Scientometrics, 2000, 49(1): 39-61

The International Visibility and Citation Impact of Scandinavian Research Articles in Selected Social Science Fields: The Decay of a Myth.

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(Final edited version - 23-01-2000)

Abstract

The article covers the period 1989-98. It investigates the results and meaningfulness of applying the Social Science Citation Index (SSCI, ISI, USA) to publication and citation studies of nine selected Social Science research areas in Scandinavia by analysing the international visibility, the research profiles, and relative citation impact. The study demonstrates that the areas Economics, Political Science, Sociology & Anthropology, Social Policy, Language & Linguistics, and, for Denmark and Finland, Information & Library Science as well as, for Sweden, Management studies, are well anchored internationally with a visibility in line with common S&T domains. The journal article World share of the region is increasing rapidly. Other small European countries, like the Netherlands, are even more substantially represented as regards citation analyses. The conclusion is that SSCI, although biased towards Anglo-American publications, actually makes room for valid bibliometric and scientometric analyses of research published by Scandinavian and other smaller countries with English as the second language in journals regarded international by ISI.

1. Introduction

The present analyses investigate to which extent it is meaningful to compare the international visibility and citation impact of Scandinavian Social Science research published in international journals to the World, i.e. mainly the Anglo-American configuration, and to other small European countries. The motivation is to explore whether the smaller Scandinavian countries, Denmark; Finland; Norway; Sweden, actually belong to that group of countries which, due to national cultural and scientific behaviour and language use in Social Science publication activity, find their international research visibility and impact biased by the Social Science Citation Index (SSCI). Such biased countries are, for instance, France, Spain, and Germany. In other words, given the bias the following investigation attempts to uncover if common bibliometric indicators can be applied to the Scandinavian region which possesses a quite coherent scientific culture, and, like the Netherlands, has English as its second language.

Recently, *Nederhof and van Wijk*[1] have investigated national research efforts in the Social and Behavioural Sciences by mapping the period 1981-90 for the US; UK; France; Germany, and the Netherlands. Their findings (1997), based on the CD-ROM version of SSCI, indicate that the research front of many areas and topics in the Social Sciences becomes international in the late 1980s. Hicks[2] (p. 213) ascertains 1999that bibliometric indicators, with caution and when interpreted as representing *internationally* oriented scholarly literature, may be reasonably reliable. Glänzel[3] demonstrated in 1996 that it is feasible and valid to apply bibliometric indicators to

selected Social Science areas in studies of national scientific performance. His study includes the early 1990s. Very recently *Luwel et al.*[4] published a survey investigation based on questionnaires of the Flemish (Belgian) performance in Law and Linguistics. The general trend is that most research is published in the national language, in particular in the Law domain (80 %), but that the proportion of English publications increases in Linguistics to 41 % within the category of "scientific publications".

The present investigation covers the period 1989-98. The ISI product National Science Indicators (NSI, Deluxe version), 1999, has been used for the data collection. Social Science is represented by the following nine selected disciplines: Communication theory; Economics; Education; Language & Linguistics; Library and Information Science; Management & Business; Political Science & Public Administration; Social Work & Social Policy; Sociology & Anthropology. In a Scandinavian context Social Science is a smaller domain, in line with the Geosciences in terms of volume and in world share like Social Medicine. The latter separate domain includes socially related areas such as Ergonomics, Health, Rehabilitation, and Psychology, as classified in recent publication analyses of the Scandinavian research 1988-96 by *Ingwersen*[5] (1998) and *Ingwersen* and *Wormell*[6] (1999), based on the SCI/SSCI online versions. Compared to the CD-ROM editions the online versions are more comprehensive in journal coverage.

Eight of the nine NSI fields correspond to the Current Contents (CC) categorisation from the edition on Social and Behavioural Sciences. The remaining categories from that edition, like Psychiatry, Psychology and Health are excluded from the present investigation. Most of them are regarded to belong to the domain of Social Medicine and have been dealt with analytically in relation to the medical sciences[6]. The ninth field, Language & Linguistics, belongs to the CC edition on Arts and Humanities. However, it is seen as a borderline case and often regarded a Social Science research area in Scandinavia. In the author´s opinion the selected areas constitute the central disciplines of the Scandinavian Social Sciences and represent a variety of scientific cultures. Certain areas, like Economics, Political Science as well as Library and Information Science, are traditionally international in scope. The research culture in other fields, such as Sociology or Education, are traditionally nationally grounded but may become more international due to influences from abroad. Some research traditions become Anglo-Americanised, for instance, by becoming more quantitative at the methodological level or they become influenced by intra-European collaboration. The research results consequently may become feasible to generalise and to introduce into the international journals. The investigation thus attempts to contribute to an improved understanding of these phenomena by observing how deep the penetration of Scandinavian Social Science research actually is at an internationally US dominated journal level as indexed by SSCI.

The paper is organised with a methodological discussion as the second section. This is followed by a World share analysis of the four Scandinavian countries Denmark, Finland, Sweden, and Norway, 1989-98. This leads in the fourth section to a trend analysis for the same period in running five-year periods of the development of this share by country. The publication activity in the form of publications published per mill. capita in the four countries in two five-year periods is followed by a development analysis of the Social Science research profiles for each of the Scandinavian countries 1989-93 and 1994-98. The nine central disciplines outlined above are indexed for each period by country. In particular for the recent period 1994-98 the Scandinavian world share is given for each discipline and the Scandinavian research profile is compared to the world profile of the nine areas. The penultimate sixth section demonstrates the citation impact of the OECD countries during two periods, 1992-96 and 1994-98 relative to the World, and includes a specific analysis of the Dutch situation in the selected fields, since the Netherlands in many ways seems comparable to Scandinavia. The paper concludes with a discussion of findings.

2. Methodological discussion

Hicks[2] provides a very thoughtful and detailed analysis of the problems and parameters involved in applying bibliometric indicators to Social Science research publications, in particular as represented by SSCI (1999). The paper reviews the literature examining SSCI coverage in order to understand the prospects and limits as to Social Science bibliometrics and points to some promising possibilities. Her main reasons as to why comprehensive coverage of *all* Social Science literature in SSCI is limited adhere to three parameters. 1) The literature is fragmented and book publishing is an important vehicle for research distribution. 2) Citations to books are difficult to obtain comprehensively, and from books impossible to monitor in the current database environment. 3) The national literatures are generally not covered outside the US.

Hicks[2] (p. 201) summarises the problems stating that the evidence she examined suggests that books comprise at least 40 % and possibly as much as 60 % of the total Social Science literature. Books are very highly cited individually and collectively account for 40 % of citations. Citations to and from books are distributed differently from citations to and from journal articles. She concludes (p. 202) that journal-based Social Science indicators will be problematic given the heterogeneous literature of the domain. The SSCI indexes refereed journal articles; so paper counts based on it will represent a smaller fraction of the literature than do natural science indicators (p. 212). However, as stated by *Hicks*[2] (p. 213) and earlier on by *Nederhof* and *van Wijk*[1], there are signs that Social Science is becoming more international. If attempts are made to eliminate non-scholarly publications from consideration, the share covered by SSCI rises dramatically, in particular in some fields like Economics. Hence, the rationale behind the present investigation is to analyse this international journal article visibility and citation impact for a particular region in selected Social Science fields. Thus, the investigation cannot claim to monitor the entire research output of the domain in the Scandinavian region, nor does it assess the coverage of the Scandinavian output in SSCI.

Earlier analyses of the Scandinavian Social Science research demonstrate a degree of international visibility. *Kyvik*[7] (1988) found that approximately 50 % of the social scientists from Norwegian universities published in a foreign language compared to 80 % of the scientists 1979-81. However, 75 % of the former published also in Norwegian against only 35 % of the latter group. *Kyvik and Larsen*[8] observed later the international collaboration and contact networks, primarily of Norwegian scholars in relation to research performance; more recently the same authors explored the extent to which a small country like Norway is integrated in the international science communities. The latter analysis[9] (1997) covers S&T as well as the Humanities and Social Science disciplines. *Luukkonen, Persson, and Sivertsen*[10] looked into the intra-Scandinavian collaboration and its effect in the sciences (1991), and *Andersson and Persson*[11] investigated further the collaborative patterns in a Nordic setting, including an econometric measure of language communality (1993). *Ingwersen´*s publication analysis of the online SCI/SSCI versions[5] showed that, during the period 1988-96, the Scandinavian research productivity in the Social Sciences reached half of the corresponding S&T world share in 1996. In that analysis duplicates were removed online between the scientific fields within domains but not between the S&T domains, and all document types were included. The S&T domains included Biology; Biomedicine; Clinical & Social Medicine; Chemistry; Geosciences; Physics & Mathematics; and the Technology areas. That all the document types are included means that the S&T World share (3.6 %) is a conservative estimate because Scandinavian S&T researchers are found to publish less conference abstracts and letters than the rest of the World[5] (p. 8-9). However, more than 25 percent of the SSCI indexed

material from Scandinavia consists of book reviews, letters, etc. One might hence argue that this 1998 investigation, by covering the total output, somewhat blurs the central research contributions and hence the comparative results between S&T and Social Science at journal level. By applying NSI the comparative results become more realistic because NSI covers only journal articles, research notes and review articles. From 1992/93 the product includes meeting abstracts as well but mainly in the natural science fields.

In contrast to the online SCI/SSCI versions, in which the individual journals are assigned several subject categories, journals (and their articles) are only assigned one CC subject field in NSI. Overlaps between fields within the same CC edition are thus eliminated; but overlaps between fields from different editions as well as deriving from international collaboration persist. These limited overlaps influence the national World share results equally at the (de)nominator levels for the total Scandinavian S&T output, Table 1. Due to the aforementioned more restrictive NSI document type characteristics and a slightly extended and up-to-date analysis window the average S&T World share for Scandinavia during the period 1989-98 increases to a more realistic 4.5 % than shown by *Ingwersen*[5] and *Ingwersen* and *Wormell*[6] (p. 490). The present results, however, may contain a minor (not estimated) overlap between Language & Linguistics and the other eight fields due to different CC editions. That overlap is not regarded influential on the overall results.

2. International Visibility - Journal Literature in Selected Social Science Fields

Following NSI the aggregation of the nine selected fields of Social Science constitute 253.360 research publications for the window 1989-98. The Scandinavian share is *2.5 %* on average, i.e. 6.360 publications, predominantly in English language journals.

Table 1 displays the actual number of publications issued in the nine fields aggregated during two five-year periods by the Scandinavian countries and in the World. The table also displays the percent distribution of Scandinavian publications for 1989-98 in total, relative to the World. Further, the average S&T World share for each country is shown for comparative reasons. The data applied to that analysis derives also from NSI. The Scandinavian subtotal contains in principle the overlap constituted by Scandinavian co-authorship. However, an online test in SSCI for the given period of intra-Scandinavian collaboration shows a co-authorship percent of only 1.6 and is not regarded relevant for the overall result. The shown World shares are thus regarded realistic and reliable. Diagram 1 details the development of the annual publication World share in percent over running five-year windows, for each Scandinavian country.

For Scandinavia as well as for the World we observe, Table 1, a steady growth over the period which approximates 40 percent for all the countries. The highest Scandinavian visibility is reached 1994-98 with 2,9 percent. This figure represents 64 percent of the average Scandinavian S&T World share for the period.

It is interesting to note that the *Norwegian* world share in the selected Social Science fields is *identical* to the S&T World share for Norway. This is not peculiar. The phenomenon may be caused by the fact that certain Scandinavian, mainly Norwegian, language journals are regarded by ISI to belong to the central Social Science journals. By being included into SSCI/NSI they can be regarded similarly *international*[1] as, for instance, a UK-based journal which commonly publishes UK research. Evidently, such national journals contribute to the international visibility of the issuing country in the databases. In the other Nordic countries the World shares approximates ½ of the national S&T World shares.

Table 1. Selected Social Science fields: Publication activity, Scandinavia 1989-98, the average National World shares, and the corresponding national S&T World share. Source: NSI, (Institute for Scientific Information, USA), 1999.

	1989-93	*1994-98*	*1989-98*	**% of World**	*S&T avr.%*
Denmark	569	799	1.368	**0.54**	*1.0*
Finland	482	634	1.116	**0.44**	*0.9*
Norway	669	974	1.643	**0.65**	*0.6*
Sweden	893	1.340	2.233	**0.88**	*2.0*
Scand.	2.613	3.747	6.360	**2.51**	*4.5*
World	122.279	131.081	253.360	100	
Scand./W %	*2.14*	*2.86*	*2.51*		

Diagram 1 demonstrates the same growth pattern in more detail. The growth in Sweden is steeper than in the other Scandinavian countries, passing the 1.0 % mark 1994-98. Norway´s maximum percent share is 0.73, and Denmark passes the 0.6 mark with Finland on 0.5 during the same current period. As the only country showing a period of decreased visibility Finland demonstrates a decline in visibility 1989-95.

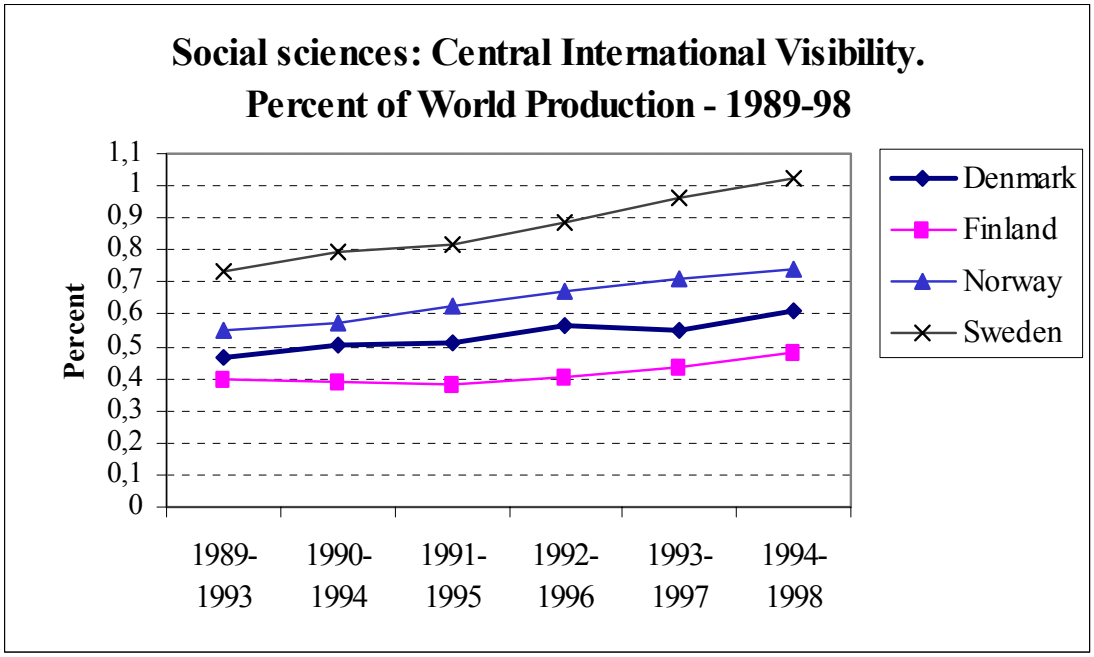

Diagram 1. Source: NSI 1981-98, Institute for Scientific Information (USA), 1999.

As in almost all S&T domains *Sweden* is also the leading Scandinavian country in the selected Social Science fields. However, in contrast to these domains, Sweden is followed by *Norway as the runner up*. This observation is not peculiar when familiar with the Norwegian research behaviour in the domain. The trend in Norway has for decades been to adhere more to Anglo-American research traditions than, for instance, in Denmark where Central European research traditions often have prevailed, except in economics, management, and library and information science.

From Table 1 and Diagram 1 we may conclude that the Scandinavian international journal article visibility in the selected central Social Science fields *currently is increasing* and *quite strong*,

also compared to the overall visibility of the S&T domains from which they are not far behind. In fact, the international visibility is in line with that of Social Medicine[6] (p. 491) and for Denmark and Finland similar to that of Geoscience. Despite the US bias in the SSCI one may conclude that the overall Scandinavian penetration internationally in some selected Social Science disciplines is substantial enough to make *publication analyses at journal article level feasible indeed*. However, the journal article visibility does not mirror the entire Social Science research productivity due to book publishing and national journal article production not represented in the international databases.

3. International publication activity

Diagram 2 demonstrates the *publication activity indicator* 1989-98 relative to Scandinavia. As shown above the international publication growth is substantial during the period for the Scandinavian region. *Norway* has the highest research activity measured in publication activity per mill. capita[2]. It is the only country above the Scandinavian average (Index 1.0) and acts as the research locomotive of the region. One may here compare to the fact that the number of annual publications per mill. capita for *Norway* in NSI is 38 on average vs. 27 publications for Scandinavia as a whole during the period. The selected Social Science fields are the *only* disciplines, including the S&T domains, in which Norway is the leading nation from an activity point of view in Scandinavia. The same pattern was also demonstrated in the online survey[5] based on SSCI for all the Social Sciences. *Denmark* decreases its activity marginally and is on par with *Sweden* 1994-98. Finland´s development is slower than the continuous growth pattern shown for Scandinavia (Index value 1.0), possibly due to the mild fall-off at the start of the 1990s, Diagram 1.

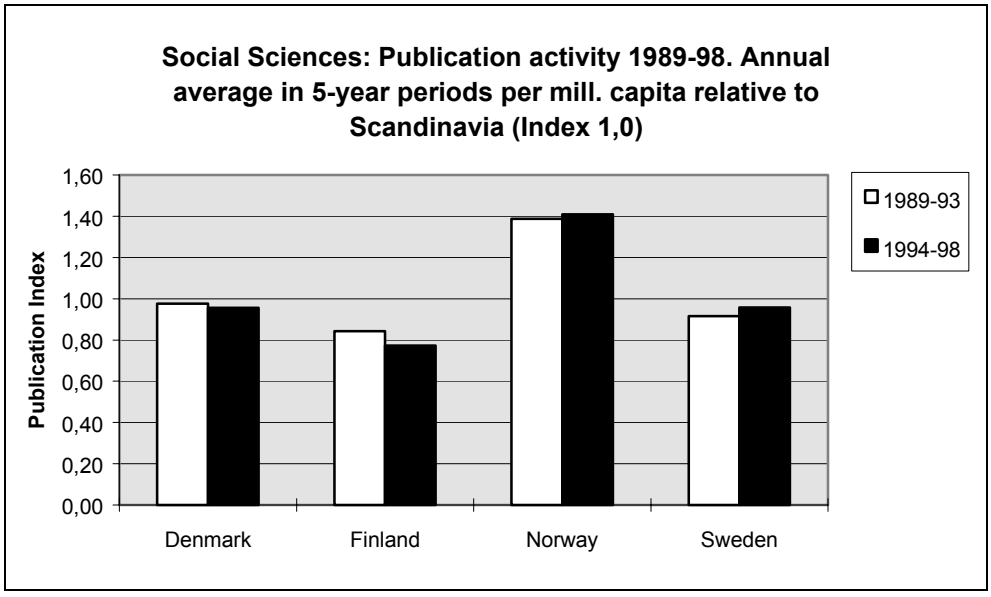

Diagram 2. Publications, Scandinavia: **Index 1,0 =** 1989-93: *22;* 1994-98: *32.* Source: NSI, 1999 (ISI)

4. The International Scandinavian and World Research Profiles: Nine Selected Social Science Fields

In this analysis the volume of publications for each Scandinavian country has been divided into two periods: 1989-93 and 1994-98. The second five-year period portraits the present situation

for the selected Social Science fields, Table 2; it corresponds also to that time slot which shows a slight increase of activity growth for Sweden and Norway, Diagram 2. The nine fields from NSI have been distributed over the national publication volume for each period as well as aggregated for the World. The resulting research profile for each country constitutes the major national research foci in international perspective of journal article production per period. For each period and country the sum of publications corresponds to the index value: 100. It becomes thus possible to follow the *relative* development over time of the national research profiles. The individual profiles are displayed as Diagrams 3-6. The national index values per period are given below the diagrams.

Table 2. Selected Social Science research areas: Volume of publications *1994-98* in the four Scandinavian countries; the Scandinavian profile in percent; the comparative World profile; the Scandinavian World share in percent per field; the top country World share in field = **Bold numbers** identify the most productive country in field. Source: NSI (ISI, USA), 1999.

	Denmark	**Finland**	**Norway**	**Sweden**	*Total*	Scan.Profile	World Profile	Scan / World %	Top Country %
Communicat.	12	23	19	**34**	88	*2,3*	3,1	*2,17*	0,84
Economics	345	222	302	**486**	1355	*36,2*	25,4	*4,07*	1,46
Education	21	39	46	**51**	157	*4,2*	9,8	*1,22*	0,40
Language	68	52	69	**125**	314	*8,4*	6,4	*3,75*	1,49
Library/InfSc	**81**	52	21	24	178	*4,8*	7,1	*1,91*	0,87
Management	75	70	53	**162**	360	*9,6*	10,0	*2,75*	1,24
Political Sci	100	67	**220**	161	548	*14,6*	14,6	*2,86*	1,15
Soc. Policy	27	37	53	**135**	252	*6,7*	6,8	*2,83*	1,52
Socio/Anthro	70	72	**191**	162	495	*13,2*	16,9	*2,24*	0,86
Total	799	634	974	1340	3747	*100*	100	*2,86*	

Table 2 demonstrates the strong position of *Sweden* among the Scandinavian countries in the majority of research areas in actual volume of publications, in particular in *Economics*, although some areas are marginal in terms of output, such as Communication and Education, and Library and Information Science in Sweden. Among the areas secondary in volume, however, *Norway*, as the most active country per capita, Diagram 2, holds strong positions in *Political Science & Public Administration* as well as in *Sociology & Anthropology. Denmark* is the leading country only in *Library & Information Science* research during the period, with a World share of 0.9 %, corresponding to 40 % of the Scandinavian output in the field. Compared to most Danish S&T disciplines this percentage is very high; see for instance the case of Danish Biomedicine[12] (p. 42).

Since Table 2 shows the breakdown of the national number of publications, shown in Table 1, we may observe in which research areas Scandinavia as such (and the individual countries) hold strong positions in terms of World shares. *Economics, Language & Linguistics, Political Science & Administration* and *Social Policy & Work* are all on or above the average Scandinavian World share (2.86 %). In particular the areas of *Economics* and the *Linguistics* show quite high international visibility with approx. 4 % of the US dominated World output each.

A glance at Table 2 demonstrates for each country that, for instance, *Sweden* in Economics, Linguistics, and Social Policy produces 1,5 % of the World output respectively and 1.2 % in Management; Norway covers 1,2 % in Political Science and stands for 0,9 % of the publications in Sociology & Anthropology. These visibility figures are on par with or above the average percentages for the individual countries in most S&T fields[5], and far above the average national visibility, shown on Table 1. In these research fields of Social Science it is fair to say that some of

the Scandinavian countries demonstrate a publication behaviour *similar to that of Scandinavian S&T,* i.e. they are strongly represented internationally in published articles. For those fields and countries there exists no need for sticking to the prevailing myth that SSCI does not display reliable informetric measures concerning international journal visibility. If reliable in the S&T domains it becomes thus also meaningful to apply the areas to bibliometric analyses. Very recently, this point was stressed by van Raan in relation to research assessments in which the analyses are seen as complementary of peer reviewing[13]. Only Educational research demonstrates a World share at national and Scandinavian level too low to be considered for bibliometric analysis in a meaningful sense.

To sum up, aside from the field of Economics which is quite international in itself across Scandinavia, Sweden demonstrates the highest degree of internationalism, except for some few fields like Education and Library and Information Science. Norway also penetrates the international landscape in a couple of fields, like Denmark in information Science and Language & Linguistics. Finland is so far less international in the selected fields aside from Economics. These differences across disciplines and countries are presumably caused by differences in national research traditions and policy, and probably also by international recognition. Aside from Education research and Economics, all the countries interestingly enough have *at least one Social Science field in a strong international position*.

Finally, Table 2 provides an idea of the general *Scandinavian research profile 1994-98*. We observe the predominance of Economics, followed by two secondary areas: Political Science and Sociology & Anthropology. Language & Linguistics and Management studies constitute a third cluster of research areas. The profile pattern is roughly similar to the US dominated World profile represented by the same nine research areas. However, there are differences. US Economics is less dominant than in the Scandinavian profile, but still the top field followed by Sociology/Anthropology and Political Science. Management and Social Policy have similar positions and strengths as in Scandinavia, but Educational and Information Science research hold much stronger positions at World level. Pearson´s correlation coefficient $r = 0.929$ (α=0.005; CV^r=0.798) may suggest that the Scandinavian *region* generally speaking seems to mirror the Anglo-American research pattern in the selected Social Science fields.

4.1 Denmark´s research profile in selected Social Science areas

The Danish research profiles of internationally visible research areas in the journal literature demonstrate some changes over the periods, Diagram 3. *Economics* is the constant top area (47 % vs. 43 %), followed in both periods by *Political Science & Public Administration* (12,5 %). However, *Linguistics*, including Language studies, has dropped from its second position (13 %) down the list 1994-98, being replaced by *Library and Information Science* (10 %) and *Management studies* (9 %), in the previous period ranked quite low. Both the latter areas have more than doubled their output into international journals over the decade. Currently, *Sociology & Anthropology* keeps its position whilst *Educational research* and *Communication studies* are nearly invisible in the central international journal landscape. Some of these rankings may be due to the fact that certain Scandinavian Social Science journals published in English have been omitted by ISI from SSCI during the period. Their journal impact factors may have been too low to be included in the later period. One should note that the profile shown does not necessarily demonstrates the total research profile for Danish Social Sciences, as books and non-NSI journal articles are omitted from the analysis.

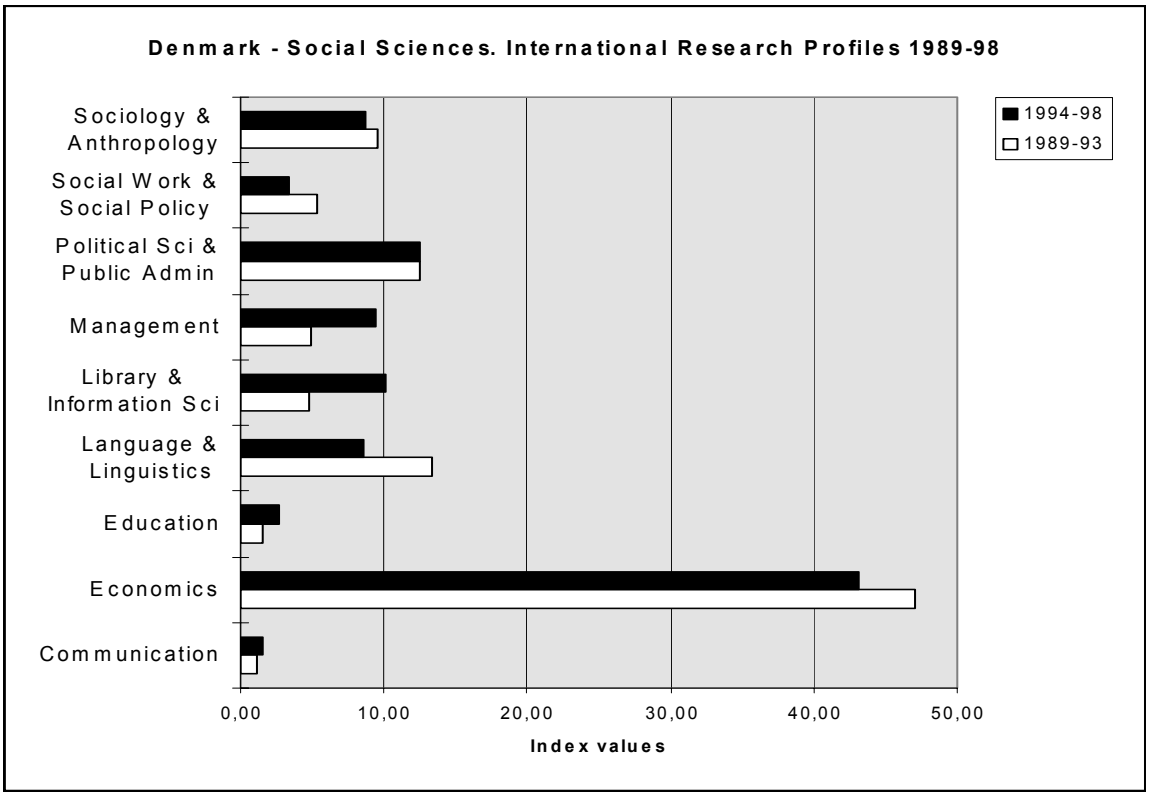

Diagram 3. Publications, Denmark. Index 100: (1989-93): *569* Publ. (1994-98): *799* Publ. Source: NSI, 1999 (ISI).

Briefly speaking, during the last five years Denmark has *one strongly visible* research area, *Economics*, followed by a cluster of scientific fields competing on much lower level but with rather identical percent values (approx. 9-12 %) like *Political Science, Information Science, Sociology & Anthropology* and *Management.* The profile demonstrates no strong secondary cluster of research areas as shown in the general Scandinavian profile above, Table 2.

4.2 Norway´s research profile in selected Social Science areas

The Norwegian research profiles, Diagram 4, show a pattern quite different from those of the rest of Scandinavia. *Economics* is ranked third, 1989-93, but first in 1994-98 while *Sociology & Anthropology* and *Political Science & Public Administration* continue to hold strong positions - as also shown in Table 2 above with Norway as the top country in these two areas. The three areas constitute a leading focus group during the entire period with percent values from 20 and above. The remaining 6 research areas are much less visible.

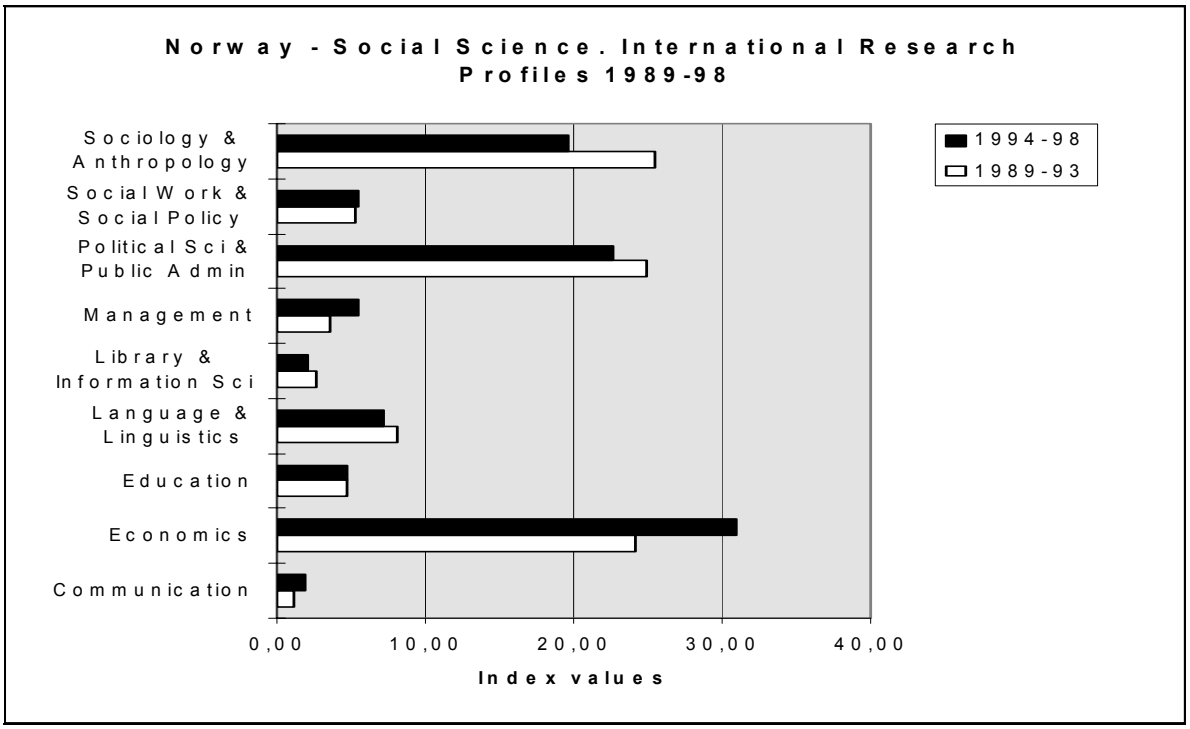

Diagram 4. Publications, Norway. Index 100: (1989-93): *669* publ. (1994-98): *974* publ. Source: NSI, 1999 (ISI).

From *Kyvik & Larsen*[9] (p. 250) we can observe that approximately 50 % of all Norwegian Social Science journal articles 1989-91 are published in non-Scandinavian languages, i.e. mostly in English. Since NSI mirrors a specific selection of journals (and thus articles) and other document types, like books and reports, are omitted from the present analysis, the *journal profile*, demonstrated Diagram 4, only show the top of the iceberg. The total research profile for Norway may be quite different. Probably, the same phenomenon occurs in the other Nordic countries, but we have no current indications to estimate differences between current national research profiles and international journal literature profiles. During the last period 1994-98 the Norwegian profile *pattern* looks – and is indeed - very fitting that of the World, Table 2, with Pearson´s $r = 0.9403$ (α=0.005).

4.3 Sweden´s research profile in selected Social Science areas

Like for Denmark, *Economics* in Sweden is the predominant research area counting for more than 35 % of the publication volume. *Library and Information Science* and *Communication studies* are nearly invisible in the international journal literature. The Swedish profile contains a secondary cluster of four areas from 10 % and above. *Political Science and Sociology* form not surprisingly part of this cluster but also *Social Work & Policy* and *Management* research are strongly visible in the international journal literature (above 10 %). The Swedish profile *pattern* 1994-98 resembles the Danish (and Finnish) ones, with the exception of Social Work & Policy (higher %) and the Library & Information Science areas (low % value). Pearson´s *r* for the Sweden/Denmark correlation is 0.931 and for Sweden/Finland 0.958 (α=0.005).

The Swedish profile pattern is not surprisingly more closely correlated with the Scandinavian one 1994-98 with $r = 0.979$ (α=0.005).

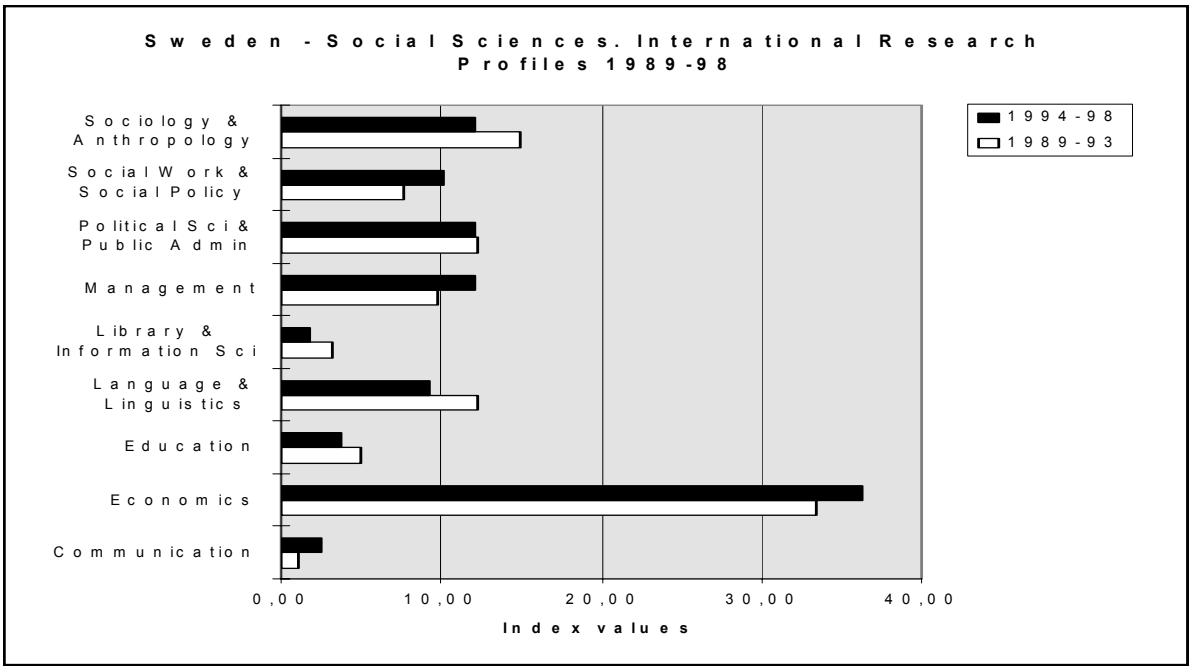

Diagram 5. Publications, Sweden. Index 100: (1989-93): ***893*** publ.*;* (1994-98): ***1343*** publ. Source: NSI, 1999 (ISI).

4.4 Finalnd´s research profile in selected Social Science areas

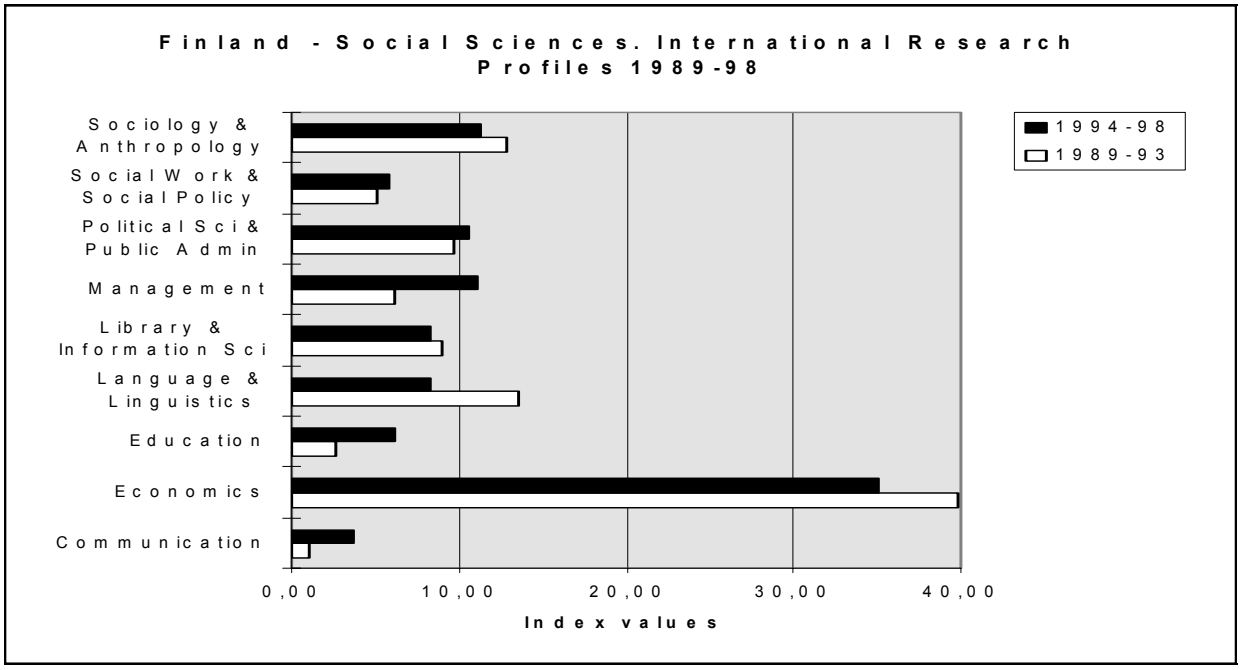

Diagram 6. Publications, Finland. Index 100: (1989-93): ***482*** publ. (1994-98): ***634*** publ. Source: NSI, 1999 (ISI).

Also focussing on *Economics* the Finnish research profile 1994-98 is highly correlated with that of Denmark, $r = 0.988$ (α=0.005), and contains the same differences confronted with Sweden:

Library and Information Science constitutes a fairly strong field of research and Social Policy & Work is a weak area.

4.5 Summary of research profiles for the international journal literature

One may state that the profiles of Denmark, Sweden, and Finland are rather similar 1994-98 by being highly focussing on *Economics* with 35-45 % of the output - to a much greater extent than the US dominated World profile with 25 %, Table 2. Quite far below in percent values (around 10 %) are clustered 4-5 research areas, among which are Political Science, Sociology & Anthropology, and Management. Sweden holds a relatively stronger position in Social Work and Policy research in the international journal literature. As shown above, the correlation between the three countries is very high, in particular between the Danish and Finnish profiles.
Norway demonstrates a quite different pattern consisting of a leading cluster of three strong research areas: Economics, Political Science & Public Administration, as well as Sociology & Anthropology. The *pattern is quite similar* to that of the US dominated World profile 1994-98 and may thus indicate a stronger Anglo-American attitude towards Social Science research than in the other Scandinavian countries. Pearson´s $r = 0.9403$ (α=0.005) for Norway demonstrates a quite robust fit between the two profiles[3] The only field constantly quite below the World profile percent value is *Education* research, with common national values of 2-6 % vs. the World percentage of approximately 10 %.

5. The Scandinavian Relative Citation Impact 1989-98 in Selected Social Science Fields

In this analysis the National Science Indicators (ISI, 1999) has been applied to the OECD countries in order to compare the Scandinavian countries with the leading industrial countries, including most of the European Union member states. The Diagrams 7 and 8 show the country ranking of the *relative citation impact*, i.e. relative to the World impact, 1989-93 and 1994-98.
The formula applied is the RCI by May[14], i.e.

$$\left(\sum_{1}^{n} cj \Big/ \sum_{1}^{n} pj\right) \Big/ \left(\sum_{1}^{n} C \Big/ \sum_{1}^{n} P\right)$$

- where *cj* and *pj* signify the citations

received and publications produced in a given time period by a specific country *j* for the range of nine NSI fields. *C* and *P* signify correspondingly to the number of citations received and publications produced in the same period in the World for the same range of nine NSI fields. The latter denominator is clear of the overlap made of the international co-operation but may contain a possible overlap between Linguistics and the other eight NSI fields. This overlap of fields is also present in the denominator for each country (*pj*) but is regarded insignificant.

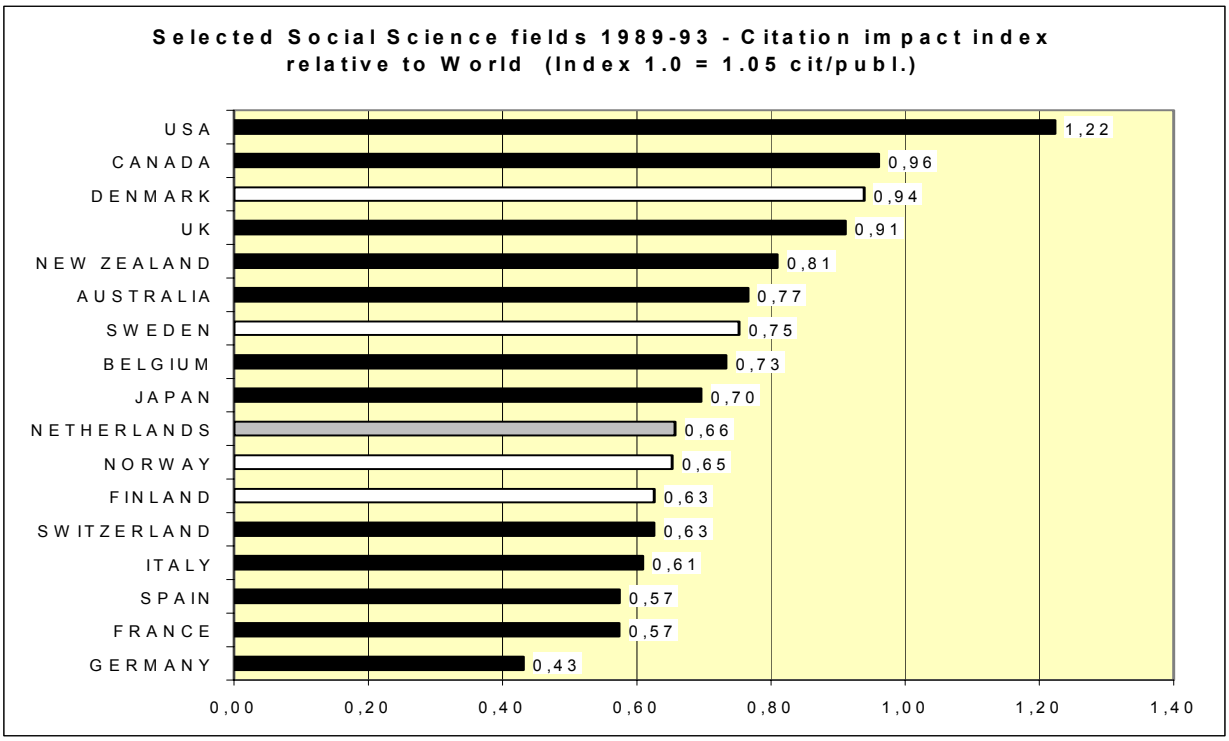

Diagram 7. OECD countries, citation impact 1989-93 relative to World. Source: NSI (ISI), 1999.

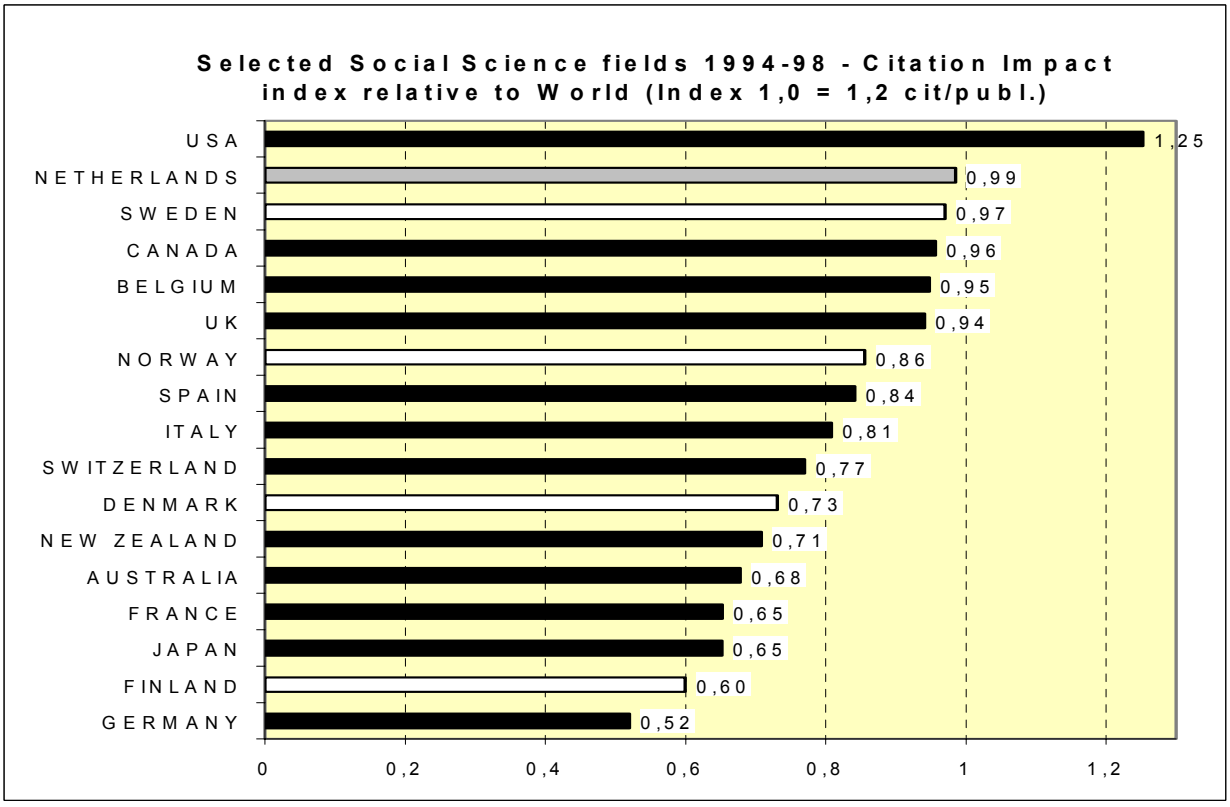

Diagram 8. OECD countries. Citation impact 1994-98 relative to World. Source: NSI (ISI), 1999.

We observe, Diagram 7, that only the US impact reaches above the World impact which amounts to 1,05 citations per publication during 1989-93. This implies, as mentioned above, that the

US impact is heavy on the social science domain in the SSCI[4]. However, *Denmark* ranks third, together with Canada and UK as the leading non-US cluster of high impact countries. *Sweden* ranks seventh somewhat below the mean OECD impact. The other major English speaking nations, Australia and New Zealand, are top-ranked. The smaller countries like Belgium and the Netherlands are located together with Norway and Finland at mid-positions during this period with quite low relative impact factors (0.73-0.63). Finally, the large EU countries like France, Germany and Spain are ranked at the bottom with relative impact values of approx. half of the World impact. The ranking of the latter countries is not surprising since they traditionally are perceived as very national in their scientific culture in the Social Sciences.

In general, the small European countries with English as secondary language, like the Netherlands, Belgium and the Scandinavian countries, are all ranked well on the list 1994-98 with the Netherlands and Sweden as number two and three. Together with Canada, UK and Belgium the two countries constitute a high ranking cluster with relative impact close to or right on the World impact. The remaining Scandinavian countries are placed lower on the list with Norway as number 7 and Denmark falling down to the rank number 11. Denmark and New Zealand have both lost 20-25 % in relative impact since the preceding period. Finland maintains its relative impact (0.6) but looses ranking position. One observes that the average World impact has increased to 1,2 citations per paper.

Looking closer to the Dutch increase of relative impact and rankings, Diagrams 7-8, the publication and citation data demonstrate a growth rate for publications at 49 % and for citations at *157 %* from the first to the second period, see Table 3. The corresponding Danish growth rates are 40 % for publications but only 26 % for received citations; hence the decrease in the Danish ranking which primarily is caused by lack of received citations.

Table 3. The Netherlands. *Absolute citation impact* of nine selected Social Science fields during the periods 1989-93 and 1994-98. Impact figures in **bold** signify research fields with impact > 1.0 cit/publ. Source: NSI, ISI, 1999.

	1994-98			1989-93		
Netherlands	Citations	Publications	Cit / Publ.	Citations	Publications	Cit / Publ.
Communic.	68	74	0,92	16	27	0,59
Economics	1.514	1.146	**1,32**	509	709	0,72
Education	241	228	1,06	108	171	0,63
Lang.& Ling.	125	307	0,41	146	283	0,52
Info Sc.& Lib.	228	172	**1,33**	154	123	**1,25**
Management	469	318	**1,47**	118	115	**1,03**
Political Sc.	328	267	**1,23**	89	183	0,49
Social Work	110	101	1,09	92	110	0,84
Sociology	624	517	**1,21**	213	379	0,56
Total	3707	3130	1,18	1445	2100	0,69

Table 3 demonstrates the Dutch trend for the selected fields over the 10-year period. The only field showing a decrease in actual publications is Social Work. The correlation between the US dominated World profile 1994-98, Table 2, shows a Pearson coefficient $r = 0.919$ (α=0.005) which signifies a good fit, as did the Norwegian one in the selected fields. We may also observe the quite few fields - two - that equals or supersede the World impact (1.05) in 1989-93, compared to the following period with five fields above the World impact score, now increased to 1.2.

In order to analyse the fields versus the OECD countries in terms of high impact countries and research areas, Table 4 demonstrates absolute impact figures > 1.0 in six of the nine selected fields, i.e. excluding the least productive ones. In case of impact placed between 0.75 and 0.99 the cell is coded grey.

Table 4. Absolute impact > 0.75 cit./publ. per OECD country in 6 selected Social Science fields, 1994-98. **Bold** figures signify the highest impact country. Source: NSI, ISI, 1999.

1994-98	Economics	Management	Pol. Science	Social Work	Sociology	Info./libr. Sc.
AUSTRALIA		1,11			1,01	
BELGIUM	1,44	1,49			1,33	
CANADA	1,35	1,5		1,24	1,15	1,13
DENMARK		1,16				1,06
FINLAND						1,21
FRANCE	1,29	1,43				
GERMANY	1,02	1,28				
ITALY	1,26	1,04				1,03
JAPAN		**2,08**			0,99	
NETHERL.	1,32	1,47	**1,23**	1,09	1,21	**1,33**
NEW ZEAL.				**2,03**		
NORWAY	1,33		1,03			1,1
SPAIN	1,19				**2,2**	
SWEDEN	1,65	1,48			1,14	
SWITZERL.	1,29					1,15
UK	1,49	1,22		1,15	1,3	
USA	**1,85**	2	1,19	1,31	1,82	1,15
World	1,50	1,62	0,94	1,16	1,33	1,03
Legend:		: citation impact 0.75-0.99 (absolute impact)				

The table demonstrates clearly the high impact of Economics in all countries but Japan. But also *Management Studies* and *Sociology & Anthropology* as well as *Information & Library Science* display frequently high values. We note as above, Table 3, that the Netherlands is represented in all the fields with substantial impact figures, and that most countries have at least two fields with an impact above 1.0 and often several fields with an impact above 0.75. Note that *Spain* shows a 2.2 impact value in the Sociology & Anthropology field and that *Japan* reaches 2.08 in Management studies. New Zealand passes the 2.0 impact mark in Social Work. As the impact scores signify the *expected* averaged field impact at national as well as World levels we may observe the differences the fields in between. For instance, in Library and Information Science the expected average IF is 1 citation per publication at World level, but 1.5 for Economics.

For the Scandinavian region we observe that compared to Table 2, the most productive fields per country are also well recognised internationally in the journal literature, with the exception of Social Work and Policy in Sweden. Overall, Table 4 indicates the degree of international recognition of the OECD countries and hence the fields and countries for which informetric analyses of journal literature are relevant and feasible at present.

6. Discussion

The interesting observation is that the *International Visibility*, measured as the percent coverage of the World journal article production in an area, in many fields per country is quite high (0,9-1,5 %) and hence often on par with the general S&T visibility for the country. This implies that the Scandinavian and other small EU countries in many instances currently succeed in penetrating and mix with the Anglo-American dominance in Social Science. This also means that national dependent cultural and social-economic phenomena can be of value to researchers from other regional environments. Otherwise the articles might not be accepted for publication by the international community and their impact not as substantial as it is.

Although SSCI/NSI is biased towards Anglo-American journals and some research areas may be better represented than others in terms of journal selection, the patterns shown in the diagrams and tables portrait those fields of the selected nine social sciences in Scandinavia that are internationally anchored. These are Economics, Political Science, Social Work & Policy, Language & Linguistics, and, for Denmark and Finland, also Information & Library Science. To Norway Sociology & Anthropology is a substantial field and in Sweden also Management studies. In the Netherlands all the mentioned fields are highly visible and well cited internationally. Other Social Science fields, such as Education and Communication studies, may very well be at an international level in qualitative sense but the scientific culture of such fields may dictate a more national or inter-regional (Scandinavian) approach and distribution of results. From Diagram 1 one may conclude that during recent years all the Scandinavian countries in the selected Social Science disciplines actually have succeeded in *increasing their positions* internationally by reaching 60 percent of the ratio obtained by the S&T domains in general. In fact, the Scandinavian Social Sciences display a visibility in line with, for instance, Chemistry or Social Medicine.

Norway is clearly the most active country among the Nordic countries in terms of publications per capita; but Sweden provides most research volume. However, compared to the Dutch activity, Table 3, the Scandinavian region just manages to maintain a leading edge (Table 1). The Danish contribution ranks the country as the second most active one among the Nordic countries. Norway presents a research profile that differs from those of the other Scandinavian countries: three research areas are highly productive in contrast to the profiles of the other three countries, with Economics as the main research focus. Norway, like the Netherlands, also display the research profiles that best fit the international US dominated profile. It is interesting to observe the increasing international focus in Denmark and Finland on the field of Library and Information Science, because the number of university departments researching this domain is extremely small in both countries. However, the field is known for its international Anglo-American research traditions.

In international impact *performance at journal literature level* the Scandinavian countries are still well off, but loosing some ground. Sweden is currently being ranked third among the OECD countries and Norway as number seven. Denmark and Finland are presently falling behind other European countries. On the other hand, *all* the OECD countries, also France, Germany and Spain, possess often two or more Social Science fields with impact factors just below or in line with the average US dominated impact.

Due to the quite substantial international visibility of the research areas outlined above, and the relative increase of citation impact monitored through the 90s, one may conclude that the SSCI is increasingly relevant as a tool for international informetric analyses of Non-US countries. Indeed, the index does display a substantial bias towards the US. However, it provides in addition valuable insight into 5-7 of the nine selected fields of Social Science research, at least with respect to the journal literature from Scandinavia and other smaller EU countries with English as second language, like the Netherlands or Belgium. Hence, for the NW region of EU the usability of SSCI as a tool for information retrieval as well as research evaluation at international scale seems quite

meaningful. For this region the decay of the prevailing myth, that SSCI does not display feasible and reliable informetric measures, is fast in progress.

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Notes:

[1] The Norwegian journal Tidsskrift for Samfundsforskning are among the ones included into SSCI/NSI. For 1997 its JIF was calculated online to 0.24 which is a score substantial enough compared to other journals in the domain. The proportion of non-Norwegian items citing the journal is 32 %.

[2] Statistisk Tiårsoversigt, 1998. Mean values capita 1989-97 (Mil): DK: 5.2; FI: 5.1; NO: 4.3; SE: 8.7.

[3] Pearson´s *r* for the World profile vs. Sweden 1994-98: 0.877; Denmark: 0.854; Finland: 0.892 (α=0.005).

[4] The US World share of publications for the nine research fields in NSI actually declines from 64% to 59% and the citation share from 78.3% to 73.3% with respect to the two periods, 1989-93 and 1994-98 respectively.