On the optimality of academic rankings of regions with RePEc data

Mishra, SK

North-Eastern Hill University, Shillong (India)

14 October 2008

On the Optimality of Academic Rankings of Regions with RePEc Data

SK Mishra
Department of Economics
North-Eastern Hill University
Shillong (India)

I. Introduction: Based on the bibliographical data available with the RePEc (Research Papers in Economics), the Internet Documents in Economics Access Service (IDEAS) publishes every month the up-dated academic rankings of different geographic regions (countries/states in the US). Academic rankings of authors belonging to a particular region make the basic building block of the region's rankings. All authors affiliated to the institutions in a particular region are added to the pool of that region. However, authors with multiple affiliations have their scores split among all regions. For computing the academic rankings of authors, thirty one criteria are used. Among those criteria, six relate to the count of work (such as articles, papers, book chapters, software, etc), fifteen are based on citation counts (excluding self citations), six are based on journal page counts and four are based on the popularity of RePEc services (such as abstract views and downloads). The ranks obtained according to these criteria are then aggregated by computing their harmonic mean, albeit with some modifications. The harmonic mean rewards those who are particularly good in some category, and perhaps too much. For this reason, the harmonic mean is dampened somewhat by adding a constant to each rank, and then subtracting it from the mean. Further, for each author, the aggregate rank is truncated by dropping the best and worst rankings. Once all these attributions are made for the authors affiliated to different regions, a properly weighted aggregate of author ranks is obtained although with a special treatment given to the Hirsch index. Finally, the regions (countries/states of USA) are ranked according to the scores thus computed for the authors affiliated to them (Zimmermann, 2007).

It may be relevant to enquire if the overall rankings of different regions obtained by such aggregation of criterion-wise rankings as obtained by the IDEAS are optimal. The objective of this paper is to discuss a few of the principles of optimality and to test on these principles the overall region-wise rankings obtained by the IDEAS.

II. The Criteria of Ranking: The following are the criteria used by the IDEAS/RePEc for ranking of the authors registered in the RePEc.

1. **Measures based on count of work**: There are six measures based on count of work (in the RePEc data base), namely:
   - (i) ANB Works: The number of distinct works of an author;
   - (ii) DNbWorks: Count divided by number of authors on each work;
   - (iii) ScWorks: Count with simple impact factor weights;
   - (iv) AScWorks: Count with simple impact factor weights divided by number of authors on each work;
   - (v) WScWorks: Count with recursive impact factor weights;
   - (vi) AWScWorks: Count with recursive impact factor weights divided by number of authors on each work.
2. **Measures based on citation counts**: There are fifteen measures based on citation counts (excluding self citations) of works in the RePEc data base, namely:
   - (i) NbCites: Simple citation count;

(ii) ANbCites: Citation count divided by number of authors on each work;
(iii) ScCites: Citation count with simple impact factor weights;
(iv) AScCites: Citation count with simple impact factor weights divided by number of authors on each work;
(v) WScCites: Citation count with recursive impact factor weights;
(vi) AWScCites: Citation count with recursive impact factor weights divided by number of authors on each work;
(vii) DCites: Citation count discounted by age;
(viii) ADCites: Citation count discounted by age and divided by number of authors on each work;
(ix) DScCites: Citation count with discounted impact factor weights;
(x) ADScCites: Citation count with discounted impact factor weights divided by number of authors on each work;
(xi) WDScCites: Citation count with recursive discounted impact factor weights;
(xii) AWDScCites: Citation count with recursive discounted factor weights divided by number of authors on each work;
(xiii) HIndex: h-index;
(xiv) NCAuthors: Count of citing registered authors;
(xv) RCAuthors: Rank weighted count of citing registered authors.

3. **Measures based on journal page counts**: There are six measures based on journal page counts (in the journals registered in the RePEc data base), namely:
   (i) NbPages: Simple page count;
   (ii) ScPages: Page count divided by number of authors on each work;
   (iii) WSCPages: Page count with simple impact factor weights;
   (iv) ANbPages: Page count with simple impact factor weights divided by number of authors on each work;
   (v) AScPages: Page count with recursive impact factor weights;
   (vi) AWScPages: Page count with recursive impact factor weights divided by number of authors on each work.
4. **Measures based on the popularity of RePEc services**: There are four measures based on viewing the abstracts and download of the full papers, articles, etc (available in the RePEc data base), namely:
   (i) AbsViews:Total abstract views in the past 12 months;
   (ii) AAbsViews: Total abstract views per author in the past 12 months;
   (iii) Downloads: Total downloads in the past 12 months;
   (iv) ADownloads: Total downloads per author in the past 12 months.

In the measures enumerated above, *impact factors* of different types (simple, recursive and discounted) appear, which are computed as described in Zimmermann (2007). The *h-index* (Hirsch, 1995) is defined as: a scientist has index h if h of his/her H papers have at least h citations each, and the other (H−h) papers have no more than h citations each. Here H is the total number of papers authored or co-authored by the scientist that are available in the bibliographical data base. The h-index can take on an integer value only. Thus, an author with *h-index*=h would have at least h^2 citations (at least h papers with at least h citations each). This index was developed for physics, where scientists write prolifically and cite their peers generously. Some physicists have h above 100, but in Economics it is very rare to have an h above 20, mainly due to the fact that economists write fewer, but more involved papers (Zimmermann, 2007). Additionally, empirical work (and oftentimes theoretical work as well) in economics has much less universal relevance and acceptability than the empirical (or theoretical) work in physics enjoys. This fact limits the *h-index* of authors in economics. Tol (2008) improved h-index to take on a real value and called it the *rational* successive *g-index*.

III. Principles of Representation and the Measures of the Degree of Representation by Overall Rankings: A perusal of the ranking criteria listed above immediately gives an impression that the criteria of citation counts dominate over other criteria by the sheer number (fifteen) of measures included under them. On the other hand, the criteria based on abstract review and downloads include only four measures. Thus, it appears to be quite likely that the overall rankings of the authors with higher scores on citation criteria would dominate over the overall rankings of the authors having higher scores on productivity or popularity criteria simply due to the number of measures used in those criteria. The biases arising out of the unequal number of measures included under different criteria may not be eliminated even if averaging is done at the criteria level and then such criteria-averages are used to obtain the overall ranking by aggregation. It is also likely that such criteria-level averaging would introduce a new kind of bias into the overall scores and the rankings based on them.

We must, therefore, lay down certain principles of optimal representation of a multitude of criteria by a unique composite criterion. We must devise some measure of the degree of representation of individual rank scores (31 in number in the present context) by the overall rank scores. Although there can be many alternative principles of representation, it is generally accepted that correlation, which is a measure of joint movement of two variables, may be used as a fair principle of representation. Among many possible correlation-based measures of the degree of representation, the following are of an immediate interest to us.

1. The array of overall scores, [S], is a linear combination of weighted individual rank score arrays, [r_j], such that the sum of the squared coefficients of correlation (ρ) between S and r_j is maximum. Symbolically, $S = \sum_{j=1}^{m} w_j r_j : \max \sum_{j=1}^{m} \rho^2(S, r_j)$. If S is obtained in this manner, it is the factor score array associated with the first Principal Component (Kendall and Stuart, 1968). From S we obtain an n-element array of rank, [R], $R = R(S)$, which is the sequence of positional values, the non-decreasing and non-interleaving natural numbers, uniquely assigned the elements of S, the latter arranged into a pre-assigned scheme of order. We will designate this R by the name of M_1.
2. The array of overall scores, [S], is a linear combination of weighted individual rank score arrays, [r_j], such that the sum of the squared coefficients of *rank* correlation ($\tilde{\rho}$) between $R(S)$ and r_j is maximum. Or, $R = R(S);\ S = \sum_{j=1}^{m} w_j r_j : \max \sum_{j=1}^{m} \tilde{\rho}^2(R, r_j)$. Spearman's formula may be used to obtain the rank correlation or, alternatively, the Karl Pearson's formula can be applied on the arrays of rank values. We will designate this R by the name M_2.
3. The array of overall scores, [S], is a linear combination of weighted individual rank score arrays, [r_j], such that the *minimal* squared (or equivalently, absolute) coefficient of *rank* correlation ($\hat{\rho}$) between $R(S)$ and r_j is maximum. Or, alternatively expressed, $R = R(S);\ S = \sum_{j=1}^{m} w_j r_j : \max(\min_j(\hat{\rho}^2(R, r_j)))$. We will designate this R by the name M_3.

There can be two other measures of the degree of representation analogous to M_1 and M_2. If we use the absolute rather than squared value of the coefficient of correlation, we can obtain M_4 analogous to M_1 and M_5 analogous to M_2.

IV. The Data Base: We use the data published by the IDEAS for the month of September 2008. The country-wise (state-wise in case of USA) rankings for all 31 criteria are reproduced in Tables 1(A) and 1(B). In Table 1(A) we also present the overall rankings of different countries/states of US as computed by the IDEAS. We will denote the array of IDEAS overall ranking scores my M_0. These overall rankings are also reproduced in Table 1(B). These are the rank scores that we purport to test for their optimality. Additionally, Table 1(A) reproduces the rankings on the basis of the simple counts of work (NbWorks) reported by the Ideas. We do not use these rankings in further analysis.

V. Computational Aspects: It is rather straightforward to obtain M_1. The Principal Component Analysis can be carried out on the individual rankings matrix that has 168 rows (countries/states of US) and 31 columns (criteria-wise ranking scores) to obtain the factor scores array associated with the first Principal Component. This array is S. Then, countries/states can be ranked according to the ordered values of S. For doing this, several statistical software/programs (such as STATISTICA or SPSS) are available.

However, for obtaining M_2 through M_5 we do not have any closed form method. They must be obtained by direct nonlinear optimization. The direct optimization method can also be used for obtaining M_1, although doing so is not economical.

It may be noted that the nonlinear optimization problem to obtain M_2 through M_5 (as well as M_1 if one wants to obtain it directly) is extremely involved. Choice of appropriate values of decision variables (that is weights or $w_j; j=1,2,...,31$) so as to maximize an involved objective function like $\sum_{j=1}^{m}\tilde{\rho}^2(R(\sum_{j=1}^{m}w_j r_j), r_j)$ or $\min_j(\hat{\rho}^2(R(\sum_{j=1}^{m}w_j r_j), r_j))$ is extremely difficult and cannot possibly be accomplished by any traditional method of nonlinear optimization. Hence, we proceed by using a relatively new method of global optimization, namely the method of Differential Evolution (Storn and Price, 1995; Mishra, 2006). This method has been successful in optimizing very difficult nonlinear multimodal optimization problems.

The Findings: As indicated in the previous sections, we have computed five different types of overall ranking scores: M_1, M_2, M_3, M_4, and M_5. The IDEAS ranking scores (M_0) are already given. These alternative overall ranking scores are presented in Table-2. The correlation coefficients of these overall ranking scores (M_1 through M_5) with the individual ranking scores (for 31 different criteria) are presented in Table-3. The inter-correlation matrix of different types of overall ranking scores among themselves is presented in Table-4.

A perusal of Table-4 reveals that the array of overall ranking scores given by the IDEAS is very highly correlated with the arrays of alternative scores. The correlation between M_0 and M_3 is the least, yet as high as 0.9866. Since M_3 is obtained in a very specific manner (by maximization of the minimal squared correlation between M_3 and the individual ranking scores, r_j) it may be specifically mentioned that M_3 assigns largest weight (0.6769) to h-index rankings, followed by downloads rankings (0.4916), AWScCites (0.2611), ADScCites (0.2464), AWScPages (0.1393), RCAuthors (0.1330) and ScPages (0.1266). Weights assigned to other individual ranking scores

(r_j) are rather much smaller. Vis-à-vis M_3, other overall ranking scores (M_1, M_2, M_4 and M_5) assign equitable weights (between 0.15 to 0.19) to all individual ranking scores. A perusal of Table-2 also reveals that except for a few stray instances, M_0, M_1, M_2, M_4 and M_5 rankings for different countries (as well as the states of USA) are identical.

However, the rankings of M_3 are noticeably different from those of M_0. The differences between the two also have a clearly discernible pattern, best depicted in Fig.-1.

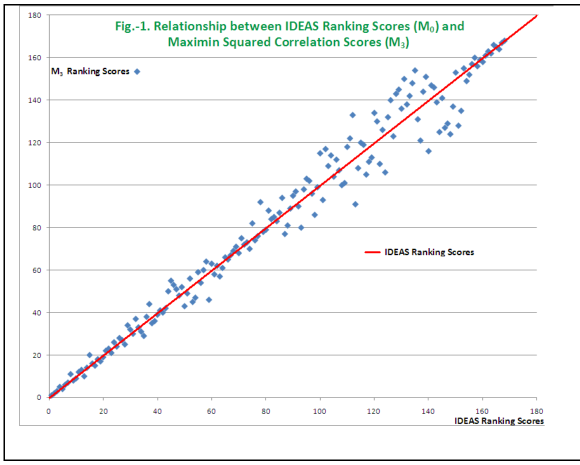

Fig.-1. Relationship between IDEAS Ranking Scores (M_0) and Maximin Squared Correlation Scores (M_3)

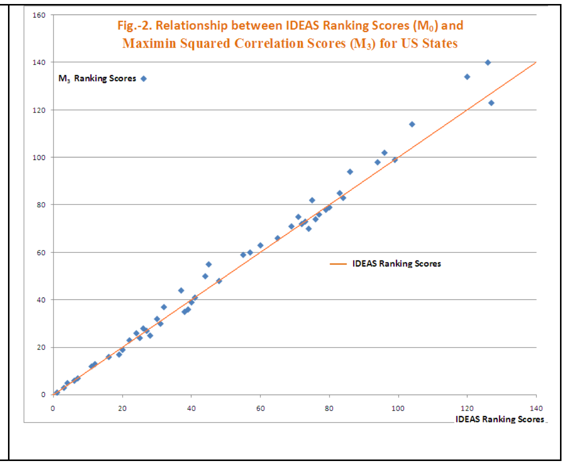

Fig.-2. Relationship between IDEAS Ranking Scores (M_0) and Maximin Squared Correlation Scores (M_3) for US States

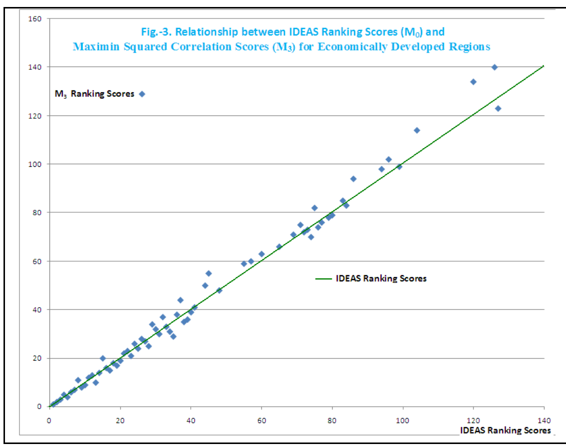

Fig.-3. Relationship between IDEAS Ranking Scores (M_0) and Maximin Squared Correlation Scores (M_3) for Economically Developed Regions

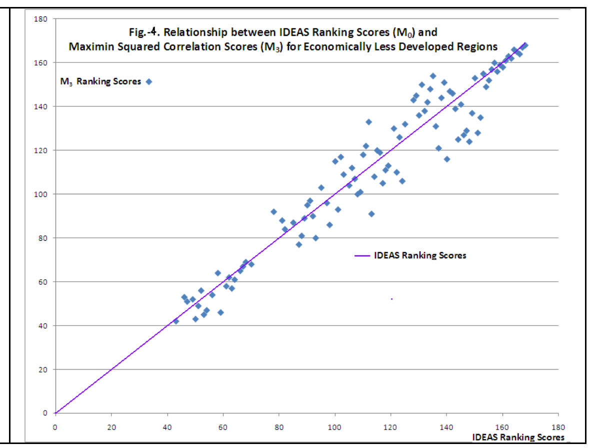

Fig.-4. Relationship between IDEAS Ranking Scores (M_0) and Maximin Squared Correlation Scores (M_3) for Economically Less Developed Regions

With an increasing value of the IDEAS ranking scores (M_0), the M_3 ranking scores increase, but its (M_3's) spread or dispersion from M_0 also increases until M_0 reaches a score of 150 or so. After that, once again, they come closer to M_0. Associated with them are such countries as Malta, Uzbekistan, Botswana, Niue, Georgia, Macedonia, Montenegro, Bahrain, Algeria, Senegal, Afghanistan, Cameroun, Oman, Paraguay, Nauru and Sudan.

A perusal of Fig.-2 through Fig.-4 also reveals that M_3 ranking scores favour the US states and the economically developed regions while M_0 is more favourable to the economically less-developed countries. Elsewhere it has been found that academic and professional participation of economists is significantly higher in developed regions than in the less developed regions (Mishra, 2008).

Concluding Remarks: We raised the question whether the method, best described by Zimmermann (2007), used by the IDEAS/RePEc to obtain academic rankings of different regions (countries and US states) in terms of the academic performance of economists associated with them can be considered optimal. We devised five different types of ranking procedure based on the *principles of representation* of numerically large and varied types of ranking criteria by a single index of overall ranking scores. We used the data published by the IDEAS for the month of September 2008.

We found that the overall ranking scores obtained by the IDEAS are almost optimal on the four (of the five) principles of representation. However, it is not so when the principle of representation is maximization of the minimal squared correlation of overall ranking scores with the constituent individual ranking scores. The overall ranking scores based on maximization of minimal squared correlation beget larger impact (weights) of a select few scientometric criteria such as *h-index*, download counts, and certain specific (co-authorship discounted) measures of impact-weighted citation and productivity of authors affiliated to the regions under consideration. As a consequence, it has some bias in favour of economically developed regions, while the overall ranking scores obtained by the IDEAS are slightly biased in favour of the economically less developed regions. The IDEAS rankings, therefore, have a tendency to discount for the disadvantages faced by the economists associated with the less privileged regions.

References

Hirsch, J. E. (2005) "An Index to Quantify an Individual's Scientific Research Output", *Proceedings of the National Academy of Sciences*, 102 (46): 16569–16572.

Kendall, M.G. and Stuart, A. (1968) *The Advanced Theory of Statistics*, vol. 3, Charles Griffin & Co., London.

Mishra, S. K. (2006) “Global Optimization by Differential Evolution and Particle Swarm Methods: Evaluation on Some Benchmark Functions”, *SSRN*: http://ssrn.com/abstract=933827

Mishra, S.K. (2008)”What Determines the Academic and Professional Participation of Economists?”, *SSRN*: http://ssrn.com/abstract=1265044.

Storn, R. and Price, K. (1995) ”Differential Evolution - A Simple and Efficient Adaptive Scheme for Global Optimization over Continuous Spaces”, *Technical Report, International Computer Science Institute*, Berkley.

Tol, R.S.J. (2008) “A Rational, Successive G-Index applied to Economics Departments in Ireland”, *Journal of Informetrics*, 2: 149-155.

Zimmermann, C. (2007) “Academic Rankings with RePEc”, *Working Papers Series #2007-36*, Dept. of Economics, Univ. of Connecticut: http://www.econ.uconn.edu/working/2007-36.pdf

Note: The Fortran Computer program available at http://www.webng.com/economics/make-indices.html

Table-1(A): IDEAS (RePEc) Academic Rank of Different Countries (States in the US) According to Different Criteria , September 2008

Country / State	Rank*	Nb Works	DNb Works	Sc Works	WSc Works	ANb Works	Asc Works	AWSc Works	Nb Cites	D Cites	Sc Cites	DSc Cites	WSc Cites	WDSc Cites	Anb Cites	AD Cites	Asc Cites
UK	2	1	1	2	3	1	2	3	2	2	3	2	3	3	3	2	3
Germany	5	2	2	5	5	2	5	5	6	5	7	7	7	7	7	5	7
Canada	8	6	6	7	8	5	7	8	9	9	10	10	10	11	8	8	10
Italy	9	5	5	9	10	6	9	10	8	8	11	9	11	10	10	9	11
France	10	7	7	10	11	7	10	12	10	10	12	12	12	12	12	12	12
Spain	13	11	11	13	13	12	14	14	14	14	13	13	13	13	14	14	13
Netherlands	14	8	9	12	15	10	13	15	13	12	14	14	16	14	13	13	16
Australia	15	12	12	15	21	11	16	21	16	16	23	24	24	24	16	15	24
Switzerland	17	16	16	18	20	15	18	20	15	15	20	16	21	16	18	16	20
Sweden	18	17	17	17	16	17	17	17	19	17	21	17	22	20	19	17	21
Belgium	21	15	15	20	24	18	22	26	21	18	25	22	26	23	23	22	26
Israel	23	25	26	22	19	25	21	19	24	24	22	23	20	22	22	23	22
Japan	29	24	22	31	29	20	30	28	39	39	38	40	38	40	35	36	38
Denmark	33	29	32	36	42	32	37	43	28	29	36	35	39	38	28	28	35
Ireland	34	30	33	34	34	33	34	35	33	33	34	33	34	34	33	31	32
Norway	35	26	27	33	40	26	33	40	38	34	41	38	42	39	36	35	40
Austria	36	22	21	40	44	21	40	44	43	42	46	43	48	45	43	42	46
Portugal	42	31	30	44	45	31	44	46	44	43	44	42	46	42	46	45	49
N Zealand	43	40	39	42	43	43	42	42	42	44	43	45	43	46	41	43	43
S Korea	46	53	52	49	46	52	48	45	49	48	45	46	44	44	48	47	45
Chile	47	46	46	46	47	45	47	49	47	47	50	49	49	49	49	48	51
Hong Kong	49	54	53	48	48	55	46	48	50	49	48	48	47	48	52	51	50
India	50	43	38	55	53	34	51	50	58	59	62	61	61	62	59	59	63
Turkey	51	48	45	53	52	47	54	53	54	55	53	55	54	55	56	57	55
Singapore	52	50	50	47	49	51	45	47	52	52	52	51	52	51	53	52	52
Greece	53	39	37	51	56	40	50	56	56	54	61	58	62	59	57	55	62
Finland	54	47	47	52	57	46	52	57	45	45	55	54	58	54	44	44	56
Brazil	56	35	34	61	62	37	62	64	59	57	68	64	64	64	61	58	68
Cyprus	58	65	74	59	59	75	60	61	51	50	49	47	51	47	50	49	47
Argentina	59	56	51	63	64	50	61	58	61	61	58	60	57	60	60	61	57
Russia	61	61	61	58	58	60	59	59	62	63	57	57	56	57	64	63	58
Hungary	62	60	60	60	63	58	58	62	60	60	63	62	66	63	58	60	61
Colombia	63	42	48	68	68	48	71	71	66	66	76	72	77	74	67	67	77
Czech Rep	64	55	54	62	67	56	63	67	64	62	64	65	71	65	65	62	66
China	66	66	66	65	65	71	67	66	65	64	60	59	60	58	66	64	60
Mexico	67	63	62	67	60	61	66	60	68	67	69	66	69	66	72	70	71
Taiwan	68	79	78	70	70	78	70	70	67	71	65	69	68	69	69	69	69
S Africa	70	59	59	76	80	59	77	83	74	68	77	76	80	78	75	71	78
Philippines	78	91	90	93	86	87	90	84	69	72	67	67	63	67	70	73	67
Poland	81	74	67	82	81	65	80	78	88	86	89	88	90	88	86	85	89
Pakistan	82	69	70	88	76	66	86	76	89	91	90	94	94	94	88	91	92
Malaysia	85	70	65	85	83	73	88	85	90	89	98	95	98	97	90	92	98
Romania	87	57	57	99	89	57	98	87	108	106	109	109	104	109	107	106	108
Slovenia	88	84	84	86	90	85	89	92	84	83	87	87	92	87	87	87	90
Luxembourg	89	89	91	90	92	90	92	93	83	81	82	78	83	77	85	83	86
Ukraine	90	85	88	81	77	88	82	81	93	92	95	92	95	93	94	93	93
Bulgaria	91	99	96	96	98	95	94	95	79	88	72	81	72	80	80	86	74
Thailand	92	95	99	94	95	97	95	97	87	87	85	84	81	82	91	89	85
Peru	93	88	87	91	94	91	93	94	92	90	91	91	91	91	92	88	91
Iceland	95	101	102	89	91	101	85	88	91	94	88	90	89	90	89	94	87
Uruguay	97	83	83	92	85	83	91	86	95	97	97	101	99	102	96	99	99
Indonesia	98	86	86	95	96	84	97	96	105	96	110	104	109	106	105	98	111
Iraq	100	106	108	100	99	108	99	99	100	99	102	102	101	103	100	97	101
Egypt	101	104	104	103	106	102	104	105	103	105	105	108	103	108	101	103	103
Kuwait	102	111	115	106	100	107	102	98	99	102	101	100	102	101	95	95	97
Côte d'Iv	103	101	103	101	103	110	106	106	101	100	100	97	100	95	103	101	102
U Arab Em	105	106	106	107	110	105	107	109	109	107	107	106	107	105	106	104	104
Tunisia	106	103	101	104	104	104	105	104	112	110	108	99	108	99	111	108	107
Estonia	107	96	95	102	105	99	108	110	106	103	111	107	112	107	108	105	110
Ethiopia	108	113	114	111	108	112	112	107	102	109	103	111	105	110	102	107	105
Venezuela	109	122	127	116	113	133	117	114	110	114	99	103	97	100	109	114	100
Croatia	110	93	92	112	102	94	116	103	129	128	118	118	120	117	130	132	117
Bangladesh	111	109	107	110	120	109	110	116	107	104	106	110	118	116	110	109	109
S Arabia	112	120	118	113	112	120	118	117	104	112	104	114	106	113	104	113	106
Jamaica	113	115	113	108	115	106	103	108	133	133	132	127	131	129	137	134	134
Kazakhstan	114	119	117	115	118	111	109	111	123	118	117	112	122	112	117	112	113
Iran	115	116	116	117	119	117	114	119	118	117	116	115	113	114	122	120	118
Bolivia	116	100	100	114	116	103	115	118	114	113	120	121	119	122	115	115	121
Qatar	117	117	120	120	114	118	121	121	119	121	114	113	111	111	123	122	115
Tanzania	118	128	126	125	131	132	132	137	115	108	112	105	110	104	113	110	112
Nigeria	119	105	105	105	107	100	100	102	136	138	146	142	144	140	134	135	145
Fiji	121	112	111	119	117	113	120	124	116	116	119	123	121	121	118	116	123
Sri Lanka	122	126	127	129	123	129	131	127	117	122	113	122	115	120	120	124	114
Viet Nam	123	108	109	121	109	114	123	113	122	152	125	151	126	152	126	146	125
Latvia	124	123	125	118	121	121	113	115	126	127	144	135	147	142	124	121	138
Morocco	125	124	122	127	129	123	124	125	119	123	127	130	127	130	116	118	122
Macao	128	139	147	126	132	137	129	138	133	128	128	125	129	125	129	127	119
Martinique	129	147	150	128	122	152	133	128	125	124	129	124	128	124	128	129	133
Malawi	130	127	124	124	126	122	119	120	128	132	134	136	135	134	125	130	137
Burkina F	131	132	139	133	141	148	147	151	113	119	123	128	114	127	114	125	126
Barbados	132	124	122	139	145	128	146	152	129	131	133	134	132	132	132	133	139
Réunion	133	129	134	122	128	135	127	132	124	126	138	131	139	133	121	119	130
Guadeloupe	134	151	154	143	143	160	150	147	132	125	126	120	124	118	138	131	128
Kyrgyzstan	135	161	158	138	136	156	128	129	143	141	135	139	136	138	135	138	127
Lithuania	136	144	142	134	133	140	130	134	133	133	142	133	146	137	127	126	131
Kenya	137	136	132	148	139	125	149	136	152	150	153	152	148	151	153	152	153
Monaco	138	147	146	132	142	151	135	144	137	128	151	143	153	147	136	128	150
Palestin A	139	149	147	150	150	161	157	160	129	137	124	132	123	131	139	144	135
Slovakia	140	131	130	141	140	130	136	139	153	148	152	147	152	148	152	148	151
Armenia	141	146	145	144	148	145	141	150	137	135	130	126	134	126	143	136	136
Costa Rica	142	130	127	140	124	124	137	123	137	144	137	144	137	143	139	143	141
Serbia	143	133	134	131	130	126	126	126	145	146	145	146	145	146	150	149	148
Ghana	144	137	133	136	127	136	140	130	145	143	148	141	151	144	139	137	143
Guatemala	145	142	140	130	125	131	125	122	137	153	150	153	150	153	133	147	147
Lebanon	146	145	143	153	154	142	154	157	144	139	139	137	140	135	145	139	132
Ecuador	147	135	131	142	135	134	145	135	137	135	131	129	130	128	148	141	144
Namibia	148	138	137	157	151	138	155	154	145	142	141	138	142	136	146	142	142

CONTINUED

Continuation of Table-1(A)

Country / State	Rank*	Nb Works	DNb Works	Sc Works	WSc Works	ANb Works	Asc Works	AWSc Works	Nb Cites	D Cites	Sc Cites	DSc Cites	WSc Cites	WDSc Cites	Anb Cites	AD Cites	Asc Cites
Jordan	149	139	138	154	158	141	152	156	137	140	149	150	149	150	144	145	149
Belarus	150	155	160	152	156	149	144	148	145	145	140	140	141	139	139	139	129
Uganda	151	142	140	135	134	144	134	133	145	147	147	148	143	145	151	153	152
Nepal	152	149	147	149	152	147	148	145	145	151	136	145	125	141	146	151	140
Malta	153	139	144	146	147	138	142	141	155	155	154	154	153	153	155	155	154
Uzbekistan	154	155	155	147	146	153	139	140	155	155	154	154	153	153	155	155	154
Botswana	155	151	150	155	160	146	153	158	155	155	154	154	153	153	155	155	154
Niue	156	155	158	159	162	157	159	163	155	155	154	154	153	153	155	155	154
Georgia	157	164	164	165	164	168	165	165	145	153	143	149	138	149	149	154	146
Macedonia	158	164	164	164	165	162	164	164	155	155	154	154	153	153	155	155	154
Montenegro	159	162	160	151	153	157	143	143	155	155	154	154	153	153	155	155	154
Bahrain	160	160	160	158	157	165	163	159	154	149	154	154	153	153	154	150	154
Algeria	161	154	153	156	155	155	158	153	155	155	154	154	153	153	155	155	154
Senegal	162	151	150	161	159	154	162	155	155	155	154	154	153	153	155	155	154
Afghanistan	163	164	167	163	163	164	161	162	155	155	154	154	153	153	155	155	154
Cameroun	164	155	155	162	149	157	160	146	155	155	154	154	153	153	155	155	154
Oman	165	162	160	166	166	166	166	166	155	155	154	154	153	153	155	155	154
Paraguay	166	155	155	168	167	149	168	167	155	155	154	154	153	153	155	155	154
Nauru	167	168	168	160	161	167	156	161	155	155	154	154	153	153	155	155	154
Sudan	168	164	164	167	168	162	167	168	155	155	154	154	153	153	155	155	154
States (USA)																	
Massach	1	3	3	1	1	3	1	1	1	1	1	1	1	1	1	1	1
California	3	4	4	3	2	4	3	2	3	3	2	3	2	2	2	3	2
New York	4	10	10	4	4	9	4	4	4	4	4	4	4	4	4	4	5
D Columb	6	9	8	6	6	8	6	7	5	6	6	6	6	6	6	6	6
Illinois	7	13	13	8	7	13	8	6	7	7	5	5	5	5	5	7	4
Pennsyl	11	14	14	11	9	14	11	9	12	11	8	8	9	8	11	11	9
N Jersey	12	23	23	14	12	23	12	11	11	13	9	11	8	9	9	10	8
Connec	16	19	19	16	14	19	15	13	18	21	16	19	15	17	15	19	14
Michigan	19	21	20	21	17	22	20	18	17	19	17	18	17	18	17	18	15
Missouri	20	18	18	19	18	16	19	16	22	22	19	21	19	21	20	20	19
N Carol	22	27	28	23	23	28	23	22	20	20	18	20	18	19	21	21	17
Minnesota	24	38	44	24	22	39	24	23	23	23	15	15	14	15	25	24	18
Maryland	25	36	36	25	25	35	25	24	25	25	24	25	23	25	24	25	23
Texas	26	28	24	26	27	24	26	27	29	28	31	29	31	30	29	29	30
Wisconsin	27	37	40	27	26	38	27	25	27	27	27	27	27	27	26	26	25
Indiana	28	32	29	28	30	27	28	30	30	30	32	34	32	33	30	30	31
Virginia	30	33	31	30	31	29	29	32	31	31	33	31	33	31	32	32	33
Ohio	31	41	41	29	28	42	31	29	32	32	30	28	30	29	31	33	29
Rhode Isl	32	52	56	38	33	54	36	33	26	26	26	26	25	26	27	27	27
Arizona	37	49	49	41	38	49	41	37	35	36	28	30	29	28	34	34	28
Florida	38	45	42	37	35	44	35	34	37	38	35	37	35	36	37	38	36
Georgia	39	34	35	35	36	36	38	36	36	37	37	36	37	35	38	37	39
Tennessee	40	44	43	32	32	41	32	31	40	41	39	39	36	37	39	39	37
Iowa	41	20	25	39	37	30	39	38	41	40	40	41	40	41	42	40	41
N Hampsh	44	72	77	45	39	77	49	41	34	35	29	32	28	32	40	41	34
S Carolina	45	58	58	50	50	62	53	51	46	46	42	44	41	43	45	46	42
Washington	48	51	55	43	41	53	43	39	48	51	47	50	45	50	47	50	44
Kentucky	55	67	72	57	55	69	57	54	53	56	51	52	50	52	51	53	48
Oregon	57	62	63	54	54	64	55	55	55	53	54	53	53	53	55	54	54
Colorado	60	64	64	56	51	63	56	52	57	58	56	56	55	56	54	56	53
Utah	65	75	71	64	66	72	64	65	63	65	59	63	59	61	63	65	59
Louisiana	69	76	76	66	61	74	65	63	73	69	70	70	67	70	73	68	73
Wyoming	71	68	68	71	71	67	68	68	72	73	73	71	74	73	68	74	72
Alabama	72	77	75	73	74	76	72	72	76	78	74	73	73	71	74	75	70
Kansas	73	78	79	69	69	80	69	69	75	75	75	75	78	76	76	76	75
Nevada	74	73	69	72	73	70	73	73	77	76	79	80	79	81	77	78	76
N Mexico	75	92	93	77	78	96	78	80	70	70	66	68	65	68	71	72	65
Hawaii	76	71	73	74	72	68	76	75	78	80	80	79	76	79	78	80	80
Maine	77	97	97	79	82	92	75	77	71	74	71	74	70	72	62	66	64
Vermont	79	80	80	75	75	79	74	74	81	77	81	83	84	85	79	77	82
Oklahoma	80	81	81	78	79	81	79	79	80	79	84	82	86	83	81	79	83
Delaware	83	94	94	84	84	93	84	82	85	84	78	77	75	75	84	84	79
Nebraska	84	82	82	80	87	82	81	90	82	82	86	86	85	86	82	81	84
W Virginia	86	90	89	83	88	86	83	89	86	85	83	85	82	84	83	82	81
Mississippi	94	87	85	87	93	89	87	91	96	95	93	93	87	92	97	96	94
Arkansas	96	98	98	97	101	98	96	101	94	93	92	89	93	89	93	90	88
Montana	99	114	111	98	97	116	101	100	97	98	94	96	88	96	99	100	96
Alaska	104	110	110	109	111	115	111	112	98	101	96	98	96	98	98	102	95
N Dakota	120	121	118	123	137	119	122	131	121	115	121	119	133	123	119	111	116
Idaho	126	118	121	137	144	127	138	149	111	111	115	117	117	119	112	117	120
S Dakota	127	133	134	145	138	143	151	142	126	120	122	116	116	115	130	123	124

Ranks* = Rank of the country/State of US as obtained by the IDEAS/RePEc. We will also denote it by M_0 in other tables and the text.

Table-1(B): IDEAS (RePEc) Academic Rank of Different Countries (States in the US) According to Different Criteria , September 2008

Country / State	Rank*	ADSc Cites	AWSc Cites	AWDSc Cites	H Index	NCAu thors	RCAu thors	Nb Pages	Sc Pages	WSc Pages	ANb Pages	ASc Pages	AWSc Pages	Abs Views	Down loads	AAbs Views	ADown loads
UK	2	3	3	3	2	2	2	1	2	2	1	2	2	1	1	1	1
Germany	5	7	7	7	6	6	6	4	6	8	4	7	8	3	3	3	3
Canada	8	10	10	10	18	9	8	5	5	6	5	5	6	7	11	7	10
Italy	9	11	11	11	10	8	9	6	10	11	7	10	11	6	6	6	6
France	10	12	12	12	12	10	10	9	9	9	10	9	10	9	9	10	8
Spain	13	13	15	13	11	12	13	12	14	13	12	15	13	10	10	9	11
Netherlands	14	14	20	15	15	13	14	11	12	14	11	13	16	11	8	11	9
Australia	15	23	24	23	29	15	15	10	15	16	9	14	18	12	13	12	13
Switzerland	17	16	21	19	14	17	18	17	23	23	16	22	23	16	15	14	14
Sweden	18	19	23	21	21	16	16	18	22	21	18	21	21	14	17	15	17
Belgium	21	24	28	24	28	19	21	15	20	22	17	23	25	17	14	17	16
Israel	23	22	19	22	17	23	23	27	18	18	26	18	17	30	29	32	30
Japan	29	39	37	39	51	37	36	21	30	33	19	30	30	27	26	22	23
Denmark	33	34	39	35	39	31	31	37	38	42	37	39	43	26	25	27	24
Ireland	34	29	32	30	26	33	34	40	41	40	39	40	40	33	30	38	35
Norway	35	40	42	40	30	36	37	30	36	38	30	37	39	29	28	31	29
Austria	36	44	49	47	49	39	41	24	42	46	23	43	45	23	23	25	25
Portugal	42	46	51	46	52	42	42	43	49	50	42	50	50	25	22	24	22
N Zealand	43	43	43	45	50	44	44	38	37	39	38	38	38	42	38	41	41
S Korea	46	45	45	43	46	46	46	48	47	48	46	47	47	57	53	58	55
Chile	47	50	50	50	56	47	47	41	55	55	41	56	56	43	42	39	39
Hong Kong	49	49	47	49	43	49	49	46	46	45	51	46	46	58	56	59	60
India	50	62	62	63	53	58	58	53	56	57	50	52	55	31	33	26	27
Turkey	51	56	55	55	56	50	51	44	52	53	48	53	54	41	35	36	33
Singapore	52	52	53	52	56	51	50	47	45	47	45	45	44	56	54	56	56
Greece	53	59	64	60	45	53	54	36	50	52	36	48	53	45	44	44	46
Finland	54	55	58	56	40	52	53	50	54	58	47	54	59	50	51	50	51
Brazil	56	64	67	64	56	60	63	54	68	68	54	67	68	35	39	35	40
Cyprus	58	47	48	44	56	54	52	64	59	56	70	60	58	70	70	73	71
Argentina	59	58	56	58	53	62	61	70	64	63	63	62	61	40	47	29	36
Russia	61	57	57	57	56	63	60	77	62	61	73	63	63	55	62	54	58
Hungary	62	61	63	62	56	61	59	59	60	60	56	59	60	63	64	61	64
Colombia	63	74	79	75	68	66	68	75	81	81	74	83	83	22	41	23	44
Czech Rep	64	65	72	65	53	59	62	62	74	75	64	74	75	53	55	55	57
China	66	60	60	59	68	65	65	66	61	62	72	65	65	68	65	68	68
Mexico	67	68	73	69	83	67	66	67	67	65	66	68	67	54	58	53	53
Taiwan	68	66	69	66	64	68	67	71	63	66	67	61	62	77	77	78	74
S Africa	70	76	80	77	68	72	74	60	80	85	59	81	84	60	57	60	59
Philippines	78	69	66	67	108	70	71	90	90	87	91	88	87	81	80	81	80
Poland	81	88	90	86	108	84	87	81	86	91	82	86	92	69	68	65	63
Pakistan	82	93	94	93	108	91	91	76	91	89	75	87	91	61	59	57	54
Malaysia	85	96	98	97	108	89	90	73	89	95	77	90	95	59	60	62	61
Romania	87	110	105	108	87	106	111	55	108	112	57	110	113	52	49	52	49
Slovenia	88	89	95	89	79	78	79	85	95	98	85	96	101	79	78	85	83
Luxembourg	89	84	88	84	84	86	86	92	94	94	93	94	94	92	86	95	89
Ukraine	90	92	93	92	108	92	92	88	82	82	90	82	81	88	84	92	86
Bulgaria	91	81	71	80	108	83	82	105	99	97	103	99	96	103	103	94	91
Thailand	92	87	85	87	81	87	85	94	85	84	94	91	89	100	100	105	101
Peru	93	91	91	90	75	90	89	96	96	96	98	97	99	82	82	83	85
Iceland	95	90	86	91	108	94	93	97	93	92	92	89	90	110	105	108	106
Uruguay	97	103	99	102	108	96	96	93	97	88	96	95	86	84	94	87	103
Indonesia	98	108	110	110	87	100	102	100	106	109	100	107	111	75	74	74	76
Iraq	100	98	101	99	123	103	101	101	100	104	102	100	102	107	109	107	108
Egypt	101	105	103	106	87	107	106	103	92	93	101	93	93	106	107	98	100
Kuwait	102	95	100	95	123	102	100	107	109	102	105	104	98	115	115	109	107
Côte d'Iv	103	100	102	100	108	99	99	104	101	101	106	102	104	108	112	114	115
U Arab Em	105	102	104	104	108	104	104	95	98	99	97	98	100	111	111	106	110
Tunisia	106	101	108	101	123	112	112	102	103	107	104	105	107	102	104	101	105
Estonia	107	109	112	109	108	105	105	109	116	123	107	115	120	94	90	99	97
Ethiopia	108	111	106	111	87	101	103	106	105	106	108	106	106	113	113	112	112
Venezuela	109	104	97	103	76	110	107	117	104	100	113	101	97	133	131	135	133
Croatia	110	117	118	117	123	125	128	98	129	135	95	127	134	93	91	93	92
Bangladesh	111	114	120	121	123	111	109	115	126	130	118	129	133	104	106	103	102
S Arabia	112	115	107	113	123	109	108	128	134	132	122	130	127	116	118	119	122
Jamaica	113	129	136	130	87	131	135	124	118	116	124	118	115	86	87	77	81
Kazakhstan	114	106	114	105	87	115	114	127	119	110	121	111	108	130	139	127	132
Iran	115	118	115	116	123	121	118	121	120	121	122	114	114	105	99	104	94
Bolivia	116	122	121	123	123	108	110	134	138	139	129	138	138	91	98	90	99
Qatar	117	113	111	112	87	115	116	119	125	127	120	126	131	114	114	117	117
Tanzania	118	107	109	107	87	118	119	126	117	122	131	121	121	128	127	133	129
Nigeria	119	140	143	135	123	127	126	120	140	141	114	135	140	89	85	80	79
Fiji	121	124	123	124	123	122	121	114	135	134	119	136	137	112	110	113	113
Sri Lanka	122	120	113	122	87	118	115	125	113	119	125	116	118	121	125	128	128
Viet Nam	123	151	128	152	123	124	125	113	110	113	117	112	116	101	96	110	109
Latvia	124	131	145	139	87	125	124	111	107	108	111	108	112	124	135	120	126
Morocco	125	125	122	126	123	115	117	132	132	133	130	133	132	117	117	116	118
Macao	128	121	124	118	143	131	132	139	123	118	140	124	119	139	133	139	138
Martinique	129	126	137	125	143	128	129	137	112	105	145	117	105	148	157	149	160
Malawi	130	135	135	138	123	128	130	148	146	149	145	146	146	122	123	118	120
Burkina F	131	130	117	127	143	114	123	131	130	129	141	141	139	145	136	154	150
Barbados	132	137	134	136	123	130	127	111	128	125	116	128	128	127	128	137	135
Réunion	133	127	131	128	123	122	122	149	139	137	144	134	129	146	152	152	154
Guadeloupe	134	123	129	120	143	135	136	140	115	117	147	119	117	156	153	157	156
Kyrgyzstan	135	134	127	133	143	148	142	143	122	114	133	113	109	165	166	162	165
Lithuania	136	128	144	132	87	142	146	136	136	136	148	144	141	152	150	151	147
Kenya	137	153	150	151	87	136	145	118	124	126	112	120	125	138	130	136	127
Monaco	138	143	153	146	143	131	131	129	114	120	137	122	124	144	145	140	144
Palestin A	139	142	130	141	143	136	138	123	121	115	136	132	122	147	149	159	159
Slovakia	140	146	152	145	87	139	141	122	141	146	128	145	147	123	121	122	121
Armenia	141	132	139	129	143	141	140	146	137	128	149	140	130	143	154	148	155
Costa Rica	142	144	138	144	143	142	139	149	149	151	153	151	150	136	137	129	134
Serbia	143	147	149	148	123	136	134	154	157	156	154	157	156	126	119	124	116
Ghana	144	138	146	142	87	149	149	138	153	152	142	153	153	129	126	132	124
Guatemala	145	152	148	153	123	152	152	147	133	124	138	131	123	150	151	141	146
Lebanon	146	133	133	131	87	140	137	133	144	144	127	142	144	149	144	145	143
Ecuador	147	139	142	137	87	152	152	158	148	145	158	150	149	142	142	143	145
Namibia	148	141	140	140	87	152	152	141	143	140	132	139	135	137	129	138	136

CONTINUED

Continuation of Table-1(B)

Country / State	Rank*	ADSc Cites	AWSc Cites	AWDSc Cites	H Index	NCAu thors	RCAu thors	Nb Pages	Sc Pages	WSc Pages	ANb Pages	ASc Pages	AWSc Pages	Abs Views	Down loads	AAbs Views	ADown loads
Jordan	149	149	151	150	123	152	152	135	147	148	135	147	148	119	116	115	114
Belarus	150	136	132	134	143	152	152	145	142	147	134	137	143	157	155	150	148
Uganda	151	150	147	147	87	142	150	160	159	159	160	159	159	135	132	134	131
Nepal	152	145	126	143	87	150	147	144	145	142	143	143	142	159	160	160	158
Malta	153	153	153	153	155	142	148	160	159	159	160	159	159	134	133	131	130
Uzbekistan	154	153	153	153	155	152	152	160	159	159	160	159	159	131	122	123	119
Botswana	155	153	153	153	155	152	152	152	158	158	152	158	158	132	145	125	137
Niue	156	153	153	153	155	142	144	156	151	143	156	149	145	153	138	155	140
Georgia	157	148	141	149	143	142	143	152	154	153	155	155	155	168	163	168	164
Macedonia	158	153	153	153	155	152	152	151	152	154	139	148	152	151	147	144	139
Montenegro	159	153	153	153	155	152	152	160	159	159	160	159	159	155	156	147	151
Bahrain	160	153	153	153	143	151	151	157	150	150	159	152	151	161	161	163	162
Algeria	161	153	153	153	155	152	152	160	159	159	160	159	159	154	162	153	157
Senegal	162	153	153	153	155	152	152	160	159	159	160	159	159	158	148	158	152
Afghanistan	163	153	153	153	155	152	152	154	156	155	150	154	154	160	159	156	153
Cameroun	164	153	153	153	155	152	152	160	159	159	160	159	159	163	158	164	161
Oman	165	153	153	153	155	152	152	142	155	157	151	156	157	162	164	165	166
Paraguay	166	153	153	153	155	152	152	159	159	159	157	159	159	164	165	161	163
Nauru	167	153	153	153	155	152	152	160	159	159	160	159	159	166	167	166	167
Sudan	168	153	153	153	155	152	152	160	159	159	160	159	159	167	168	167	168
States (USA)																	
Massach	1	1	1	1	1	1	1	2	1	1	2	1	1	2	2	2	2
California	3	2	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4
New York	4	4	5	4	4	4	4	7	4	4	6	4	4	8	7	8	7
D Columb	6	6	6	6	8	5	5	8	8	7	8	8	7	5	5	5	5
Illinois	7	5	4	5	5	7	7	13	7	5	13	6	5	13	12	13	12
Pennsyl	11	9	9	8	9	11	11	14	11	10	14	11	9	15	16	16	15
N Jersey	12	8	8	9	7	14	12	19	13	12	21	12	12	19	18	20	18
Connec	16	15	13	16	16	21	20	20	16	17	20	16	15	18	19	18	19
Michigan	19	17	16	17	13	18	17	22	19	19	24	19	19	21	21	21	21
Missouri	20	21	18	18	20	20	19	16	17	15	15	17	14	20	20	19	20
N Carol	22	20	17	20	27	22	22	26	21	20	28	20	20	24	24	28	26
Minnesota	24	18	14	14	22	24	24	39	29	25	40	29	28	38	34	42	37
Maryland	25	25	22	25	22	25	25	29	24	24	29	24	22	36	31	37	32
Texas	26	30	30	29	34	27	27	23	25	26	22	25	24	28	27	30	28
Wisconsin	27	26	25	26	19	26	26	35	32	34	34	32	34	44	43	43	38
Indiana	28	32	31	33	25	29	29	28	26	28	27	26	26	32	32	33	31
Virginia	30	33	33	32	33	30	30	25	27	29	25	27	27	37	36	34	34
Ohio	31	31	29	31	22	32	32	33	28	27	35	28	29	46	46	46	45
Rhode Isl	32	27	26	27	32	28	28	52	34	31	52	34	32	47	40	49	43
Arizona	37	28	27	28	47	34	33	45	39	36	43	36	35	51	52	51	48
Florida	38	36	35	36	31	38	38	31	31	30	31	33	33	48	48	47	47
Georgia	39	38	38	38	38	35	35	32	35	35	33	35	36	39	37	40	42
Tennessee	40	37	36	37	37	41	40	34	33	32	32	31	31	49	50	48	50
Iowa	41	41	41	41	41	40	39	42	40	37	44	41	37	34	45	45	52
N Hampsh	44	35	34	34	35	43	43	68	48	44	71	49	48	64	61	67	65
S Carolina	45	42	40	42	44	45	45	49	43	41	53	44	42	66	67	66	67
Washington	48	48	44	48	36	48	48	51	44	43	49	42	41	62	66	63	66
Kentucky	55	51	46	51	42	55	55	58	51	49	58	51	49	73	73	76	75
Oregon	57	54	54	54	48	56	56	57	53	51	60	55	52	67	69	70	70
Colorado	60	53	52	53	56	57	57	56	58	59	55	58	57	65	63	64	62
Utah	65	63	59	61	68	64	64	63	57	54	65	57	51	76	79	75	77
Louisiana	69	71	68	71	68	69	69	72	69	70	69	71	73	72	72	71	73
Wyoming	71	73	74	73	74	74	75	65	72	74	61	69	74	83	83	82	82
Alabama	72	72	70	72	64	75	73	61	66	67	62	66	66	85	89	84	90
Kansas	73	75	75	74	64	77	77	78	65	64	79	64	64	80	81	86	84
Nevada	74	77	77	79	64	76	76	69	70	73	68	70	72	74	76	72	78
N Mexico	75	70	65	70	78	71	70	86	73	71	86	73	71	98	93	102	95
Hawaii	76	80	78	81	77	79	78	80	76	77	78	75	79	71	71	69	69
Maine	77	67	61	68	73	73	72	91	83	79	89	79	76	97	97	89	87
Vermont	79	82	82	83	82	80	80	82	79	78	81	76	77	78	75	79	72
Oklahoma	80	83	83	82	80	82	83	74	71	69	76	72	69	87	88	88	88
Delaware	83	78	76	76	86	85	84	87	75	72	87	77	70	99	102	96	98
Nebraska	84	85	84	85	85	81	81	79	78	80	80	80	80	90	92	91	93
W Virginia	86	79	81	78	108	88	88	83	77	76	83	78	78	96	95	97	96
Mississippi	94	94	89	94	108	95	95	84	84	83	84	84	82	95	101	100	104
Arkansas	96	86	87	88	108	93	94	89	88	90	88	85	85	109	108	111	111
Montana	99	99	92	98	87	97	97	99	87	86	99	92	88	120	124	121	125
Alaska	104	97	96	96	108	98	98	108	102	103	110	103	103	118	120	126	123
N Dakota	120	112	125	114	123	120	120	110	111	111	109	109	110	125	140	130	142
Idaho	126	119	119	119	123	113	113	116	127	138	115	123	136	141	141	142	141
S Dakota	127	116	116	115	87	131	133	130	131	131	126	125	126	140	143	146	149

Ranks* = Rank of the country/State of US as obtained by the IDEAS/RePEc. We will also denote it by M_0 in other tables and the text.

Table-2. Overall Academic Rankings of Countries/States of US
According to Different Measures of the Degree of Representation

Country / State	M_0	M_1	M2	M3	M4	M5	Country / State	M_0	M_1	M2	M3	M4	M5
UK	2	2	2	2	2	2	Kenya	137	136	136	121	136	136
Germany	5	5	5	4	5	5	Monaco	138	137	137	144	137	137
Canada	8	8	8	11	8	8	Palestin A	139	140	140	151	141	141
Italy	9	9	9	8	9	9	Slovakia	140	139	139	116	138	138
France	10	10	10	9	10	10	Armenia	141	143	142	147	143	143
Spain	13	12	12	10	12	12	Costa Rica	142	144	144	146	144	145
Netherlands	14	14	14	14	14	14	Serbia	143	147	147	139	147	147
Australia	15	16	16	20	16	16	Ghana	144	141	141	125	140	140
Switzerland	17	17	17	15	17	17	Guatemala	145	148	148	141	148	148
Sweden	18	18	18	18	18	18	Lebanon	146	142	143	127	142	142
Belgium	21	21	21	22	21	21	Ecuador	147	145	145	129	145	144
Israel	23	23	23	21	23	23	Namibia	148	146	146	124	146	146
Japan	29	30	30	34	30	30	Jordan	149	149	149	137	149	149
Denmark	33	34	34	33	33	33	Belarus	150	152	152	153	152	152
Ireland	34	32	32	31	32	32	Uganda	151	151	151	128	151	151
Norway	35	35	35	29	35	35	Nepal	152	150	150	135	150	150
Austria	36	40	40	38	40	40	Malta	153	153	153	155	153	153
Portugal	42	42	42	40	42	42	Uzbekistan	154	154	154	149	154	154
N Zealand	43	43	43	42	43	43	Botswana	155	155	155	152	155	155
S Korea	46	45	45	53	45	45	Niue	156	156	156	157	156	156
Chile	47	46	46	51	46	46	Georgia	157	157	157	160	158	158
Hong Kong	49	49	49	52	49	49	Macedonia	158	158	158	156	157	157
India	50	54	54	43	54	54	Montenegro	159	159	159	159	159	159
Turkey	51	51	51	49	51	51	Bahrain	160	160	160	158	160	160
Singapore	52	50	50	56	50	50	Algeria	161	161	161	161	161	162
Greece	53	53	53	45	53	53	Senegal	162	162	162	163	162	161
Finland	54	52	52	47	52	52	Afghanistan	163	164	163	162	163	163
Brazil	56	60	60	54	60	60	Cameroun	164	163	164	166	164	164
Cyprus	58	59	59	64	59	59	Oman	165	165	165	165	165	165
Argentina	59	58	57	46	57	57	Paraguay	166	166	166	164	166	166
Russia	61	61	61	58	61	61	Nauru	167	167	167	167	167	167
Hungary	62	62	62	62	62	62	Sudan	168	168	168	168	168	168
Colombia	63	67	67	57	67	67							
Czech Rep	64	63	63	61	63	63	**States (USA)**	**M_0**	**M_1**	**M2**	**M3**	**M4**	**M5**
China	66	65	65	65	65	65	Massach	1	1	1	1	1	1
Mexico	67	66	66	67	66	66	California	3	3	3	3	3	3
Taiwan	68	68	68	69	68	68	New York	4	4	4	5	4	4
S Africa	70	70	70	68	70	70	D Columb	6	6	6	6	6	6
Philippines	78	78	78	92	78	78	Illinois	7	7	7	7	7	7
Poland	81	81	81	88	81	81	Pennsyl	11	11	11	12	11	11
Pakistan	82	84	83	84	83	83	N Jersey	12	13	13	13	13	13
Malaysia	85	86	86	87	86	86	Connec	16	15	15	16	15	15
Romania	87	93	93	77	93	93	Michigan	19	19	19	17	19	19
Slovenia	88	87	87	81	87	87	Missouri	20	20	20	19	20	20
Luxembourg	89	88	88	89	88	88	N Carol	22	22	22	23	22	22
Ukraine	90	89	89	95	89	89	Minnesota	24	24	24	26	24	24
Bulgaria	91	90	90	97	90	90	Maryland	25	25	25	24	25	25
Thailand	92	91	91	90	91	91	Texas	26	26	26	28	26	26

CONTINUED

Continuation of Table-2													
Country / State	**M_0**	**M_1**	**M2**	**M3**	**M4**	**M5**	**Country / State**	**M_0**	**M_1**	**M2**	**M3**	**M4**	**M5**
Peru	93	92	92	80	92	92	Wisconsin	27	28	28	27	28	28
Iceland	95	95	95	103	95	95	Indiana	28	27	27	25	27	27
Uruguay	97	97	97	96	97	97	Virginia	30	29	29	32	29	29
Indonesia	98	98	98	86	98	98	Ohio	31	31	31	30	31	31
Iraq	100	101	101	115	101	101	Rhode Isl	32	33	33	37	34	34
Egypt	101	100	100	93	100	100	Arizona	37	38	38	44	38	38
Kuwait	102	103	102	117	103	103	Florida	38	37	37	35	37	37
Côte d'Iv	103	102	103	109	102	102	Georgia	39	36	36	36	36	36
U Arab Em	105	104	104	104	104	104	Tennessee	40	39	39	39	39	39
Tunisia	106	106	106	112	106	106	Iowa	41	41	41	41	41	41
Estonia	107	107	107	107	107	107	N Hampsh	44	44	44	50	44	44
Ethiopia	108	108	108	100	108	108	S Carolina	45	48	48	55	48	48
Venezuela	109	109	109	101	109	109	Washington	48	47	47	48	47	47
Croatia	110	111	111	118	111	111	Kentucky	55	55	55	59	55	55
Bangladesh	111	110	110	122	110	110	Oregon	57	56	56	60	56	56
S Arabia	112	114	114	133	114	114	Colorado	60	57	58	63	58	58
Jamaica	113	117	117	91	117	117	Utah	65	64	64	66	64	64
Kazakhstan	114	113	113	108	113	113	Louisiana	69	69	69	71	69	69
Iran	115	112	112	120	112	112	Wyoming	71	71	71	75	71	71
Bolivia	116	116	116	119	116	116	Alabama	72	72	72	72	72	72
Qatar	117	115	115	105	115	115	Kansas	73	73	73	73	73	73
Tanzania	118	118	118	111	118	118	Nevada	74	74	74	70	74	74
Nigeria	119	122	122	113	122	122	N Mexico	75	76	76	82	76	76
Fiji	121	121	121	130	120	120	Hawaii	76	75	75	74	75	75
Sri Lanka	122	119	119	110	119	119	Maine	77	77	77	76	77	77
Viet Nam	123	123	123	126	123	123	Vermont	79	79	79	78	79	79
Latvia	124	124	124	106	124	124	Oklahoma	80	80	80	79	80	80
Morocco	125	125	125	132	125	125	Delaware	83	82	82	85	82	82
Macao	128	128	128	143	128	128	Nebraska	84	83	84	83	84	84
Martinique	129	129	129	145	131	131	W Virginia	86	85	85	94	85	85
Malawi	130	131	131	136	130	130	Mississippi	94	94	94	98	94	94
Burkina F	131	132	132	150	132	132	Arkansas	96	96	96	102	96	96
Barbados	132	130	130	138	129	129	Montana	99	99	99	99	99	99
Réunion	133	133	133	142	133	133	Alaska	104	105	105	114	105	105
Guadeloupe	134	134	134	148	134	134	N Dakota	120	120	120	134	121	121
Kyrgyzstan	135	138	138	154	139	139	Idaho	126	126	126	140	126	126
Lithuania	136	135	135	131	135	135	S Dakota	127	127	127	123	127	127

Table-3. Correlation between the Different Types of Overall Academic Rankings (M) of Countries/States of US And Individual Ranking Scores (r_j)

Sl No.	Ranking Criteria (r_j)	M_1	M2	M3	M4	M5
1	DNbWorks	0.98024140	0.97855130	0.97878522	0.98041463	0.97890726
2	ScWorks	0.99486657	0.99464722	0.98355445	0.99487714	0.99464722
3	AScWorks	0.99224418	0.99169877	0.98232698	0.99226883	0.99164309
4	ANbWorks	0.97913187	0.97714070	0.97920807	0.97931781	0.97747006
5	WScWorks	0.99199715	0.99105340	0.98197772	0.99201808	0.99101037
6	AWScWorks	0.98940233	0.98813025	0.98111216	0.98943793	0.98806191
7	NbCites	0.99446474	0.99325425	0.97408596	0.99438033	0.99312718
8	ANbCites	0.99397668	0.99315414	0.97525267	0.99389989	0.99308454
9	ScCites	0.99104519	0.98983130	0.96918074	0.99092385	0.98964794
10	AScCites	0.99217075	0.99120267	0.97301850	0.99206416	0.99107354
11	WScCites	0.98869078	0.98709271	0.96755042	0.98856725	0.98691401
12	AWScCites	0.99080088	0.98953225	0.97135218	0.99068828	0.98942089
13	DCites	0.99399332	0.99297320	0.97297099	0.99390031	0.99286230
14	ADCites	0.99438252	0.99351705	0.97577415	0.99430127	0.99346037
15	DScCites	0.99128257	0.99026518	0.96932794	0.99115667	0.99008698
16	ADScCites	0.99215427	0.99123890	0.97255123	0.99204155	0.99110164
17	WDScCites	0.98863971	0.98716004	0.96698326	0.98850511	0.98700724
18	AWDScCites	0.99104841	0.99006056	0.97082646	0.99092871	0.98990777
19	HIndex	0.93803227	0.93586584	0.96696920	0.93821363	0.93656923
20	NCAuthors	0.99501553	0.99406763	0.97679107	0.99495518	0.99399720
21	RCAuthors	0.99490884	0.99386367	0.97549010	0.99483262	0.99378315
22	NbPages	0.98549453	0.98486097	0.97694117	0.98555000	0.98496300
23	ScPages	0.98802319	0.98793218	0.97234506	0.98793753	0.98761298
24	WSCPages	0.98472664	0.98439290	0.96772561	0.98461499	0.98394091
25	ANbPages	0.98529542	0.98421979	0.97837055	0.98536375	0.98438552
26	AScPages	0.98855953	0.98832543	0.97316476	0.98847467	0.98802666
27	AWScPages	0.98439462	0.98406604	0.96698251	0.98427926	0.98358852
28	AbsViews	0.96661155	0.96500321	0.97135568	0.96686987	0.96538031
29	AAbsViews	0.96430780	0.96241640	0.96924657	0.96457676	0.96295815
30	Downloads	0.95962064	0.95750680	0.96693679	0.95990300	0.95789149
31	ADownloads	0.96063736	0.95850649	0.96796432	0.96092055	0.95905062

.

Table-4. Inter-Correlation Matrix of Different Types of Overall Academic Rankings (M) of Countries/States of US

Overall Rankings	M_0	M_1	M_2	M_3	M_4	M_5
M_0	1.00000000	0.99957735	0.99960265	0.98660667	0.99954444	0.99952926
M_1	0.99957735	1.00000000	0.99998735	0.98714574	0.99997216	0.99996710
M_2	0.99960265	0.99998735	1.00000000	0.98712550	0.99997469	0.99996963
M_3	0.98660667	0.98714574	0.98712550	1.00000000	0.98742920	0.98746716
M_4	0.99954444	0.99997216	0.99997469	0.98742920	1.00000000	0.99999494
M_5	0.99952926	0.99996710	0.99996963	0.98746716	0.99999494	1.00000000