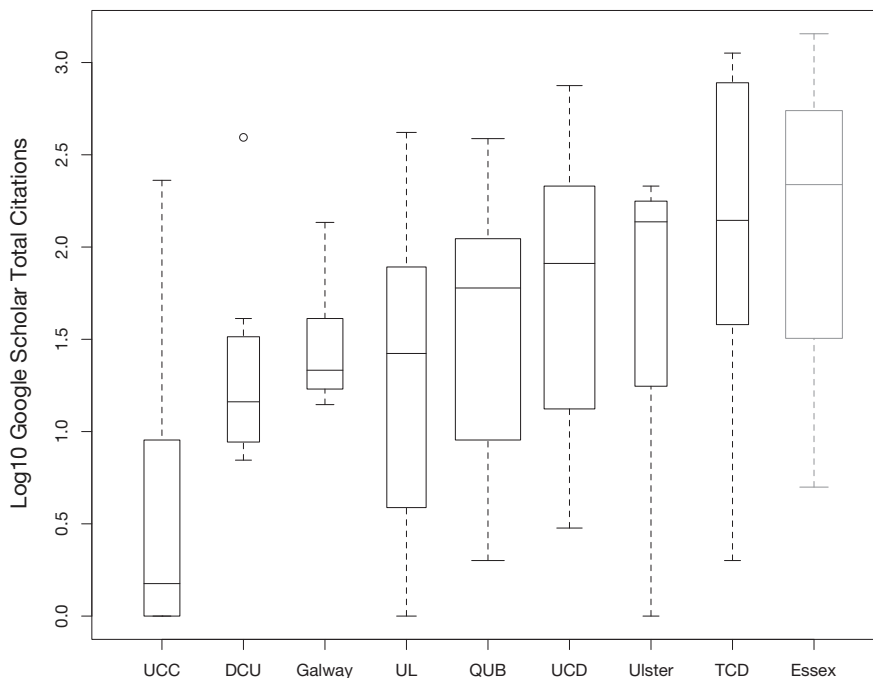
Differences between departmental profiles can be summarised graphically using box plots such as the one shown in Figure 4. Each box shows the inter-quartile range of the values for each department, along with a bar for the median value and additional markings outside the box showing some of the extreme values. For comparison, we have also plotted the distribution of Essex's Department of Government. While Essex's median total citations is higher than any Irish department's, its interquartile range is slightly below TCD's. Figure 4 plots this data for the total Google Scholar citations, a figure that takes into account every type of publication. Departments are plotted in increasing order, and the counts shown on the *y*-axis are logged to reduce skew. Trinity's median value is highest, followed by Ulster whose relatively small department has a high per capita number of Google citations, and followed by UCD in third. In comparison with Essex, TCD has practically the same median value on yearly impact, with a slightly larger range.

Different departments not only have different numbers of staff, they also have very different age profiles. Counting total citations clearly advantages

Figure 5: *Productivity Profile of Departments, Google Scholar Citations Per Year*
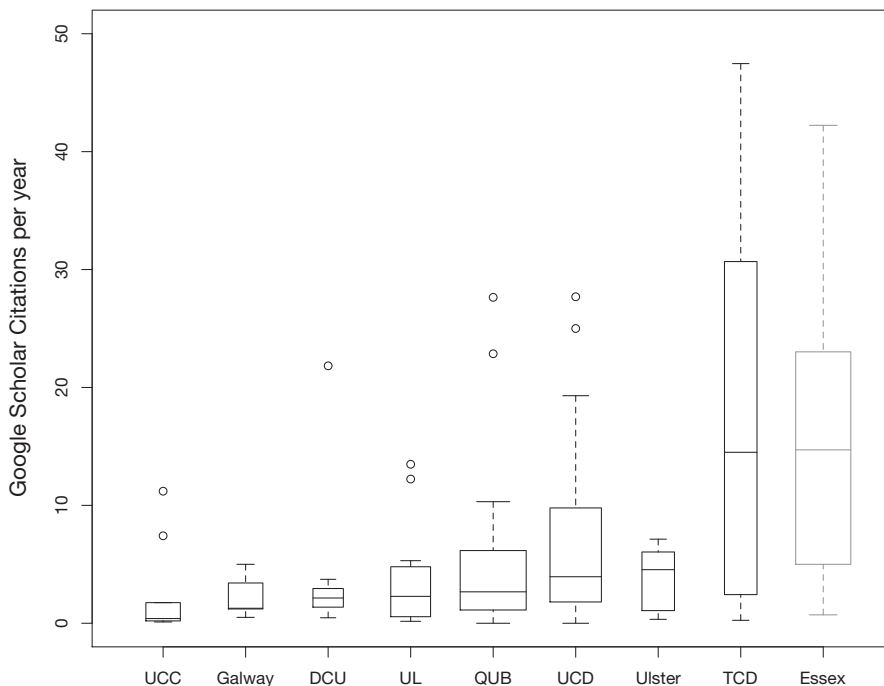
departments with senior staff whose longer careers have provided more opportunity to accumulate citations. Figure 5 portrays the profiles of departments according to yearly impact, on a linear scale, according to the Google Scholar citations per year. Once again, the ranking puts TCD first, Ulster second, UCD third.
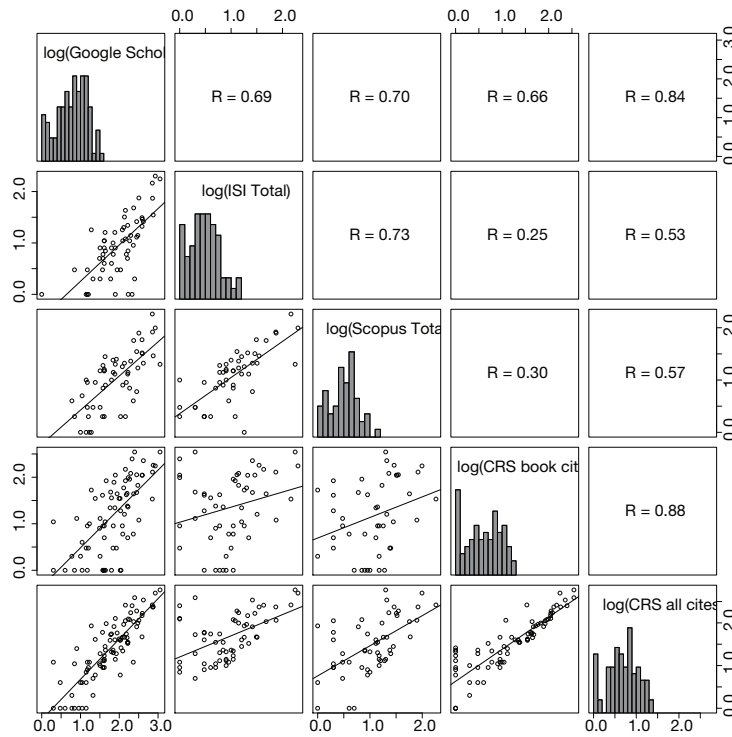
Books

As we emphasised earlier, a complete summary of the impact of research has to deal with the fact that many scholars publish much of their research in the form of edited books and monographs. As is widely suspected, our research has provided firm quantitative evidence that book citations form an important part of scholarly impact in political science. The bibliometric problem is that book citations are not counted in standard sources and are very hard to measure. These are not included in either ISI or Scopus searches, and while they are included in Google Scholar we have made no distinction in counting Google citations between books and other material. Examining the ISI-CRS results, it is apparent that 60 per cent of all citations were to books, a striking figure given that the ISI citing database is confined to non-book material. In Table 4 we list some of the most cited books. The list is headed by Lodge's book *Black Politics in South Africa,* followed by a varied list including three books at least part written by Paul Bew, three by Michael Gallagher and two by Tom Garvin and by Richard Sinnott. The most cited book on Ireland is Ruane and Todd's *Dynamics of Conflict in Northern Ireland.*

VI CROSS-VALIDATING DIFFERENT CITATION MEASURES

In addition to our results focusing on the departmental rankings, our analysis also revealed several interesting patterns from a comparison of the different measures. These different measures derive from different sources, and it is a matter of some debate in the bibliometric literature as to how dependent results are on the sources chosen. Figure 6 shows the relationships between five different sources, taking in each case total citations: Google scholar, ISI, Scopus, ISI-CRS (books only) and ISI-CRS (all material).[15] ISI has been the most widely used source to date despite concerns about its coverage. We can see that its results correlate quite well with those from Scopus (0.73), and also with Google Scholar (0.70) but less well with the full ISI-CRS where the correlation is only 0.53. Most strikingly, it correlates at only 0.25 with the book-only citations from ISI-CRS. Scopus provides pretty similar results,

[15] Here we compare the *total* citations from the Cited Reference Search, which includes both books (represented in Tables 2-4) as well as citations to articles, which we did not count in our analysis.

Figure 6: *Correlations Between Citations Measures*

correlating modestly with ISI-CRS (total cites) and more strongly with Google Scholar, but also very poorly with the book-only measure from ISI-CRS. It is very clear that measures based just on books will give different results from those based just on articles, although article-based measures do correlate more highly with total measures than do book-only measures.[16] The two most inclusive measures, Google Scholar and the full ISI-CRS, provide the highest correlation in the whole matrix, 0.84. This is particularly remarkable given the concerns expressed about the unreliability and unpredictability of the former (Jacso, 2005; Jacso, 2006; Norris and Oppenheim, 2007) and the more systematic problems raised here about the latter. In general the analysis here seems to "confirm" the worth of Google scholar. Not only does it correlate more highly with ISI and Scopus, but it also matches well with the total CRS

[16] We found that 40 per cent of citations in ISI-CRS was for books as opposed to 60 per cent for articles. This is much lower than the percentage of book citations found by (Lindholm-Romantschuk and Warner, 1996), although the methodology used there was very different, with only a subsection of books being included for analysis.

citations (books and articles), suggesting that Google provides a valid aggregate measure that includes both books and articles. However, we should sound one note of caution here. Typically, Google Scholar shows about double the number of citations produced by summing ISI articles and ISI-CRS books-only. However, in a few cases – Bew and Paterson most significantly, but also Garvin – the Google Scholar score is *smaller* than that. Indeed, for Bew and Patterson it is smaller than total book citations. We are undertaking further analyses to explore why this should be so.

VII CONCLUSIONS

Our chief objective in this paper was to explore what bibliometric methods could tell us about the impact of research being carried out and published by those in departments of political studies in Ireland. While we were interested most in those departments in the Republic, where there has not been any kind of national level research ranking and review, we have also included other departments on the Island on the basis that taken together, these eight departments provide the bulk of the PSAI membership whose focus, in name and in activity, is Irish political studies. We also examined the Department of Government at Essex University so that we could use it as a benchmark of high quality. The main results of this exercise suggest that while the top Irish department's scores from this exercise compares quite favourably to the score of the best research department in the UK, there is also a very big range of scores significantly below this standard in Ireland, even controlling for the fact that some are much newer, with younger staff profiles than others.

In terms just of the Republic of Ireland, there is an obvious Dublin concentration, with the strongest departments all located in the capital. The analysis also looks at individuals, and the pattern here is similar, with most of the more highly cited staff being based in Dublin, a result which holds even when we look at the whole island with only three of the top dozen – calculated by a composite measure – based outside Dublin. We would argue that our measure gains added validity from the fact that most of the more highly ranked people are now senior academics, being Associate or Full Professors in the Republic or Professors in the UK.

As is expected in bibliometric results, the scores are highly skewed, with a small percentage of people obtaining most of the citations. However, less expected was the fact that quite a large proportion of those included in the survey had published no articles cited in either ISI or Scopus and that most people had an *H*-index of no more than 1.

A secondary question we wanted to explore was the extent to which the sources we used would affect the results obtained. This is particularly important given that social science is seen as less amenable to the sort of exercise we have conducted here because important published work is not confined to journals. In particular, books are very important. We chose two databases that focus on articles, one of which can also be used to examine a wider set of citations, including those to books, in those articles. We also used Google Scholar. In general, we found a broad similarity between the stories that could be told using any of these data sources, apart from the fact that Google Scholar suggests everyone has a bigger impact than is suggested by Scopus or ISI. The rankings are much the same, as is evident in the substantial correlations between those sources. However, it is also clear that including book citations does make a difference, as there are groups of scholars who have concentrated on books almost to the exclusion of articles and reliance on Scopus or ISI will thus ignore the sometimes substantial impact of their work. We feel that if only a single source is used, Google Scholar (using *Publish or Perish*) is to be preferred to ISI-CRS, because it is far superior in picking up the sort of co-authored work that is increasing in importance, but that is not to dismiss the concerns many have about the quality of its data.

Just as there does seem to be a difference between those who communicate largely through books and those whose primary medium is the refereed journal article, many in the profession feel that the culture of citation itself varies within the field of political studies. Most disciplines need their own benchmarks when it comes to judging what is a high level of citation, and within disciplines there may sometimes be a need for different benchmarks. As yet there is no agreed standard for political studies, and certainly no set of standards for its subfields. However, those whose approach to their subject is closer to the humanities will probably find their work less cited than those whose conception is closer to fields such as economics, other things being equal. It may also be the case that those whose work lies on boundaries between disciplines may attract less attention, although it is evident that the highly cited books in Table 5 cover a wide variety of research approaches. Our main intention here is certainly not to suggest that our approach is the only way to assess research work. There is a wider discussion on this issue, not least in the context of the next UK RAE, and a good case can be made for a wider range of indicators of research quality that goes beyond what can be achieved with bibliometrics. What should be evident from this paper is that political studies in Ireland follows a well known pattern in that the impact of individual items of work in the field, and the impact of the work of individual scholars is highly skewed, with most impact being made by a few contributions

and contributors. We also show that the choice of which citation database to use makes a significant difference to who and what does well, and we have suggested that Google Scholar, despite its limitations, may provide a better overall perspective than even more limited alternatives.

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APPENDIX:

EXACT DETAILS ON USAGE OF ISI, SCOPUS, AND *PUBLISH OR PERISH*

The full dataset of our citation measures collected in April 2008 are available from http://www.kenbenoit.net. All code used to produce the analyses in this paper are also available from that source.

ISI / Social Science Citation Index

ISI is a subscription-only service provided by Thomson Scientific. We were able to access it through the Trinity College network at the following address: http://apps.isiknowledge.com/WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=Q1leaCC@49JJkbMAB47&preferencesSaved=. From this search page, we selected the **Current Limits: [Hide Limits and Settings]** link, and made sure that only the *Social Science Citation Index* was checked. In the **Search For:** fields, we then entered the author's last name and first initial, making sure the "In" drop-down list displayed **Author**. Our results included all publications except Book Reviews which we excluded from the search results.

To search for "Simon Hix", for example, we input "Hix S" into the author field, and clicked on **Search**. This led to 28 results displayed across three pages. After verifying that the author of each publication was indeed Professor Simon Hix of the London School of Economics and Political Science (http://personal.lse.ac.uk/HIX/), we checked only *Article*, *Editorial Material*, and *Review* under **Document Types**, and clicked on the **Refine** button. **This step excluded book reviews from the results**, leaving 23 total results. From there we clicked the link Create Citation Report, which summarised the information including the *H*-index computation of 10.

SSCI "Cited Reference Search"

When running a Cited Reference Search on the *ISI Web of Science* search engine, the name of the scholar was entered into the 'author' field as Hix S*, where the '*' allowed for the fact that there were some scholars who published using more than one initial. The results were then examined to filter out false positives. First, any well-known works were marked and included in our overall dataset. Second, we consulted each scholar's individual webpage, and if there was a list of publications on that webpage, it was used to identify those works that qualified for inclusion in our dataset. Third, where there was a list of selected publications, we used the research interests as stated for each scholar to judge whether or not a particular work should have been included

in our dataset. Finally, where we were unsure as to whether or not a particular work should have been included in the dataset, we used *Google Scholar* to help us match cited references to scholars.

This method does not perfectly account for those works that were co-authored, since the CRS routinely lists cited references authored by two or more scholars only using the first author's last name. In these cases we added information about known co-authored works based on our readings of individual web pages and CVs, and searched for cited references to these co-authored works in the CRS using the first author's name.

To identify whether works were books or not, we used scholars' webpages and the Trinity on-line library catalogue.

Once we had attained this information on each scholar, we placed each individual scholar's citation information in a single worksheet that in turn was contained in an individual workbook, identified by each institution on the island of Ireland. This was then collated into a master-sheet which corrected all *ISI* errors in the names of individual scholars, as well as making sure that those works that were counted as separate entries were identified using a unique code so that citations for the separate entries could be aggregated into a single work. For example, an extra space could make 'Book A' seem as two entries. As such, the total amount of citations for 'Book A' might not be reflected adequately without running a Cited Reference Search. Not doing so would have consequences for the construction of those indices used to measure academic impact.

Scopus

Scopus is a subscription-based service from Elsevier, which also required access from the Trinity College network. The Author Search page can be found from http://www.scopus.com/scopus/search/form.url?display=author Lookup&clear=t&txGid=GyIwov16EBJy80VfkZn_UdP%3a3. To look up Simon Hix for this example, we input "Hix" into *Last Name*, "Simon" into *First Name*, and unchecked the boxes for *Life Sciences*, *Health Sciences*, and *Physical Sciences*, leaving only *Social Sciences* checked. We then clicked the **Search** button. This returns seven author results, all of which can be verified as Simon Hix of the LSE. Checking **All** to select all authors, we then click the button **Citation Tracker** to generate the citation statistics. This results in a summary of the 25 cited documents recorded by Scopus and their citations, including the *H*-index of 11. As with ISI, we excluded book reviews from the search results.

Google Scholar / Publish or Perish

Publish or Perish is software available for Windows and Linux from Harzing.com, and provides an interface for searching citation data from

Scholar.Google.com. We used the Windows version of the software. Once the program is started, we unchecked all of the subject fields except for "Business, Administration, Finance, Economics" and "Social Sciences, Arts, Humanities." We followed the recommended Author Search method which is to use the full name of the author enclosed in quotation marks, but we also explored separately using first initial and name which for some people threw up additional work. Each resulting list was then checked and apparently false positives dropped. In some cases on-line CVs were used to help with this process. The search is confined to material in social sciences, including Economics and Commerce as well as Arts and Humanities, but no other filter was used.

To continue our running example, in the **Author's Name** field we entered "Simon Hix", enclosed in quotation marks. This results in 176 papers that have received a total of 2,983 citations (April 15, 2008) over a 16 year span, for an *H*-index of 25 (although we did not use the *H*-index from *Publish or Perish* in our analysis).

Because *Publish or Perish* tends to result in many "false positives" – although not for relatively uncommon names such as "Simon Hix" – we found the following steps helpful to filter out results:

- Sort by year, since it will become clear that results from very early years are not the person searched for. For instance, we can safely exclude the articles dated in 1934 from a search for "Michael Gallagher".
- Sort by name, since it then becomes easier to sort out other people with different initials, for instance "M Gallagher" will be okay, but "MJ Gallagher" will not be.
- Sorting by Publication and Publisher also helps filter out false positives.

The final resort in difficult cases is simply to examine each article in the results list one-by-one, comparing them to items listed on authors' web pages or CVs.