

# ACADEMIC QUALITY, POWER, AND STABILITY: AN APPLICATION TO ECONOMICS IN THE REPUBLIC OF IRELAND

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### **Abstract**

Measures of the academic quality of individual researchers tend to ignore the context. Here we introduce contextualised measures of individual quality: cardinal and ordinal pseudo-Shapley values. The cardinal values do not add much new information if departments are roughly the same size, but the ordinal values do. Ordinal Shapley-values can be interpreted as measures of the market power of an individual, her power over the rank of her current employer, and her ability to affect rankings of all departments in a country. We use normalised Herfindahl-Hirschmann indices to assess the concentration of contributions to a department's standing. This provides further information on the power of individuals over their departments, but also reveals the robustness of departmental rankings to job mobility.

### **Key words**

Rankings, individuals, departments

### **JEL Classification**

A10, Z00

## **1. Introduction**

Measuring the academic quality of individuals and institutions is now routine practice. Individuals are ranked according to their output or citations to their work, typically with

some correction for quality. Institutions are ranked according to some aggregation of the scores of their members (e.g., Comber and Linnemer, 2003; Kalaitzidakis *et al.*, 2003; Lubrano *et al.*, 2003). However, this is a static view of institutions, and it treats all researchers alike. Some institutions are carried by a single, exceptional individual, while other institutions have a large number of good researchers. This has implications for the power relations within an institutions, and, consequently, for the robustness of its ranking to job mobility. In this paper, we propose measures of power and stability to complement standard measures of academic quality, and apply this to institutions of economic research in the Republic of Ireland.

The Republic of Ireland is a good choice for this exercise. There are only 185 active researchers in economics in the country, based at nine institutions. This small sample allows for quality control on the input data. These researchers include some world class economists, and two world-class institutions (at least, according to IDEAS/REPEC), while other institutions are more akin to liberal arts colleges in the USA.

The proposed measures are variations of standard ones. We use a normalisation of the Herfindahl-Hirschman Index (HHI) to measure the concentration of quality within institutions. We use (pseudo-)Shapley values to measure the power of individuals. The HHI of the Shapley value is used to as a measure of the power structure within institutions.

Section 2 presents the data and specifies the indicators. Section 3 discusses the results. Section 4 concludes.

## 2. Data and Methods

The analysis is based on a total of 185 economic researchers at post-doc level or higher in 9 institutions in the Republic of Ireland. See Table A1 for those with traceable publications. The names of individuals were taken from the relevant institution's web site.<sup>1</sup> The institutions are the Central Bank and Financial Services Authority of Ireland (CBI), the Economic and Social Research Institute (ESRI), and seven universities: Dublin City University (DCU), National University of Ireland, Galway (NUIG), National University of Ireland, Maynooth (NUIM), Trinity College Dublin (TCD), Univeristy of Limerick (UL), University College Cork (UCC), and University College Dublin (UCD).

Data are taken from Scopus ([www.scopus.com](http://www.scopus.com)), at the end of 2006. Unlike *EconLit*, *Scopus* includes citations. Compared to the *ISI Web of Science* and *IDEAS/REPEC*, *Scopus* has a better coverage of journals, particularly after 1996. *Scopus* excludes working papers, and has a limited coverage of books.

We generated three rankings of individuals, based on the number of publications, the number of citations to those papers, and the *h*-number.<sup>2</sup> Publication and citation numbers are not corrected for the journal quality, page length, self-citations or age. Such

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<sup>1</sup> Mary Keeney kindly supplied the names of the economists at the Central Bank of Ireland.

<sup>2</sup> A researcher has an *h*-number of *h* if she has *h* publications which are cited at least *h* times (Hirsch, 2005).

corrections are possible, but they are data-intensive, if done carefully, while the overall ranking is hardly affected.

For institutions, we consider totals and averages of publications and citations, the  $h_1$ -number<sup>3</sup> and the average  $h$ -number. We also give the share of active researchers in the total number. For some institutions, the number of unpublished researchers is substantial, and so is their effect on averages.

The average number of publications or citations of an institution is interesting, but it contains no information about the distribution within the institution. On the one extreme, all researchers may be equal to the average; on the other extreme, all publications of an institution may originate from a single researcher. In the latter case, the institution's score is fragile to anything happening to this particular researcher, while he/she holds the institute at ransom. Therefore, we propose a number of additional indicators to measure power and robustness.

The Herfindahl-Hirschman Index (HHI) is a standard measure for concentration of market share. We use it here to measure concentration within institutes, between institutes, and for all researchers in Ireland. The HHI for total publications and citations is readily calculated. Because institutions differ in size, we normalize the HHI as follows

$$(1a) \quad HHI^* = \frac{HHI - HHI_{\min}}{1 - HHI_{\min}}$$

with

$$(1b) \quad HHI = \sum_{i=1}^n \left( \frac{p_i}{p} \right)^2; p = \sum_{i=1}^n p_i; HHI_{\min} = \sum_{i=1}^n \left( \frac{1}{n} \right)^2 = \frac{1}{n}$$

where  $p_i$  is the number of publications (say) and  $n$  is the number of institution members, including the ones that did not publish.  $HHI^*$  lies between zero and one, regardless of  $n$ . As researchers either contribute to their institution's  $h_1$ -number or not,  $p_i$  is either zero or one in this case.

The number of publications is a measure of a researcher's productivity, but this measure is not placed in any context. A productive economist would not stand out if surrounded by equally productive others, but would if his/her colleagues are less active. Standing, resources, and salary are likely to depend as much on context as on individual characteristics – the assumption of perfect mobility does not hold at the academic labour market. We now introduce academic quality indicators that contextualize the indicators used above.

The Shapley value of an agent equals the average contribution of that agent to any coalition. We here define the value of a coalition as the average number of publications or citations or the  $h_1$ -number. We define the contribution of a researcher as the change in the coalition's value should this researcher leave or join the coalition.<sup>4</sup> However, we only

<sup>3</sup> An institution has an  $h_1$ -number of  $h_1$  if it has  $h_1$  members with an  $h$ -number of at least  $h_1$  (Prathap, 2006; Schubert, 2007).

<sup>4</sup> The Shapley value of the contribution to the total number of publications (citations) equals a researcher's number of publications (citations).

consider the nine existing institutions, rather than any coalition. We therefore refer to this as a *pseudo-Shapley* value.

The pseudo-Shapley value for the number of publications of a researcher  $r$  in an institution  $i$  is defined as

$$(2) \quad p_r^{pSV} := \frac{1}{I} \left\{ \frac{n_1}{n_1 - 1} \bar{p}_1 - \frac{p_r}{n_1 - 1} + \sum_{i=2}^I \left( \frac{n_i + 1}{n_i} \bar{p}_i + \frac{p_r}{n_i + 1} \right) \right\}$$

where  $n_i$  is the number of members of institution  $i$ ,  $I$  is the number of institutions, and  $\bar{p}_i$  is the average number of publications per researcher at institution  $i$ . If all institutions are the same size ( $n_i=n$ ), the ranking of individuals based on the pseudo-Shapley value of publications is identical to the ranking based on the number of publications – and if institution sizes are similar, the rankings will not deviate much. This measure, although conceptually superior, is not expected to bring much new information. We show below that it indeed does not.

Instead, one may consider the contribution of a researcher to the rank of any existing institution, rather than its score. This is an *ordinal* pseudo-Shapley value. However, as rankings are zero-sum games, this equals zero. We therefore only count the positives, a half-ordinal pseudo-Shapley (HOPS) value. The HOPS-value essentially measures what would happen to the ranking of all institutions if researcher A would move from institution X to institution Y. This is a measure of a researcher’s power to upset the current pecking order, a contextualized measure of quality. The power to “rock the boat” stems from the difference between that researcher’s performance (positive or negative) and the institutional average. In order to account for this, we give a negative sign to the HOPS value for those researchers that score less than the median. Unlike the cardinal pseudo-Shapley value discussed above, the HOPS-value does not follow trivially from the non-contextualized score. We also compute the average HOPS-value per institution and the normalized HHI. As the HHI is not defined for negative “market shares”, we first normalized the rank power indicator to lie between zero and one.

Department heads are likely to be more interested in what happens to the rank of their own institutions, should a researcher leave, than in the average rank change of all institutions. Indeed, this may be more relevant than the change in score per se, as scores may change without affecting the ranking. We therefore compute the average change in rank of the own institution if a researcher moves to any of the other institutions. This measures the power of a researcher over his/her institution. Note that this index can be negative, that is, an institution could rise in the ranking if a researcher departs. In order to compare this indicator between researchers of different institutions, we normalize it with the maximum increase (decrease) in rank (plus one) if the researcher’s departure would reduce (increase) the institution’s rank. We calculate the average power-over-own-rank indicator per institution, and the normalized HHI.

We also compute the complement of the above, that is, the average change in rank of the institution the researcher would move to. This is an indicator of the market value of a researcher. Again, this index may be negative. We calculate the average power-over-own-rank indicator per institution, and the normalized HHI.

### 3. Results

Table 1 shows the Spearman rank correlation between selected indicators based on the results for individual economists (Table A1). Ranking based on publications correlate well with rankings based on citations and  $h$ -index, regardless of the indicator. Rankings based on publication or citation numbers or the  $h$ -index correlate closely with rankings based on the corresponding pseudo-Shapley value, the HOPS-value and the overall ranking.

Rank power is an exception. It correlates poorly with other indicators. For rank power, the context is at least as important as the own achievements – and the context includes all institutions. Because differences between institutions are large (see below), a researcher who is below (above) the national average, may be above (below) the institutional average. Furthermore, the rank power indicator also has poor discriminatory power. Only 13 economists have positive power, and only 6 have negative power over the publications rank of their institutions. As a result, most economists have rank 14. The same happens for citations and the  $h$ -index.

Table 2 shows the ranking of the institutions. Because they closely correlate with the numbers, we omit the pseudo-Shapley values. As an additional quality measure, we include the fraction of research staff (post-doc and higher) that have published. The three leading institutions are clearly identified, followed by a clear number four and five. Note that only the top 3 institutions are above the country average. The ranking of the four remaining institutions is less pronounced. Rankings based on publication numbers, citation numbers, or  $h$ -index are roughly the same. Rankings based on total number, average number, or market value also by and large agree. The exception is the HOPS-value, the index for the ability to rock the boat. The average HOPS-value tends to be small for UCD. UCD is by far the largest institution, so that few UCD researchers can influence UCD ranks, which constitute half of the HOPS-value. The HOPS-value tends to be large for NUIM, the middle-ranking institution. NUIM is the only institution that can rise as well as fall substantially.

Table 3 shows the within-institution HHIs of publication, citations, and  $h$ -indices. Some institutions are clearly dominated by a few individuals, while others are not.

Concentration is less pronounced for publications than for citations. It is altogether different for  $h$ -numbers. This is because we define market share as a dummy that is 0 if the researcher has an  $h$ -number that is lower than the institutions'  $h_1$ -number, and 1 otherwise. This caps the contributions of a single individual. Furthermore, institutions with a low  $h$ -number tend to have only a few contributors.

Roughly the same pattern emerges for the HHIs of market power and HOPS-value, but the numerical differences are less pronounced for the latter.

Table 3 also shows the average of the rank power. These show a different pattern than the HHIs. For publications, negative power dominates. This is because an individual tend have a greater effect on the average number of publication through the numerator than through the denominator. For citations, positive power dominates as there are a few

individuals with many citations and many with few. For the  $h_1$ -index, positive power dominates because less productive individuals are disregarded.

Finally, Table 3 shows the HHIs of the rank power indicators. There is low concentration for publications, but (much) higher for citations ( $h$ -index). A high (low) average rank power does not necessarily imply a high (low) concentration of that power.

Tables 2 and 3 combined show that some institutions are firmly established at the top (e.g., TCD, UCD) or bottom (e.g., UCC, UL) while other institutions' position is fragile, whether at the top (e.g., ESRI) or at the bottom (e.g., CBI).

#### **4. Discussion and conclusion**

In this note, we introduce new measures of academic quality of individuals and institutions. The new quality measures for individuals, the pseudo-Shapley value, the half-ordinal Shapley value, and the market power value, take better account of the context of academic performance in theory, but in practice lead to largely identical rankings in our data set.

The measures of concentration of quality and of power over the ranking of the institution give, for the first time, an indication of the robustness or fragility of an institutions place in the rank order – and of the potential power that individual researchers can exert over their institutions.

We applied the new measures to the small but diverse economics profession in the Republic of Ireland. The proposed measures can also be developed further and applied to different questions. It would be interesting to test whether economists would prefer to work in a high-quality environment, or in one over which they can exert power. It would also be interesting to test whether those institutions identified as “fragile” would indeed show volatility in their rankings. This can only be tested with consistent time series of performance and location – and is therefore deferred to future research. More generally, further research should estimate the preferences of researchers and department heads. On that basis, indicators of attractiveness and stability of research department can be constructed that go beyond the descriptive measures used here.

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Table 1. Rank correlations of quality indicators of individuals.

		PSV	rank	market	HOPS	overall
Publications	number	0.98	-0.02	0.58	0.64	0.88
Citations	number	0.97	-0.01	0.93	0.89	0.90
h-number	number	1.00	0.08	0.84	0.84	0.88
		PSV	rank	market	HOPS	number
Publications	Citations	0.83	0.65	0.64	0.61	0.86
Publications	h-number	0.79	0.80	0.51	0.84	0.86
Citations	h-number	0.88	0.77	0.79	0.80	0.93



Table 2. Characteristics of institutions.

	Score <sup>a</sup>	People			Publications				Citations				h-number			
		#	Active	Ratio	#	avg	Market	HOPS	#	Avg	market	HOPS	h <sub>1</sub>	avg	market	HOPS
ESRI	0.88	19	17	0.89	204	10.7	0.296	0.355	1259	66.3	0.487	0.487	4	3.1	0.342	0.342
UCD	0.78	39	34	0.87	320	8.2	0.192	0.019	1443	37.0	0.362	0.330	5	2.4	0.340	0.340
TCD	0.75	20	18	0.90	185	9.3	0.231	0.144	935	46.8	0.406	0.406	4	2.5	0.325	0.325
NUIM	0.51	22	16	0.73	97	4.4	0.091	0.091	364	16.5	0.199	0.142	2	1.6	0.358	1.068
NUIG	0.25	24	18	0.75	68	2.8	0.021	-0.307	154	6.4	0.042	0.021	2	0.9	0.130	0.130
DCU	0.15	13	8	0.62	28	2.2	-0.019	-0.452	50	3.8	-0.019	0.144	2	0.5	0.087	0.000
UL	0.12	11	5	0.45	35	3.2	0.091	-0.386	34	3.1	-0.023	-0.636	2	0.6	0.091	0.091
UCC	0.11	22	11	0.50	26	1.2	0.000	-0.511	31	1.4	0.045	-0.091	2	0.5	0.045	0.125
CBI	0.10	15	10	0.67	21	1.4	0.017	0.075	21	1.4	-0.042	-0.708	1	0.3	0.000	0.000
RoI	0.83	185	137	0.74	984	5.3	0.012	0.113	4291	23.2	0.000	0.000	6 <sup>a</sup>	1.6	0.000	0.000

<sup>a</sup> The overall score (column 2) is based on the average of the 13 scores, each normalised to lie between 0 and 1. For comparison, the scores for the Republic of Ireland taken as a whole are given as well.

<sup>b</sup> The  $h_2$ -number of the Republic of Ireland is 3.

Table 3. Stability of institutions, as measured by the normalised HHI for the number (P publications; C citations; H h-number), HOPS-value, market power and rank power; and the average rank power. For comparison, the same measures are given for the Republic of Ireland, based on both the individual scores and the institutional scores.

	Score <sup>a</sup>	HHI (number)			HHI (HOPS)			HHI (market)			rank			HHI (rank)		
		P	C	H	P	C	H	P	C	H	P	C	H	P	C	H
UCD	0.18	0.04	0.12	0.10	0.01	0.01	0.02	0.04	0.03	0.02	-0.09	0.00	0.00	0.00	0.00	0.00
NUIM	0.26	0.07	0.18	0.16	0.02	0.02	0.13	0.07	0.08	0.09	0.00	0.00	0.01	0.01	0.01	0.16
TCD	0.27	0.07	0.21	0.12	0.02	0.02	0.04	0.08	0.08	0.04	-0.18	0.01	0.00	0.01	0.01	0.00
NUIG	0.29	0.05	0.07	0.13	0.01	0.01	0.13	0.03	0.06	0.13	-0.06	0.00	0.00	0.01	0.01	1.00
CBI	0.30	0.13	0.22	0.14	0.03	0.08	0.00	0.04	0.11	0.00	0.08	-0.09	0.00	0.03	0.05	0.00
ESRI	0.35	0.20	0.41	0.10	0.03	0.03	0.05	0.19	0.13	0.05	0.02	0.02	0.00	0.00	0.01	0.30
UCC	0.43	0.07	0.12	0.48	0.05	0.09	0.48	0.04	0.05	0.48	-0.06	0.36	0.07	0.04	0.07	0.48
DCU	0.66	0.17	0.53	0.46	0.05	0.09	0.46	0.12	0.36	0.47	-0.07	0.08	0.12	0.04	0.17	0.46
UL	0.80	0.24	0.23	0.45	0.18	0.12	0.45	0.30	0.19	0.45	-0.10	-0.10	0.00	0.09	0.12	0.00
RoI	Ind.	0.02	0.06	0.14	0.12	0.10	0.03	0.02	0.02	0.01	0.01	0.05	0.07	0.00	0.01	0.22
RoI	Inst.	0.10	0.16	0.25	0.08	0.06	0.16	0.11	0.14	0.10	-	-	-	0.04	0.13	0.37

<sup>a</sup> The overall score is based on the average of the 15 scores, each normalised to lie between 0 and 1.

Table A1. Rankings of individual economists. Individuals are ranked according to their publications, citations, and h-number. Measures are the number, the pseudo-Shapley value (PSV), market power, rank power, and the half-ordinal pseudo-Shapley value (HOPS). For each measure, the score (s) and the rank (r) are given. The overall score (column 4) and rank (column 1) are based on the average of the 15 scores, each normalised to lie between 0 and 1.

r		Publications										Citations					h-number																
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS													
		s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r										
1	Tol, R.S.J.	ESRI	0.7755	94	1	3.97	1	0.33	3	3.38	1	4.50	1	819	1	35.58	1	0.34	10	4.13	1	4.63	1	18	1	1.00	1	0.02	11	0.75	6	0.75	10
2	Nolan, B.	UCD	0.4848	49	2	1.95	2	0.00	14	1.75	2	1.75	5	479	2	20.24	2	0.08	12	2.50	2	2.50	4	10	2	1.00	1	0.00	14	0.75	6	0.75	10
3	Lane, P.R.	TCD	0.4750	37	3	1.43	3	0.14	4	1.38	3	2.25	3	410	3	17.34	3	0.20	11	2.50	2	3.25	2	9	3	1.00	1	0.00	14	0.63	17	0.63	21
4	Gallagher, L.A.	DCU	0.4443	11	23	0.27	24	0.13	6	0.38	16	0.38	17	36	27	0.71	27	1.00	1	0.63	26	3.00	3	4	18	0.88	18	0.78	1	0.63	17	1.50	6
5	Leahy, D.M.	NUIM	0.3726	17	11	0.54	12	0.03	11	0.75	10	0.75	11	114	7	4.18	7	0.03	16	1.25	4	1.25	5	6	5	1.00	1	0.03	6	1.25	1	4.38	1
6	Barry, F.G.	TCD	0.3537	31	4	1.16	4	0.14	4	1.25	4	2.13	4	150	4	5.78	4	0.00	17	1.25	4	1.25	5	6	5	1.00	1	0.00	14	0.63	17	0.63	21
7	McElroy, B.	UCC	0.3424	3	75	-0.08	76	0.00	14	0.00	47	0.00	47	7	60	-0.56	60	1.00	1	0.13	51	1.00	14	2	40	0.50	40	0.78	1	0.50	39	1.38	7
8	Doyle, E.	UCC	0.3422	3	75	-0.08	76	0.00	14	0.00	47	0.00	47	6	63	-0.61	63	1.00	1	0.13	51	1.00	14	2	40	0.50	40	0.78	1	0.50	39	1.38	7
9	Kapur, K.	UCD	0.3391	31	4	1.16	5	0.00	14	1.13	5	1.13	6	146	5	5.56	5	0.00	17	1.25	4	1.25	5	7	4	1.00	1	0.00	14	0.75	6	0.75	10
10	O'Neill, D.	NUIM	0.3304	10	25	0.23	26	0.00	14	0.13	25	0.13	26	66	16	2.05	16	0.00	17	1.00	13	1.00	14	5	11	1.00	1	0.03	6	1.25	1	4.38	1
11	Pecchenino, R.A.	NUIM	0.3205	9	34	0.19	34	0.00	14	0.13	25	0.13	26	103	9	3.69	9	0.00	17	1.13	8	1.13	9	4	18	0.88	18	0.03	6	1.13	3	4.25	3
12	Whelan, C.T.	ESRI	0.3170	24	8	0.85	8	0.00	14	0.88	8	0.88	10	128	6	4.79	6	0.00	17	1.25	4	1.25	5	6	5	1.00	1	0.02	11	0.75	6	0.75	10
13	Honohan, P.	TCD	0.3086	28	6	1.03	6	0.02	13	1.13	5	1.13	6	83	12	2.79	12	0.00	17	1.13	8	1.13	9	5	11	1.00	1	0.00	14	0.63	17	0.63	21
14	O Grada, C.	UCD	0.3067	27	7	0.98	7	0.00	14	1.00	7	1.00	8	70	15	2.21	15	0.00	17	1.00	13	1.00	14	6	5	1.00	1	0.00	14	0.75	6	0.75	10
15	Conniffe, D.	NUIM	0.2930	19	9	0.63	9	0.03	11	0.75	10	0.75	11	17	41	-0.12	41	0.00	17	0.25	32	0.25	35	3	30	0.63	30	0.03	6	1.13	3	4.25	3
16	Clinch, J.P.	UCD	0.2862	19	9	0.63	10	0.00	14	0.75	10	0.75	11	79	13	2.61	13	0.00	17	1.00	13	1.00	14	5	11	1.00	1	0.00	14	0.75	6	0.75	10
17	Kelly, M.	UCD	0.2816	13	16	0.36	17	0.00	14	0.38	16	0.38	17	104	8	3.71	8	0.00	17	1.13	8	1.13	9	6	5	1.00	1	0.00	14	0.75	6	0.75	10
18	O'Rourke, K.H.	TCD	0.2782	15	13	0.45	13	0.00	14	0.50	13	0.50	14	95	11	3.33	11	0.00	17	1.13	8	1.13	9	5	11	1.00	1	0.00	14	0.63	17	0.63	21
19	Ruane, F.	ESRI	0.2738	15	13	0.45	14	0.00	14	0.50	13	0.50	14	47	21	1.18	22	0.00	17	0.88	19	0.88	23	6	5	1.00	1	0.02	11	0.75	6	0.75	10
20	Jacobson, D.S.	DCU	0.2704	6	45	0.05	48	0.00	14	0.00	47	0.00	47	10	53	-0.43	55	0.04	15	0.25	32	0.25	35	2	40	0.50	40	0.78	1	0.50	39	1.38	7
21	Roche, M.J.	NUIM	0.2671	10	25	0.23	26	0.00	14	0.13	25	0.13	26	18	40	-0.08	40	0.00	17	0.25	32	0.25	35	3	30	0.63	30	0.03	6	1.13	3	4.25	3

r		Publications										Citations										h-number											
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
		s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
22	Andreosso-O'Callaghan, B.	UoL	0.2655	17	11	0.56	11	0.56	2	0.88	8	2.38	2	14	47	-0.24	47	0.06	13	0.25	32	0.25	35	3	30	0.63	30	0.00	14	0.50	39	0.50	42
23	Harmon, C.P.	UCD	0.2653	9	34	0.19	35	0.00	14	0.13	25	0.13	26	99	10	3.49	10	0.00	17	1.13	8	1.13	9	5	11	1.00	1	0.00	14	0.75	6	0.75	10
24	Walsh, P.P.	UCD	0.2627	13	16	0.36	17	0.00	14	0.38	16	0.38	17	51	20	1.37	20	0.00	17	0.88	19	0.88	23	5	11	1.00	1	0.00	14	0.75	6	0.75	10
25	Reynolds-Feighan, A.	UCD	0.2540	10	25	0.23	31	0.00	14	0.13	25	0.13	26	52	19	1.41	19	0.00	17	0.88	19	0.88	23	5	11	1.00	1	0.00	14	0.75	6	0.75	10
26	Keane, M.J.	NUIG	0.2456	13	16	0.36	16	0.04	8	0.25	23	0.25	24	32	31	0.54	31	0.06	13	0.63	26	0.63	30	4	18	0.88	18	0.03	5	0.63	17	0.63	21
27	Callan, T.	ESRI	0.2406	10	25	0.23	33	0.00	14	0.13	25	0.13	26	63	18	1.89	18	0.00	17	1.00	13	1.00	14	4	18	0.88	18	0.00	14	0.63	17	0.63	21
28	Bergin, J.	UCD	0.2390	9	34	0.19	35	0.00	14	0.13	25	0.13	26	64	17	1.94	17	0.00	17	1.00	13	1.00	14	4	18	0.88	18	0.00	14	0.63	17	0.63	21
29	Barrett, A.	ESRI	0.2373	11	23	0.27	23	0.00	14	0.13	25	0.13	26	47	21	1.18	22	0.00	17	0.88	19	0.88	23	4	18	0.88	18	0.00	14	0.63	17	0.63	21
30	Barrett, S.D.	TCD	0.2356	10	25	0.23	28	0.00	14	0.13	25	0.13	26	47	21	1.19	21	0.00	17	0.88	19	0.88	23	4	18	0.88	18	0.00	14	0.63	17	0.63	21
31	Bradley, J.	TCD	0.2348	6	45	0.05	52	0.00	14	0.00	47	0.00	47	78	14	2.57	14	0.00	17	1.00	13	1.00	14	4	18	0.88	18	0.00	14	0.63	17	0.63	21
32	Maitre, B.	ESRI	0.2336	12	21	0.32	21	0.00	14	0.38	16	0.38	17	37	26	0.74	26	0.00	17	0.38	28	0.38	31	4	18	0.88	18	0.00	14	0.63	17	0.63	21
33	Whelan, K.T.	UCD	0.2334	12	21	0.32	22	0.00	14	0.38	16	0.38	17	36	27	0.71	28	0.00	17	0.38	28	0.38	31	4	18	0.88	18	0.00	14	0.63	17	0.63	21
34	Walsh, B.	UCD	0.2243	5	54	0.01	59	0.00	14	0.00	47	0.00	47	44	24	1.06	24	0.00	17	0.88	19	0.88	23	4	18	0.88	18	0.00	14	0.63	17	0.63	21
35	FitzGerald, J.D.	ESRI	0.2171	7	40	0.10	44	0.00	14	0.13	25	0.13	26	26	32	0.25	32	0.00	17	0.25	32	0.25	35	4	18	0.88	18	0.00	14	0.63	17	0.63	21
36	Devereux, P.J.	UCD	0.2051	13	16	0.36	17	0.00	14	0.38	16	0.38	17	22	34	0.09	34	0.00	17	0.25	32	0.25	35	3	30	0.63	30	0.00	14	0.63	17	0.63	21
37	Farrell, L.	UCD	0.1985	6	45	0.05	49	0.00	14	0.00	47	0.00	47	42	25	0.97	25	0.00	17	0.75	25	0.75	29	3	30	0.63	30	0.00	14	0.63	17	0.63	21
38	Matthews, A.	TCD	0.1960	10	25	0.23	28	0.00	14	0.13	25	0.13	26	21	35	0.04	36	0.00	17	0.25	32	0.25	35	3	30	0.63	30	0.00	14	0.63	17	0.63	21
39	O'Leary, E.	UCC	0.1933	1	107	-0.17	111	0.00	14	0.00	47	0.00	47	6	63	-0.61	63	1.00	1	0.13	51	1.00	14	1	64	0.13	64	0.00	14	0.00	64	0.00	64
40	McGuinness, S.	ESRI	0.1924	8	39	0.14	39	0.00	14	0.13	25	0.13	26	21	35	0.02	37	0.00	17	0.25	32	0.25	35	3	30	0.63	30	0.00	14	0.63	17	0.63	21
41	Morgenroth, E.L.W.	ESRI	0.1879	4	63	-0.04	74	0.00	14	0.00	47	0.00	47	34	30	0.60	30	0.00	17	0.38	28	0.38	31	3	30	0.63	30	0.00	14	0.63	17	0.63	21
42	Cotter, J.	UCD	0.1871	13	16	0.36	17	0.00	14	0.38	16	0.38	17	19	38	-0.04	38	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
43	Lucey, B.M.	TCD	0.1868	14	15	0.41	15	0.00	14	0.50	13	0.50	14	9	57	-0.50	59	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
44	Bargain, O.	UCD	0.1813	7	40	0.10	42	0.00	14	0.13	25	0.13	26	1	102	-0.83	104	0.00	17	-0.13	107	-0.13	83	3	30	0.63	30	0.00	14	0.63	17	0.63	21
45	Drudy, P.J.	TCD	0.1799	4	63	-0.04	72	0.00	14	0.00	47	0.00	47	12	50	-0.36	50	0.00	17	0.13	51	0.13	54	3	30	0.63	30	0.00	14	0.63	17	0.63	21

r		Publications										Citations										h-number											
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
		s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
46	Kearney, C.	TCD	0.1771	10	25	0.23	28	0.00	14	0.13	25	0.13	26	14	47	-0.28	48	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
47	McQuinn, K.	CBI	0.1754	7	40	0.10	40	1.00	1	0.13	25	1.00	8	4	75	-0.69	75	0.00	17	0.00	97	0.00	74	1	64	0.13	64	0.00	14	0.00	64	0.00	64
48	Harrison, M.J.	UCD	0.1725	5	54	0.01	59	0.00	14	0.00	47	0.00	47	35	29	0.67	29	0.00	17	0.38	28	0.38	31	2	40	0.50	40	0.00	14	0.50	39	0.50	42
49	Madden, D.	UCD	0.1723	7	40	0.10	42	0.00	14	0.13	25	0.13	26	16	42	-0.17	44	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
50	Hutson, E.	UCD	0.1722	9	34	0.19	35	0.00	14	0.13	25	0.13	26	7	60	-0.57	62	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
51	Whelan, B.J.	ESRI	0.1700	6	45	0.05	53	0.00	14	0.00	47	0.00	47	23	33	0.11	33	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
52	Flavin, T.J.	NUIM	0.1695	7	40	0.10	41	0.00	14	0.13	25	0.13	26	11	51	-0.39	52	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
53	Lenihan, H.	UoL	0.1690	6	45	0.06	45	0.03	10	0.13	25	0.13	26	10	53	-0.42	53	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
54	Whelan, C.	UCD	0.1685	6	45	0.05	49	0.00	14	0.00	47	0.00	47	15	45	-0.22	46	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
55	Shinnick, E.	UCC	0.1680	3	75	-0.08	76	0.00	14	0.00	47	0.00	47	4	75	-0.69	76	1.00	1	0.13	51	-1.00	135	1	64	0.13	64	0.00	14	0.00	64	0.00	64
56	Kavanagh, E.	UCC	0.1676	3	75	-0.08	76	0.00	14	0.00	47	0.00	47	2	90	-0.78	91	1.00	1	0.13	51	-1.00	135	1	64	0.13	64	0.00	14	0.00	64	0.00	64
57	Boylan, T.A.	NUIG	0.1663	5	54	0.01	57	0.00	14	0.00	47	0.00	47	13	49	-0.30	49	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
58	Eakins, J.	UCC	0.1659	2	91	-0.12	91	0.00	14	0.00	47	0.00	47	2	90	-0.78	91	1.00	1	0.13	51	-1.00	135	1	64	0.13	64	0.00	14	0.00	64	0.00	64
58	Kavanagh, C.	UCC	0.1659	2	91	-0.12	91	0.00	14	0.00	47	0.00	47	2	90	-0.78	91	1.00	1	0.13	51	-1.00	135	1	64	0.13	64	0.00	14	0.00	64	0.00	64
60	Thom, D.R.	UCD	0.1658	4	63	-0.04	70	0.00	14	0.00	47	0.00	47	19	38	-0.04	38	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
61	DeWit, G.	NUIM	0.1655	6	45	0.05	47	0.00	14	0.00	47	0.00	47	9	57	-0.48	58	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
62	Kirby, E.	UCC	0.1641	1	107	-0.17	111	0.00	14	0.00	47	0.00	47	2	90	-0.78	91	1.00	1	0.13	51	-1.00	135	1	64	0.13	64	0.00	14	0.00	64	0.00	64
63	O'Donoghue, C.	NUIG	0.1640	5	54	0.01	57	0.00	14	0.00	47	0.00	47	10	53	-0.43	54	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
64	Hogan, V.	UCD	0.1639	5	54	0.01	59	0.00	14	0.00	47	0.00	47	10	53	-0.44	56	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
65	O'Shea, E.	NUIG	0.1634	3	75	-0.08	80	0.00	14	0.00	47	0.00	47	16	42	-0.17	42	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
66	Kennelly, B.	NUIG	0.1627	2	91	-0.12	94	0.00	14	0.00	47	0.00	47	21	35	0.06	35	0.00	17	0.25	32	0.25	35	2	40	0.50	40	0.00	14	0.50	39	0.50	42
67	Cuddy, M.P.	NUIG	0.1624	4	63	-0.03	64	0.00	14	0.00	47	0.00	47	11	51	-0.39	51	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
70	Newman, C.	TCD	0.1593	3	75	-0.08	86	0.00	14	0.00	47	0.00	47	5	69	-0.68	74	0.00	17	0.13	51	0.13	54	2	40	0.50	40	0.00	14	0.50	39	0.50	42
71	Velupillai, K.V.	NUIG	0.1322	10	25	0.23	25	0.04	8	0.25	23	0.25	24	7	60	-0.56	61	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64

r		Publications										Citations										h-number											
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
		s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
72	Bredin, D.	UCD	0.1281	10	25	0.23	31	0.00	14	0.13	25	0.13	26	5	69	-0.66	71	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
73	Convery, F.J.	UCD	0.1264	9	34	0.19	35	0.00	14	0.13	25	0.13	26	5	69	-0.66	71	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
74	O'Reilly, G.	CBI	0.1207	4	63	-0.03	63	0.13	6	0.13	25	0.13	26	3	85	-0.74	85	0.00	17	0.00	97	0.00	74	1	64	0.13	64	0.00	14	0.00	64	0.00	64
75	Ahearne, A.G.	NUIG	0.1178	3	75	-0.08	80	0.00	14	0.00	47	0.00	47	15	45	-0.21	45	0.00	17	0.25	32	0.25	35	1	64	0.13	64	0.00	14	0.00	64	0.00	64
76	Deegan, J.	UoL	0.1176	5	54	0.01	54	0.00	14	0.00	47	0.00	47	5	69	-0.65	69	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
76	Reeves, E.	UoL	0.1176	5	54	0.01	54	0.00	14	0.00	47	0.00	47	5	69	-0.65	69	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
78	Garvey, E.	NUIG	0.1162	2	91	-0.12	94	0.00	14	0.00	47	0.00	47	16	42	-0.17	42	0.00	17	0.25	32	0.25	35	1	64	0.13	64	0.00	14	0.00	64	0.00	64
79	Gannon, B.	NUIG	0.1154	6	45	0.05	46	0.00	14	0.00	47	0.00	47	3	85	-0.74	87	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
80	Walsh, F.	UCD	0.1149	6	45	0.05	49	0.00	14	0.00	47	0.00	47	1	102	-0.83	104	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
81	Pastine, I.	UCD	0.1138	5	54	0.01	59	0.00	14	0.00	47	0.00	47	4	75	-0.70	78	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
82	McDowell, M.	UCD	0.1124	2	91	-0.12	98	0.00	14	0.00	47	0.00	47	6	63	-0.61	66	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
83	Kearney, I.	ESRI	0.1123	2	91	-0.13	105	0.00	14	0.00	47	0.00	47	6	63	-0.65	68	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
84	Kawakatsu, H.	DCU	0.1120	4	63	-0.03	66	0.00	14	0.00	47	0.00	47	4	75	-0.70	77	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
85	Gavin, C.	CBI	0.1119	3	75	-0.08	75	0.00	14	0.00	47	0.00	47	3	85	-0.74	85	0.00	17	0.00	97	0.00	74	1	64	0.13	64	0.00	14	0.00	64	0.00	64
86	Denny, K.	UCD	0.1118	4	63	-0.04	70	0.00	14	0.00	47	0.00	47	3	85	-0.75	88	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
87	Broome, S.J.	NUIM	0.1116	4	63	-0.03	67	0.00	14	0.00	47	0.00	47	2	90	-0.79	97	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
88	McDonough, T.	NUIG	0.1114	4	63	-0.03	64	0.00	14	0.00	47	0.00	47	1	102	-0.83	102	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
89	van Rensburg, T.M.	NUIG	0.1107	1	107	-0.17	121	0.00	14	0.00	47	0.00	47	6	63	-0.61	65	0.00	17	0.13	51	0.13	54	1	64	0.13	64	0.00	14	0.00	64	0.00	64
90	Ferreira, S.	UCD	0.1102	3	75	-0.08	84	0.00	14	0.00	47	0.00	47	4	75	-0.70	78	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
91	Gekker, R.	NUIG	0.1099	3	75	-0.08	80	0.00	14	0.00	47	0.00	47	2	90	-0.79	95	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
92	Delaney, L.	UCD	0.1098	3	75	-0.08	84	0.00	14	0.00	47	0.00	47	2	90	-0.79	96	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
93	O'Toole, F.	TCD	0.1097	3	75	-0.08	86	0.00	14	0.00	47	0.00	47	2	90	-0.81	100	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
94	Traistaru-Siedschlag, I.	ESRI	0.1097	3	75	-0.08	89	0.00	14	0.00	47	0.00	47	2	90	-0.82	101	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
95	Kearns, A.	CBI	0.1095	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	9	57	-0.47	57	0.00	17	0.00	97	0.00	74	1	64	0.13	64	0.00	14	0.00	64	0.00	64

r		Publications										Citations										h-number											
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
		s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
96	Murphy, A.E.	TCD	0.1095	3	75	-0.08	86	0.00	14	0.00	47	0.00	47	1	102	-0.85	107	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
97	Duffy, D.	ESRI	0.1095	3	75	-0.08	89	0.00	14	0.00	47	0.00	47	1	102	-0.87	108	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
98	McAleese, D.	TCD	0.1084	2	91	-0.13	102	0.00	14	0.00	47	0.00	47	4	75	-0.72	82	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
98	O'Hagan, J.	TCD	0.1084	2	91	-0.13	102	0.00	14	0.00	47	0.00	47	4	75	-0.72	82	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
100	Cassidy, M.	CBI	0.1081	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	2	90	-0.78	90	0.00	17	0.00	97	0.00	74	1	64	0.13	64	0.00	14	0.00	64	0.00	64
101	Pontikakis, D.	NUIG	0.1079	2	91	-0.12	94	0.00	14	0.00	47	0.00	47	1	102	-0.83	102	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
102	Pantelidis, T.	NUIM	0.1079	2	91	-0.12	100	0.00	14	0.00	47	0.00	47	1	102	-0.84	106	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
103	Nolan, A.	ESRI	0.1077	2	91	-0.13	105	0.00	14	0.00	47	0.00	47	1	102	-0.87	108	0.00	17	-0.13	107	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
104	Doris, A.	NUIM	0.1067	1	107	-0.17	129	0.00	14	0.00	47	0.00	47	4	75	-0.70	80	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
104	O'Sullivan, P.	NUIM	0.1067	1	107	-0.17	129	0.00	14	0.00	47	0.00	47	4	75	-0.70	80	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
106	Scott, S.	ESRI	0.1065	1	107	-0.17	135	0.00	14	0.00	47	0.00	47	4	75	-0.73	84	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
107	Durkan, J.	UCD	0.1065	1	107	-0.17	125	0.00	14	0.00	47	0.00	47	3	85	-0.75	88	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
108	Hurley, M.J.	NUIM	0.1063	1	107	-0.17	129	0.00	14	0.00	47	0.00	47	2	90	-0.79	97	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
108	Rousseau, F.	NUIM	0.1063	1	107	-0.17	129	0.00	14	0.00	47	0.00	47	2	90	-0.79	97	0.00	17	0.13	51	-0.13	83	1	64	0.13	64	0.00	14	0.00	64	0.00	64
110	Considine, J.	UCC	0.0997	5	54	0.01	56	0.00	14	0.00	47	0.00	47	0	110	-0.87	116	0.00	17	0.00	97	0.00	74	0	110	0.00	110	0.00	14	0.00	64	0.00	64
111	Somerville, R.A.	TCD	0.0960	4	63	-0.04	72	0.00	14	0.00	47	0.00	47	0	110	-0.90	140	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
112	Sjostrom, W.	UCC	0.0944	2	91	-0.12	91	0.00	14	0.00	47	0.00	47	0	110	-0.87	116	0.00	17	0.00	97	0.00	74	0	110	0.00	110	0.00	14	0.00	64	0.00	64
113	Hogan, T.	DCU	0.0944	3	75	-0.08	83	0.00	14	0.00	47	0.00	47	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
114	Power, B.	UCC	0.0927	1	107	-0.17	111	0.00	14	0.00	47	0.00	47	0	110	-0.87	116	0.00	17	0.00	97	0.00	74	0	110	0.00	110	0.00	14	0.00	64	0.00	64
115	Piggins, A.	NUIG	0.0926	2	91	-0.12	94	0.00	14	0.00	47	0.00	47	0	110	-0.87	126	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
116	Parlane, S.	UCD	0.0926	2	91	-0.12	98	0.00	14	0.00	47	0.00	47	0	110	-0.88	131	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
117	Leddin, A.	UoL	0.0926	2	91	-0.12	101	0.00	14	0.00	47	0.00	47	0	110	-0.88	136	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
118	Thijssen, J.J.J.	TCD	0.0925	2	91	-0.13	102	0.00	14	0.00	47	0.00	47	0	110	-0.90	140	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
119	Largey, A.	DCU	0.0909	1	107	-0.17	107	0.00	14	0.00	47	0.00	47	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64

r		Publications										Citations										h-number											
		Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
		s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
119	McDonnell, T.	DCU	0.0909	1	107	-0.17	107	0.00	14	0.00	47	0.00	47	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
119	McGovern, S.	DCU	0.0909	1	107	-0.17	107	0.00	14	0.00	47	0.00	47	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
119	Poti, V.	DCU	0.0909	1	107	-0.17	107	0.00	14	0.00	47	0.00	47	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
123	Duffy, D.	NUIG	0.0909	1	107	-0.17	121	0.00	14	0.00	47	0.00	47	0	110	-0.87	126	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
123	Lally, B.	NUIG	0.0909	1	107	-0.17	121	0.00	14	0.00	47	0.00	47	0	110	-0.87	126	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
123	Raghavendra, S.	NUIG	0.0909	1	107	-0.17	121	0.00	14	0.00	47	0.00	47	0	110	-0.87	126	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
126	Di Maria, C.	UCD	0.0909	1	107	-0.17	125	0.00	14	0.00	47	0.00	47	0	110	-0.88	131	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
126	Kelly, A.	UCD	0.0909	1	107	-0.17	125	0.00	14	0.00	47	0.00	47	0	110	-0.88	131	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
126	McCarthy, C.	UCD	0.0909	1	107	-0.17	125	0.00	14	0.00	47	0.00	47	0	110	-0.88	131	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
129	Geary, P.T.	NUIM	0.0908	1	107	-0.17	129	0.00	14	0.00	47	0.00	47	0	110	-0.88	138	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
130	Tamura, Y.	TCD	0.0907	1	107	-0.17	134	0.00	14	0.00	47	0.00	47	0	110	-0.90	140	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
131	Bergin, A.	ESRI	0.0907	1	107	-0.17	135	0.00	14	0.00	47	0.00	47	0	110	-0.91	144	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
131	Lyons, S.	ESRI	0.0907	1	107	-0.17	135	0.00	14	0.00	47	0.00	47	0	110	-0.91	144	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
133	unpublished	NUIM	0.0891	0	138	-0.21	143	0.00	14	0.00	47	0.00	47	0	110	-0.88	138	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
134	unpublished	ESRI	0.0889	0	138	-0.22	146	0.00	14	0.00	47	0.00	47	0	110	-0.91	144	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
135	Birmingham, C.	CBI	0.0697	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.13	140	-0.13	107	-1.00	135	0	110	0.00	110	0.00	14	0.00	64	0.00	64
135	Browne, F.X.	CBI	0.0697	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.13	140	-0.13	107	-1.00	135	0	110	0.00	110	0.00	14	0.00	64	0.00	64
135	d'Agostino, A.	CBI	0.0697	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.13	140	-0.13	107	-1.00	135	0	110	0.00	110	0.00	14	0.00	64	0.00	64
135	Doran, D.	CBI	0.0697	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.13	140	-0.13	107	-1.00	135	0	110	0.00	110	0.00	14	0.00	64	0.00	64
135	Murphy, A.P.	CBI	0.0697	1	107	-0.17	114	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.13	140	-0.13	107	-1.00	135	0	110	0.00	110	0.00	14	0.00	64	0.00	64
140	unpublished	UCC	0.0687	0	138	-0.21	139	-0.14	141	0.00	47	-1.13	142	0	110	-0.87	116	0.00	17	0.00	97	0.00	74	0	110	0.00	110	0.00	14	0.00	64	0.00	64
141	unpublished	CBI	0.0650	0	138	-0.21	142	0.00	14	0.00	47	0.00	47	0	110	-0.87	120	-0.14	145	0.00	97	-1.13	145	0	110	0.00	110	0.00	14	0.00	64	0.00	64
142	unpublished	NUIG	0.0634	0	138	-0.21	140	-0.23	143	0.00	47	-1.13	142	0	110	-0.87	126	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
143	unpublished	DCU	0.0623	0	138	-0.21	138	-0.21	142	-0.13	145	-1.25	146	0	110	-0.87	110	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64



r	Publications										Citations										h-number											
	Number		PSV		Rank		Market		HOPS		Number		PSV		rank		market		HOPS		number		PSV		rank		market		HOPS			
	s	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	
144 unpublished	UCD	0.0493	0	138	-0.21	141	-0.56	145	0.00	47	-1.13	142	0	110	-0.88	131	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
145 unpublished	TCD	0.0328	0	138	-0.22	144	-1.00	146	-0.13	145	-1.00	141	0	110	-0.90	140	0.00	17	-0.13	107	-0.13	83	0	110	0.00	110	0.00	14	0.00	64	0.00	64
146 unpublished	UoL	0.0319	0	138	-0.22	145	-0.28	144	0.00	47	-1.13	142	0	110	-0.88	136	-0.19	146	-0.13	107	-1.25	146	0	110	0.00	110	0.00	14	0.00	64	0.00	64

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**Research Unit Sustainability and Global Change**  
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