

## Rational (successive) $h$ -indices: An application to economics in the Republic of Ireland

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We rank economics departments in the Republic of Ireland according to the number of publications, number of citations, and successive  $h$ -index of research-active staff. We increase the discriminatory power of the  $h_1$ -index by introducing three generalizations, each of which is a rational number. The first ( $h_1^+$ ) measures the excess over the actual  $h$ -index, while the other two ( $h_1^*$ ,  $h_1^\Delta$ ) measures the distance to the next  $h$ -index. At the individual level,  $h^*$  and  $h^\Delta$  coincide while  $h^+$  is undefined.

### Introduction

HIRSCH [2005] introduced the  $h$ -index to measure the quality of academics. A researcher has an  $h$ -index of  $h$  if she has  $h$  publications that are cited at least  $h$  times. PRATHAP [2006] and SCHUBERT [2007] proposed successive  $h$ -indices. A university department has an  $h_1$ -index of  $h_1$  if it has  $h_1$  members with an  $h$ -index of at least  $h_1$ . (This can be repeated for universities, countries, and so on.) Prathap applied this method to institutions, Schubert to journals and publishers. Here we present the  $h_1$ -index of economics departments in the Republic of Ireland.

One problem with (successive)  $h$ -indices is that they are natural numbers. This implies that the  $h$ -ranking lacks a finer structure. One can have two opinions on this.

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On the one hand, any ranking is arbitrary to a degree, and a finer structure is precision without accuracy. On the other hand, minor but real quality differences are omitted. We show below that it is possible to define a rational  $h$ -index, which interpolates the original, natural  $h$ -index.

### Data and methods

The analysis is based on a total of 135 economic researchers in 9 institutions in the Republic of Ireland. The names of individuals were taken from the relevant institution's web site.<sup>1</sup> Some 90 people without traceable publications were excluded.

Data are taken from Scopus ([www.scopus.com](http://www.scopus.com)), at the end of 2006. EconLit and IDEAS/REPEC are frequently used to rank economists, but EconLit excludes citations while IDEAS/REPEC is limited to self-registered authors. Both sources have a narrow focus on economic journals, while Ireland has a relatively large number of applied economists who publish also in, say, health and environment journals. Additional data were collected from Thomson Scientific's Web of Science in Spring 2007, but these are used in a sensitivity analysis only. Scopus has a better coverage of journals after 1996, but Web of Science is superior for earlier years.

We can generate three rankings of individual economists, based on the number of publications, the number of citations to those papers, and the  $h$ -index (see Table A1 in the Appendix). Publication and citation numbers are not corrected for the journal quality, page length, or number of authors. The rankings are not corrected for self-citations or age and are included for comparison only. The focus is here on  $h$ -indices.

For institutions, we look at totals and averages of publications and citations. The "total"  $h$ -index is Schubert's  $h_1$ -index. The average  $h$ -index is also given – the difference between the total and average in an indicator of the variance within an institution.

An institution has an  $h_1$ -index of  $h_1$  if  $h_1$  is the largest number of members with an  $h$ -number of at least  $h_1$ . However, some institutions may have more than  $h_1$  members, say  $n$ , with an  $h$ -number of at least  $h_1$ . Let us define  $h_1^x := n - h_1$ . Institutions can be ranked first on  $h_1$  and second on  $h_1^x$ . This captures the extent to which productivity within an institution is skewed at the upper end. This can be turned into a single index normalizing  $h_1^x$  with the number of institution members,  $s$ , as follows  $h_1^+ = h_1 + h_1^x / (s - h_1)$ .

One may also consider the distance to  $h_1 + 1$ . Let us consider two institutions, A and B. Institution A has  $h_1$  members with an  $h$ -index of  $h_1 + 1$ , and one member with an  $h$ -index of  $h_1$ . Institution B has  $h_1$  members with an  $h$ -index of  $h_1$ , and one member with an  $h$ -index of 0. Clearly, institution A outperforms institution B, but both have an  $h_1$ -index of  $h_1$ . For institution A to get a higher  $h_1$ -index, the  $h$ -index of one (specific) member has to increase by at least one point. Institution B needs  $2h_1 + 1$  additional points.

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

Let  $m$  denote the additional points needed. The fact that there is a maximum distance between  $h_1$  and  $h_1+1$  allows us to express the distance as a fraction,  $m/(2h_1+1)$ , and the  $h_1$ -index as a rational number:  $h_1^\Delta = h_1 + 1 - m/(2h_1+1)$ . It is easily seen that  $h_1^\Delta = h_1 + 1$  for  $m=0$  (i.e., no additional points are needed) and that  $h_1^\Delta = h_1$  for  $m=2h_1+1$  (i.e., the maximum number of additional points are needed).

One can also define the  $h^x$  and  $h^\Delta$  for individuals. One cannot define  $h^+$  for individuals, as there is no upper limit to the potential amount of papers, while using the actual amount punish prolificacy. Let us introduce a third individual index,  $h^*$ , and define it as  $h^* = h^\Delta$  (see Table A2). A successive  $h^*$  index,  $h_1^*$ , can be defined as the largest number for which  $h^* > h_1^*$ .

The ESRI, for example, has 7 member with an  $h$ -index of 4 or more, but only 4 members with an  $h$ -index of 5 or larger. The ESRI's  $h_1$ -index is therefore 4. However, it has 5 members with an  $h^*$ -index of 4.8 or larger, and thus also "4.8 people" with 4.8 or more. Its  $h_1^*$ -index is therefore 4.8, while its  $h_1^\Delta$ -index is 4.9. The  $h_1^\Delta$ -index is a refined, successive  $h$ -index, while the  $h_1^*$ -index is a successive, refined  $h$ -index.<sup>2</sup>

Note that  $h_1^+$ ,  $h_1^\Delta$ ,  $h^*$  and  $h_1^*$  can readily be generalized [SIDIROPOULOS & AL., FORTHCOMING].

## Results

Table 1 shows the results for the nine institutions using Scopus.<sup>3</sup> The rankings, which are based on total and average number of publications, total and average number of citations, average  $h$ -index, and  $h_1$ -index, roughly agree. Table 2 shows the rank correlations. UCD, ESRI and TCD stand out as a top 3, NUIM is alone in the sub-top, NUIG and UL rank in the middle, and UCC, CBI and DCU are at the bottom.

However, two of top institutions have the same  $h_1$ -index, and so do the four of the lower ranked ones. Therefore, Table 1 also shows  $h_1^+$ ,  $h_1^\Delta$  and  $h_1^*$ . The latter two indices agree perfectly with one another on the ranking, and the scores are largely the same; the ranking based on  $h_1^+$  is slightly different. The three refined  $h_1$ -indices agree roughly with the rankings based on publication and citation numbers. Table 2 shows the rank correlations.

Table 3 shows the various  $h_1$ -indices for data from Scopus and Web of Science. The results are robust to the data source. ESRI and UL do better in Scopus, while NUIG and UCD do better in Web of Science. The rank correlations are higher than 0.86 (for  $h_1^*$ ).

<sup>2</sup> We are grateful to an anonymous referee for pointing us toward the successive refined index.

<sup>3</sup> RUANE & TOL [2007] discuss the results in more details, including the implications for research policy in Ireland. They also compare these rankings to the earlier ones by BARRETT & LUCEY [2003] and COUPE & WALSH [2003].

Table 1. Rankings of economics institutions in the Republic of Ireland<sup>a</sup>

	People	Publications		Citations		$h_1$		$h_1^+$	$h_1^\Delta$	$h_1^*$
	#	#	Avg	#	Avg	#	Avg	#	#	#
UCD	30	300	10.0	1362	45.4	5	2.8	5.12	5.73	5.73
ESRI	16	199	12.4	1262	78.9	4	3.6	4.25	4.89	4.78
TCD	19	189	9.9	982	51.7	4	2.7	4.13	4.89	4.78
NUIM	15	88	5.9	260	17.3	3	2.0	3.08	3.71	3.57
NUIG	17	73	4.3	157	9.2	2	1.2	2.27	2.60	2.60
UL	7	46	6.6	62	8.9	2	1.4	2.20	2.80	2.80
CBI	11	37	3.4	75	6.8	2	1.0	2.00	2.40	2.00
DCU	8	29	3.6	51	6.4	2	0.9	2.00	2.40	2.00
UCC	11	26	2.4	30	2.7	1	0.8	1.70	1.67	1.67

<sup>a</sup> The institutions are ordered based on the arithmetic average of the ranks shown.

Table 2. Rank correlations for the indices of Table 1

		publ	publ	cit	cit	$h_1$	$h_1$	$h_1^+$	$h_1^\Delta$	$h_1^*$
		#	avg	#	avg	#	avg	#	#	#
people	#	0.76	0.51	0.81	0.69	0.63	0.61	0.75	0.66	0.66
publ	#		0.92	0.98	0.95	0.88	0.97	0.99	0.97	0.97
publ	avg			0.85	0.92	0.84	0.97	0.93	0.95	0.95
cit	#				0.93	0.88	0.93	0.98	0.93	0.93
cit	avg					0.84	0.97	0.94	0.93	0.93
$h_1$	#						0.86	0.92	0.93	0.93
$h_1$	avg							0.96	0.97	0.97
$h_1^+$	#								0.98	0.98
$h_1^\Delta$	#									1.00

Table 3. Alternative  $h_1$ -indices for the 9 economic institutions according to *Scopus* and *Web of Science* data; rank correlations between the databases for each index are also shown

	Scopus				Web of Science			
	$h_1$	$h_1^+$	$h_1^\Delta$	$h_1^*$	$h_1$	$h_1^+$	$h_1^\Delta$	$h_1^*$
UCD	5	5.12	5.73	5.73	5	5.04	5.73	5.64
ESRI	4	4.25	4.89	4.78	4	4.17	4.89	4.78
TCD	4	4.13	4.89	4.78	5	5.00	5.64	5.00
NUIM	3	3.08	3.71	3.57	3	3.08	3.86	3.43
NUIG	2	2.27	2.60	2.60	3	3.14	3.86	3.86
UL	2	2.20	2.80	2.80	1	1.50	1.67	1.67
CBI	2	2.00	2.40	2.00	2	2.00	2.60	2.00
DCU	2	2.00	2.40	2.00	2	2.00	2.20	2.00
UCC	1	1.70	1.67	1.67	1	1.30	1.33	1.00
Corr.					0.88	0.92	0.88	0.86

### Conclusion

We present three refinements of the  $h_1$ -index,  $h_1^+$ ,  $h_1^\Delta$  and  $h_1^*$ , and two refined  $h$ -indices:  $h^x$  and  $h^*$ . The  $h^x$ -index allows for a secondary ranking of individuals with an equal  $h$ -index. The  $h^*$ -index gives a finer distinction than the  $h$ -index, and equals  $h^\Delta$ . The  $h_1^+$ ,  $h_1^\Delta$  and  $h_1^*$ -indices are rational numbers with a finer discrimination than the  $h_1$ -index. An application to economics institutions in the Republic of Ireland shows that the new indices perform as desired: The crude order is preserved, but a finer order is added that is in line with a ranking based on publication and citation numbers. The  $h_{(n)}^*$ -index is the most intuitive extension of the  $h_{(n)}$ -index.

\*

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## Appendix

Table A1. Rankings of economists in the Republic of Ireland

Rank	Name	Inst.	Score <sup>a</sup>	Publications		Citations		<i>h</i> -index	
				#	rank	#	rank	#	rank
1	Tol, R.S.J.	ESRI	3.00	94	1	819	1	18	1
2	Nolan, B.	UCD	1.66	49	2	478	2	10	2
3	Lane, P.R.	TCD	1.39	37	3	410	3	9	3
4	Kapur, K.	UCD	0.90	31	4	146	7	7	4
5	Barry, F.G.	TCD	0.78	31	4	143	5	5	9
6	Whelan, C.T.	ESRI	0.74	24	8	128	6	6	5
7	Honohan, P.	TCD	0.69	28	6	91	11	5	9
8	Leahy, D.M.	NUIM	0.65	17	11	114	7	6	5
9	O Gráda, C.	UCD	0.63	26	7	61	17	5	9
10	Kelly, M.	UCD	0.60	13	18	104	8	6	5
11	Clinch, J.P.	UCD	0.58	19	9	84	12	5	9
12	O'Rourke, K.H.	TCD	0.56	15	13	100	10	5	9
13	Ruane, F.P.	ESRI	0.55	15	13	47	22	6	5
14	Harmon, C.P.	UCD	0.50	9	35	104	8	5	9
15	Whelan, K.T.	CBI	0.50	15	13	50	21	5	9
16	Maitre, B.	ESRI	0.49	14	16	52	19	5	9
17	Walsh, P.P.	UCD	0.48	13	18	51	20	5	9
18	Reynolds-Feighan, A.	UCD	0.45	10	26	53	18	5	9
19	Callan, T.	ESRI	0.43	11	23	71	14	4	19
20	O'Neill, D.	NUIM	0.41	10	26	64	15	4	19
21	Barrett, A.	ESRI	0.40	11	23	47	22	4	19
22	Bergin, J.	UCD	0.40	9	35	64	15	4	19
23	Conniffe, D.	NUIM	0.39	19	9	18	39	3	28
24	Bradley, J.	TCD	0.39	6	45	82	13	4	19
25	Barrett, S.D.	TCD	0.39	10	26	47	22	4	19
26	Gallagher, L.A.	DCU	0.38	11	23	36	28	4	19
27	Andreosso-O'Callaghan, B.	UL	0.36	17	11	14	47	3	28
28	Keane, M.J.	NUIG	0.34	13	18	29	30	3	28
29	Devereux, P.J.	UCD	0.33	13	18	22	33	3	28
30	Walsh, B.M.	UCD	0.33	5	55	44	25	4	19
31	Fitz Gerald, J.D.	ESRI	0.31	6	45	20	36	4	19
32	Matthews, A.	TCD	0.30	10	26	21	34	3	28
33	Roche, M.J.	NUIM	0.30	10	26	18	39	3	28
34	Boyle, G.E.	UL	0.29	8	39	29	30	3	28
35	Farrell, L.	UCD	0.28	6	45	42	26	3	28
36	Cotter, J.	UCD	0.27	13	18	19	37	2	39
37	Lucey, B.M.	TCD	0.27	14	16	9	55	2	39

Table A1. (cont.)

Rank	Name	Inst.	Score <sup>a</sup>	Publications		Citations		<i>h</i> -index	
				#	rank	#	rank	#	rank
38	Morgenroth, E.L.W.	ESRI	0.26	4	64	38	27	3	28
39	Bargain, O.	UCD	0.24	7	41	1	101	3	28
40	Cuddy, M.P.	NUIG	0.24	10	26	16	41	2	39
41	Kearney, C.	TCD	0.23	10	26	14	47	2	39
42	Drudy, P.J.	TCD	0.22	4	64	12	50	3	28
43	Hutson, E.	UCD	0.22	9	35	7	59	2	39
44	Lenihan, H.	UL	0.21	8	39	9	55	2	39
45	Harrison, M.J.	TCD	0.21	5	55	35	29	2	39
46	Madden, D.	UCD	0.21	7	41	16	41	2	39
47	Whelan, B.J.	ESRI	0.20	6	45	23	32	2	39
48	Flavin, T.J.	NUIM	0.20	7	41	11	51	2	39
49	Whelan, C.	UCD	0.19	6	45	15	45	2	39
50	Jacobson, D.S.	DCU	0.19	6	45	11	51	2	39
51	DeWit, G.	NUIM	0.19	6	45	9	55	2	39
52	Siddiqui, A.S.	UCD	0.18	6	45	8	58	2	39
53	Boylan, T.A.	NUIG	0.18	5	55	14	47	2	39
54	Thom, D.R.	UCD	0.18	4	64	19	37	2	39
55	O'Donoghue, C.	NUIG	0.18	5	55	10	54	2	39
56	Velupillai, K.V.	NUIG	0.17	10	26	7	59	1	63
57	Bredin, D.	UCD	0.17	10	26	5	66	1	63
58	O'Shea, E.	NUIG	0.16	3	74	16	41	2	39
59	Pastine, T.	NUIM	0.16	4	64	6	62	2	39
60	Sweetman, O.	NUIM	0.16	4	64	5	66	2	39
61	Kennelly, B.	NUIG	0.16	2	91	21	34	2	39
62	Convery, F.J.	UCD	0.16	9	35	5	66	1	63
63	Doyle, E.	UCC	0.15	3	74	7	59	2	39
64	Newman, C.	TCD	0.15	3	74	5	66	2	39
65	Kearns, A.	CBI	0.15	2	91	11	51	2	39
66	McQuinn, K.	CBI	0.13	7	41	4	73	1	63
67	Gannon, B.	NUIG	0.12	6	45	3	83	1	63
68	Walsh, F.	UCD	0.12	6	45	1	101	1	63
69	Deegan, J.	UL	0.11	5	55	5	66	1	63
69	Reeves, E.	UL	0.11	5	55	5	66	1	63
71	Kawakatsu, H.	DCU	0.11	5	55	4	73	1	63
71	Pastine, I.	UCD	0.11	5	55	4	73	1	63
73	Ahearne, A.G.	NUIG	0.11	3	74	15	45	1	63
74	O'Reilly, G.	CBI	0.10	4	64	4	73	1	63
75	Denny, K.	UCD	0.10	4	64	3	83	1	63

Table A1. (cont.)

Rank	Name	Inst.	Score <sup>a</sup>	Publications		Citations		<i>h</i> -index	
				#	rank	#	rank	#	rank
76	Broome, S.J.	NUIM	0.10	4	64	2	91	1	63
77	McDonough, T.	NUIG	0.10	4	64	1	101	1	63
78	Garvey, E.	NUIG	0.10	2	91	16	41	1	63
79	Shinnick, E.	UCC	0.09	3	74	5	66	1	63
80	Ferreira, S.	UCD	0.09	3	74	4	73	1	63
81	Gavin, C.	CBI	0.09	3	74	3	83	1	63
81	McElroy, B.	UCC	0.09	3	74	3	83	1	63
81	Nolan, A.	ESRI	0.09	3	74	3	83	1	63
81	Traistaru-Siedschlag, I.	ESRI	0.09	3	74	3	83	1	63
85	Delaney, L.	UCD	0.09	3	74	2	91	1	63
85	Gekker, R.	NUIG	0.09	3	74	2	91	1	63
85	Kavanagh, E.	UCC	0.09	3	74	2	91	1	63
85	O'Toole, F.	TCD	0.09	3	74	2	91	1	63
89	Duffy, D.	ESRI	0.09	3	74	1	101	1	63
89	Murphy, A.E.	TCD	0.09	3	74	1	101	1	63
91	Kearney, I.	ESRI	0.08	2	91	6	62	1	63
92	McAleese, D.	TCD	0.08	2	91	4	73	1	63
92	O'Hagan, J.	TCD	0.08	2	91	4	73	1	63
94	Eakins, J.	UCC	0.08	2	91	3	83	1	63
95	Kavanagh, C.	UCC	0.08	2	91	2	91	1	63
96	Pantelidis, T.	NUIM	0.08	2	91	1	101	1	63
96	Pontikakis, D.	NUIG	0.08	2	91	1	101	1	63
98	O'Leary, E.	UCC	0.07	1	105	6	62	1	63
98	van Rensburg, T.M.	NUIG	0.07	1	105	6	62	1	63
100	Doris, A.	NUIM	0.07	1	105	4	73	1	63
100	O'Sullivan, P.	NUIM	0.07	1	105	4	73	1	63
100	Scott, S.	ESRI	0.07	1	105	4	73	1	63
103	Cassidy, M.	CBI	0.07	1	105	3	83	1	63
104	Hurley, M.J.	NUIM	0.07	1	105	2	91	1	63
104	Kirby, E.	UCC	0.07	1	105	2	91	1	63
104	Mariuzzo, F.	TCD	0.07	1	105	2	91	1	63
104	Rousseau, F.	NUIM	0.07	1	105	2	91	1	63
108	Considine, J.	UCC	0.05	5	55	0	108	0	108
109	Somerville, R.A.	TCD	0.04	4	64	0	108	0	108
110	Hogan, T.	DCU	0.03	3	74	0	108	0	108



Table A1. (cont.)

Rank	Name	Inst.	Score <sup>a</sup>	Publications		Citations		<i>h</i> -index	
				#	rank	#	rank	#	rank
111	Leddin, A.	UL	0.02	2	91	0	108	0	108
111	Parlane, S.	UCD	0.02	2	91	0	108	0	108
111	Piggins, A.	NUIG	0.02	2	91	0	108	0	108
111	Sjostrom, W.	UCC	0.02	2	91	0	108	0	108
115	Bergin, A.	ESRI	0.01	1	105	0	108	0	108
115	Bermingham, C.	CBI	0.01	1	105	0	108	0	108
115	Browne, F.X.	CBI	0.01	1	105	0	108	0	108
115	d'Agostino, A.	CBI	0.01	1	105	0	108	0	108
115	Di Maria, C.	UCD	0.01	1	105	0	108	0	108
115	Doran, D.	CBI	0.01	1	105	0	108	0	108
115	Duffy, D.	UCC	0.01	1	105	0	108	0	108
115	Geary, P.T.	NUIM	0.01	1	105	0	108	0	108
115	Kelly, A.	UCD	0.01	1	105	0	108	0	108
115	Lally, B.	NUIG	0.01	1	105	0	108	0	108
115	Largey, A.	DCU	0.01	1	105	0	108	0	108
115	Lyons, S.	ESRI	0.01	1	105	0	108	0	108
115	McCarthy, C.	UCD	0.01	1	105	0	108	0	108
115	McDonnell, T.	DCU	0.01	1	105	0	108	0	108
115	McGovern, S.	DCU	0.01	1	105	0	108	0	108
115	Murphy, A.P.	CBI	0.01	1	105	0	108	0	108
115	O'Donnell, M.	UL	0.01	1	105	0	108	0	108
115	Poti, V.	DCU	0.01	1	105	0	108	0	108
115	Power, B.	UCC	0.01	1	105	0	108	0	108
115	Raghavendra, S.	NUIG	0.01	1	105	0	108	0	108
115	Tamura, Y.	TCD	0.01	1	105	0	108	0	108

<sup>a</sup> The overall score is the sum of number of publications, number of citations, and the *h*-index, each divided by the score of the highest ranked individual.

Table A2. Data for selected economists in the Republic of Ireland<sup>a</sup>

Name	Inst.	<i>Scopus</i>				<i>Web of Science</i>			
		Publ	Cit	<i>h</i>	<i>h</i> *	Publ	Cit	<i>h</i>	<i>h</i> *
Whelan, K.T.	CBI	15	50	5	5.91	16	45	5	5.45
Kearns, A.	CBI	2	11	2	2.00	1	8	1	1.00
McQuinn, K.	CBI	7	4	1	1.67	6	3	1	1.67
O'Reilly, G.	CBI	4	4	1	1.33	3	3	1	1.33
Gavin, C.	CBI	3	3	1	1.33	1	0	0	0.00
Cassidy, M.	CBI	1	3	1	1.00	2	3	1	1.33
Browne, F.X.	CBI	1	0	0	0.00	19	57	4	4.89
Gallagher, L.A.	DCU	11	36	4	4.56	11	20	3	3.57
Jacobson, D.S.	DCU	6	11	2	2.60	8	20	2	2.40
Kawakatsu, H.	DCU	5	4	1	1.33	2	0	0	0.00
Tol, R.S.J.	ESRI	94	819	18	18.86	72	520	13	13.96
Whelan, C.T.	ESRI	24	128	6	6.92	34	233	8	8.88
Ruane, F.P.	ESRI	15	47	6	6.38	20	62	5	5.91
Maitre, B.	ESRI	14	52	5	5.45	10	30	4	4.67
Callan, T.	ESRI	11	71	4	4.78	17	86	5	5.64
Barrett, A.	ESRI	11	47	4	4.67	9	25	2	2.80
Fitz Gerald, J.D.	ESRI	6	20	4	4.33	9	50	4	4.78
Morgenroth, E.L.W.	ESRI	4	38	3	3.57	4	25	2	2.00
Whelan, B.J.	ESRI	6	23	2	2.80	15	39	3	3.00
Keane, M.J.	NUIG	13	29	3	3.86	13	36	4	4.78
Cuddy, M.P.	NUIG	10	16	2	2.80	9	38	3	3.86
Boylan, T.A.	NUIG	5	14	2	2.60	12	38	4	4.44
O'Shea, E.	NUIG	3	16	2	2.00	11	41	4	4.67
Kennelly, B.	NUIG	2	21	2	2.00	7	22	3	3.43
Velupillai, K.V.	NUIG	10	7	1	1.67	37	47	4	4.67
Leahy, D.M.	NUIM	17	114	6	6.77	15	69	4	4.89
O'Neill, D.	NUIM	10	64	4	4.89	9	60	4	4.78
Roche, M.J.	NUIM	10	18	3	3.71	11	12	2	2.80
Conniffe, D.	NUIM	19	18	3	3.57	57	249	8	8.88
DeWit, G.	NUIM	6	9	2	2.40	9	16	3	3.43
Geary, P.T.	NUIM	1	0	0	0.00	16	112	4	4.89
Lane, P.R.	TCD	37	410	9	9.89	37	290	7	7.93
Barry, F.G.	TCD	31	143	5	5.91	41	110	5	5.91
Honohan, P.	TCD	28	91	5	5.91	54	83	4	4.78
O'Rourke, K.H.	TCD	15	100	5	5.82	31	134	6	6.92
Bradley, J.	TCD	6	82	4	4.78	21	125	6	6.85
Barrett, S.D.	TCD	10	47	4	4.67	19	13	2	2.00
Harrison, M.J.	TCD	5	35	2	2.00	24	108	5	5.82
McAleese, D.	TCD	2	4	1	1.00	37	63	4	4.67

Table A2. (cont.)

Name	Inst.	<i>Scopus</i>				<i>Web of Science</i>			
		Publ	Cit	$h$	$h^*$	Publ	Cit	$h$	$h^*$
Doyle, E.	UCC	3	7	2	2.40	3	4	1	1.67
Shinnick, E.	UCC	3	5	1	1.67	2	1	1	1.00
McElroy, B.	UCC	3	3	1	1.67	1	0	0	0.00
Eakins, J.	UCC	2	3	1	1.67	0	0	0	0.00
Kavanagh, E.	UCC	3	2	1	1.33	2	2	1	1.00
Kavanagh, C.	UCC	2	2	1	1.33	1	1	1	1.00
Nolan, B.	UCD	49	478	10	10.95	56	346	9	9.89
Kapur, K.	UCD	31	146	7	7.93	27	130	6	6.92
Kelly, M.	UCD	13	104	6	6.69	13	71	5	5.91
O Gráda, C.	UCD	26	61	5	5.91	94	134	7	7.80
Clinch, J.P.	UCD	19	84	5	5.91	14	53	4	4.89
Reynolds-Feighan, A.	UCD	10	53	5	5.82	7	14	2	2.80
Harmon, C.P.	UCD	9	104	5	5.73	11	91	5	5.64
Walsh, P.P.	UCD	13	51	5	5.55	13	28	3	3.86
Bergin, J.	UCD	9	64	4	4.00	20	111	5	5.91
Walsh, B.M.	UCD	5	44	4	4.00	24	42	4	4.78
Devereux, P.J.	UCD	13	22	3	3.00	12	25	4	4.78
Thom, D.R.	UCD	4	19	2	2.00	31	52	4	4.89
Boyle, G.E.	UL	8	29	3	3.57	16	37	5	5.45
Andreosso-O'Callaghan, B.	UL	17	14	3	3.43	7	2	1	1.33
Lenihan, H.	UL	8	9	2	2.80	5	5	1	1.67

<sup>a</sup> Results are shown for those economists that potentially affect the various  $h_1$ -indices of their institutions.