Bibliometric research evaluations, Web of Science and the Social Sciences and Humanities: a problematic relationship ?

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Abstract:

This paper presents results from a study on two main issues in many bibliometric studies, namely language of publications and coverage issues. While these two phenomena are hardly considered as problematic in most bibliometric analyses in the life sciences, the natural sciences and biomedicine, these two topics do play a role while discussing the application of bibliometrics in the assessment of research and scholarly activity in the social sciences, humanities, and law. From a wider international perspective, we will further focus on German research performance in the social sciences, humanities, and law, over a period of nearly 30 years how coverage issues and language of publication have influenced scholarly activity and the international visibility of research output in these domains when written in German. Similar studies in other European languages will show the same pattern: given the current coverage of the well-known bibliometric databases and an increasing focus of English as *Lingua France* of modern day scholarly activity, the current bibliometric tools are insufficient to support the actual research assessment of scholars in the social sciences, humanities, and law. This asks for a broader focus on a wider variety of publication types, which are not always intended for a purely academic audience.

Introduction

Bibliometric techniques are frequently used nowadays as support tools for assessment exercises, sometimes under the guidance of peer review committees, sometimes as stand-alone tools. Varying between very crude and sometimes even flawed bibliometric indicators, to various very advanced bibliometric indicators, the role of bibliometrics in research assessments in various layers of the science system is becoming increasingly more important. While national and supranational governments apply macro bibliometric analyses in their policy, such as in France, the Netherlands, and the USA, as well as the EU, many university boards carefully watch the annual rankings of universities to appear, and national assessments of scholarly disciplines in various countries rely often on bibliometric studies accompanying peer review.

In the Netherlands bibliometric analyses have accompanied research assessments, as a support tool for peer review since the nineteen nineties. This only concerned scholarly disciplines in which the application of bibliometric techniques related to the specific publication culture of the discipline under assessment. So in many assessments in the natural sciences and biomedicine the peer review process was supported by a bibliometric analysis. Also in some of the engineering disciplines, such as mechanical engineering, chemical engineering, etc, bibliometric analyses were used to create quantitative measures of research performance. Among the social sciences, only in the field of psychology, bibliometrics was considered a valuable attribute to the research assessment procedure. In other social sciences, the humanities, and law, bibliometric studies were not considered as a support tool to the peer review process. The main reason for that decision was the inability of the bibliometric community to create valid and representative indicators of the scholarly activities of the respective research communities, which would do right to the different communication patterns observed in these domains.

The social sciences and humanities stand in a different position towards society as compared to the natural, life and biomedical sciences when it comes to the mission of scholars in the SSH domains (SSH stands for Social Science

and Humanities, in this paper we include Law as well, as the characteristics we find there are of a similar nature). These scholars study soci(et)al and cultural issues, that may have a direct impact on policy makers, managers, people in the legal system, and the general public. The scholars in the SSH domains have to respond to a demand that requires specific types of (scientific) communication, such as policy papers, legal advisory papers, a public appearance or a publication for the general public, e.g., in a newspaper. Those publications, often related to national topics, and targeted at professionals, politicians, or the general public, are frequently in the national language. This does not mean that these types of publications can-not have an international impact, they are simply not primarily intended for that purpose.

Next to this difference of the mission orientation of the SSH domains compared to the sciences and biomedicine, we would like to indicate differences of a more fundamental nature, often indicated by referring to the notion of "Two cultures" (Snow 1959, 2007). And although this claim about the ease of making such a distinction might be 'misleading and obstructive' (Collini, 2012), the fact remains that bibliometrically we can see important differences between the STM disciplines (which stands for Science, Technology, & Medicine) on the one hand, and the SSH and Law disciplines on the other hand (see for example Nederhof 2006). We will now sum up a number of such differences between the SSH domains and the STM domains. A first important difference relates to the pace of conducting research, and the way scientific knowledge ages in time: while in the STM domains scientific knowledge become obsolete within 3 to 4 years, in the SSH domains this might take even up to ten years or more, while books published in the SSH domains do influence the field sometimes for even decades (Martin et al., 2012). As mentioned above, scientific research in the SSH domains often have a local focus, while the research in the STM domains is more internationally oriented. This often is reflected in the degree of international cooperation found in the STM domains as compared

to the SSH domains: while it is completely normal to have a high degree of international cooperation in the former, we find a much lower degree of international cooperation in the latter. Furthermore, the teams involved in the STM domains are much larger as compared to the SSH domains, where scholars often conduct research solely, and publish solely or in small teams, while in most STM domains research teams are larger (Seglen and Aksnes 2000, Horta and Austin 2011, Moed et al 1998). In relation to the ageing of scientific knowledge mentioned above, a next difference relates to the diversity of communication patterns in the SSH domains as compared to the STM domains. Making a distinction between journal publishing and book and book chapter publishing on the one hand, and a distinction between scholarly and non scholarly publications on the other hand, we observe a variety of publication types in the SSH domains not or hardly present in the STM domains (Hicks, 2004). Finally, we want to focus on the language of publication. While Garfield already indicated that English was the *Lingua Franca* of modern day sciences (Garfield and Welljams-Dorof, 1990), and non Anglo-Saxon publishing in the STM domains also influenced national impact scores in biomedicine (van Leeuwen et al, 2001), in most SSH domains publishing in other languages than English is still quite common. Another important finding of that research was the increasing influence of English as the main language of communication in scientific journal publications as covered in the WoS.

In this paper we will discuss the issue of language of publication, in particular in the light of the SSH domains in the Web of Science database, against the perspective of the coverage of these domains in the Web of Science database. This will make clear that these two features of scholarly publishing in the SSH domains have serious consequences for the representation of the output of the SSH domains within the WoS database (the coverage issue), as well as the representation of the impact of the WoS database (the language issue), particularly against the possibilities and limitations of research assessment procedures.

Data and methodology

In this study we will use the publications in the Web of Science in the period 1982 to 2011. We will use publication output data as extracted from an in-house bibliometric database created at CWTS for bibliometric purposes covering the period 1991-2011, while we use the references tracing back to 1982 as first year in our analyses. *Language* is an entry in our analyses through the language indication in the WoS database. *Coverage* is analysed through the so-called <u>internal</u> coverage approach, in which the references given in a publication are traced back for the previous ten years, in order to establish to what degree publications in WoS do refer back to other WoS publications. This share per publication can be quantified for larger sets, and as such is indicative for the degree of focus on WoS covered journal literature. Consequently, this can then be interpreted as the extent to which WoS covered literature and the publishing in these journals is an appropriate assessor for the adequacy of WoS covered journal literature as basis for bibliometric assessment studies (a method developed by CWTS at Leiden University, see van Leeuwen & van Raan, 2003, van Leeuwen 2005, Moed 2005). This internal coverage analyses is starting from within the WoS, consequently the analysis from outside the WoS ("external coverage analysis") focuses on the total output of a unit, which would mean in this case study focus on the complete national output of Germany. In this study we will focus on the publication patterns of German scientists across some 35 larger disciplines, which are actually aggregates of the so-called Journal Subject Categories (JSCs) as used by Thomson Reuters in the Journal Citation Reports. These disciplines were designed in the former Dutch Observatory of Science and Technology, the NOWT (NOWT, 2010).

The indicators we will use in the study are the number of publications, indicated by **P**. Next, we present a field-normalized impact indicator, the Mean Normalized Citation Score, indicated as **MNCS** (Waltman et al, 2010). Finally, we show the **% Refs CI**, which indicates the share of the reference lists of a set of publications that refer to the WoS covered journal literature itself (the 'internal coverage' indicator).

Results

The bigger picture: a national perspective.

In this section the results of the study are presented, but before digging into the main issues of coverage and language, we would like to present some general characteristics of the development of the impact of German science in the last decade, in order to create some kind of wider perspective of the specific results on coverage and language. The publication output of Germany and comparator countries consists of publications of the type *articles*, *reviews*, and *letters*. As comparator countries, we selected eleven European countries. These countries are Austria, Belgium, Denmark, Finland, France, Great Britain, Ireland, the Netherlands, Norway, Sweden, and Switzerland, of which only Great Britain and Ireland are English language countries.

The analysis of the scientific impact in WoS of these twelve European countries in displayed I n Figure 1. The impact indicators displayed is **MNCS** (see Waltman et al, 2012). We observe impact growth for all countries involved, but also notice some very interesting differences among the group of comparator countries for Germany. We find three smaller countries (Switzerland, Denmark, and the Netherlands) with the highest impact, a picture that supports many other bibliometric findings (for example the Dutch Observatory reports, EU-reports, etc.. However, when we look at the impact scores for Great Britain, Germany, and France, countries that are relatively of similar volume, , we notice at least one remarkable fact: Great Britain has a higher impact as compared to the other two countries !

Figure 1: Impact development of twelve European countries, 2003-2011.
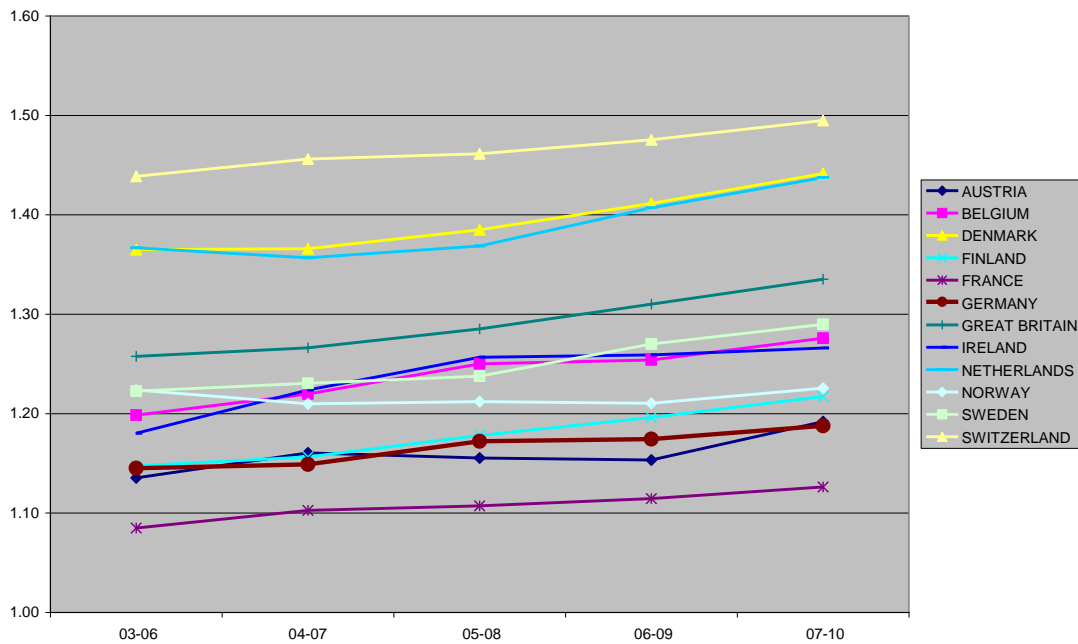
The explanation for this fact has been indicated in the past (Garfield and Welljams-Dorof, 1990, van Leeuwen et al, 2001), and next to a possible intrinsic difference in 'quality' of the research conducted in and published from Great Britain as compared to Germany and France, there is one factor that influences the impact results, and that is language of publication.

As a previous study on German biomedical research has shown, some 10% increase in impact can be expected by focusing on English language publications from for example Germany and France (van Leeuwen et al, 2001), while it also has been shown recently that universities in Germany and France would improve their rank positions in global rankings when only publications in English would be taken into account (van Raan et al, 2011a and 2011 b).

## Coverage of the Web of Science in terms of disciplines covered

At this point of the argument, we would like to focus on the coverage of the WoS database when it comes to the journals and the related disciplines in the database. The issue of coverage can be discussed in two ways, the first via the comparison of a list of publications with the WoS database (much easier to conduct for say an institution than for a country as a whole). This method is coined as the external coverage (from the perspective of the WoS database). The second method consist of an internal analysis, and is based on the share of references given in any set of publications to other publications in the WoS database. The volume of that share is indicative of the relevance of the journal literature for the publications you are studying (so a large share of WoS focused references indicates a high degree of relevance of these publications for your own communication pattern). Taking this argument somewhat further, we can hypothesize that such a strong focus, and thus relevance of journal literature communication, is indicative for the validity of applying journal literature based metrics in an assessment environment.

Whenever we take a look at the complete WoS database, the coverage is distributed across disciplines as shown in Figure 2. By means of colours we indicated the various groupings of disciplines and their shares of references to-wards other WoS journal literature. Previous research has shown that it is quite complex to create baselines for this type of groupings, as that depends on the composition of the groupings (see Moed, 2005), or on the moment in time one analyses this phenomenon (e.g., see van Raan et al, 2007). These characteristics do create a certain arbitrariness around such groupings, until now this has been not solved in bibliometric research. The top ranking group (running to over 80% of the references in WoS literature) consists mainly of biomedical and natural sciences disciplines, while the second group, indicated in blue and reference shares between 80-60%, consists mainly of engineering and natural sciences disciplines, together with Psychology and Health sciences. The third group, indicated in green and ranging from 60-50%, covers engineering and social sciences disciplines (Economics & business and Management & planning). The next group, indicated in orange stretches between 50-40% shares of references to WoS literature, mainly relates to social sciences disciplines, while the lowest positioned group of disciplines, indicated in red, and covering reference shares from 40% downward, only covers humanities and law disciplines. It is obvious that for the two lowest positioned groups WoS based bibliometric techniques are at least problematic, and for the lowest positioned group this is clearly not a valid way of assessing research quality.

Figure 2: Coverage of disciplinary output in WoS, 2010.
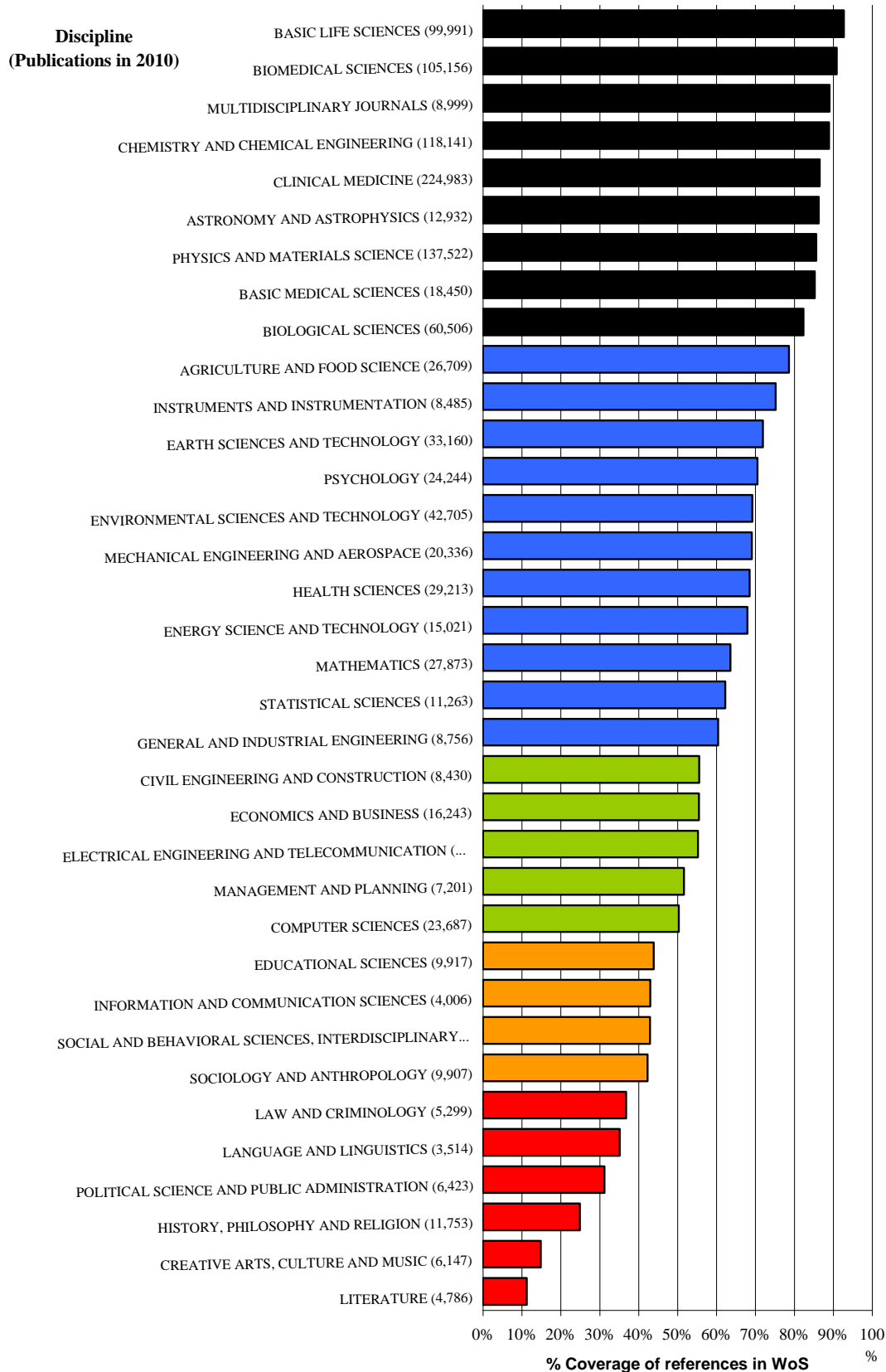
From the description of Figure 2 we may conclude that applying bibliometric techniques in the social sciences and humanities related disciplines, including law, are at least problematic. In Figure 4 we conduct a similar analysis as the one underlying Figure 2 for German output in the social sciences, law and humanities disciplines. We do this in a historical perspective, by analysing and comparing twenty years of output and thirty years of references, produced by German scholars in the social sciences, law and humanities disciplines. For every publication year in this analysis, we focus our citation perspective ten years back in time. So for 1991 publications, we analyse all references given towards the period 1982-

1991, while for all publication of 2011, we focus on references given towards the period 2002-2011. This ensures that we have similar length perspectives for every year.

But before we enter that coverage analysis focusing on Germany, let us first take a short look at the development of referencing behaviour by German scholars in the SSH domains in general. Figure 3 contains those trends in the length of reference lists between 1991 and 2011, with five year intervals. This analysis clearly shows that the referencing of SSH scholars in Germany has become more extended, as such following international trends of growing lists of references.

Figure 3: Length of references lists of German output in social sciences and humanities disciplines in WoS, 1991-2011.
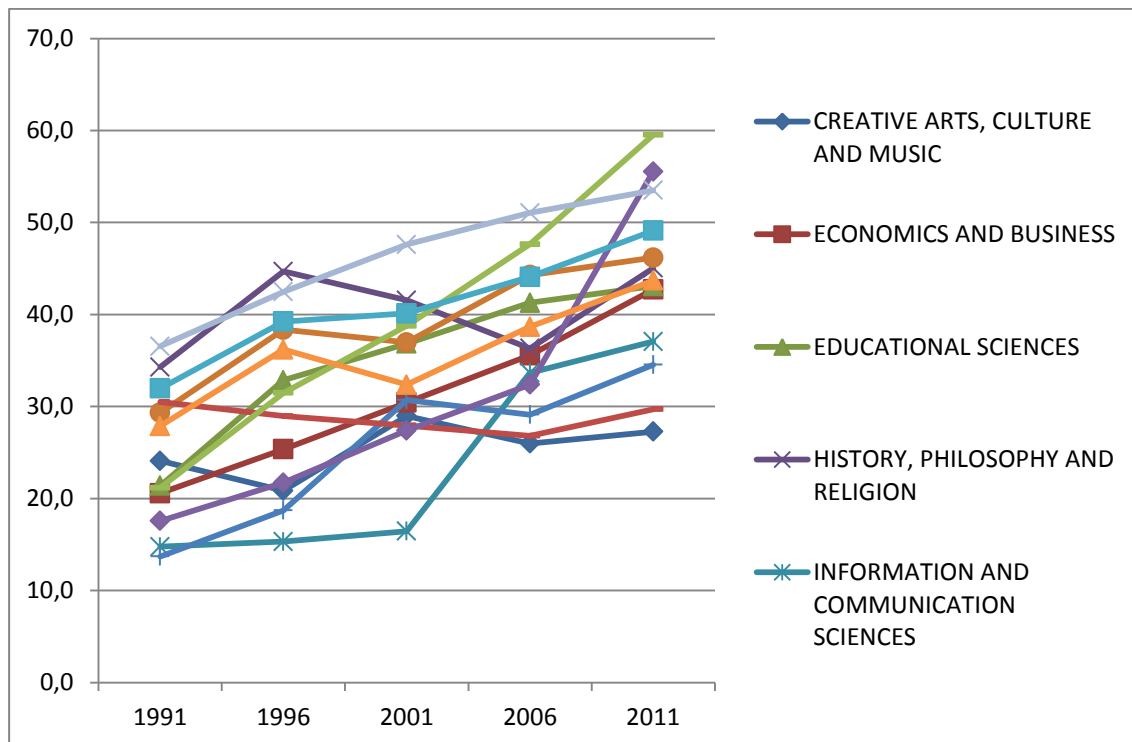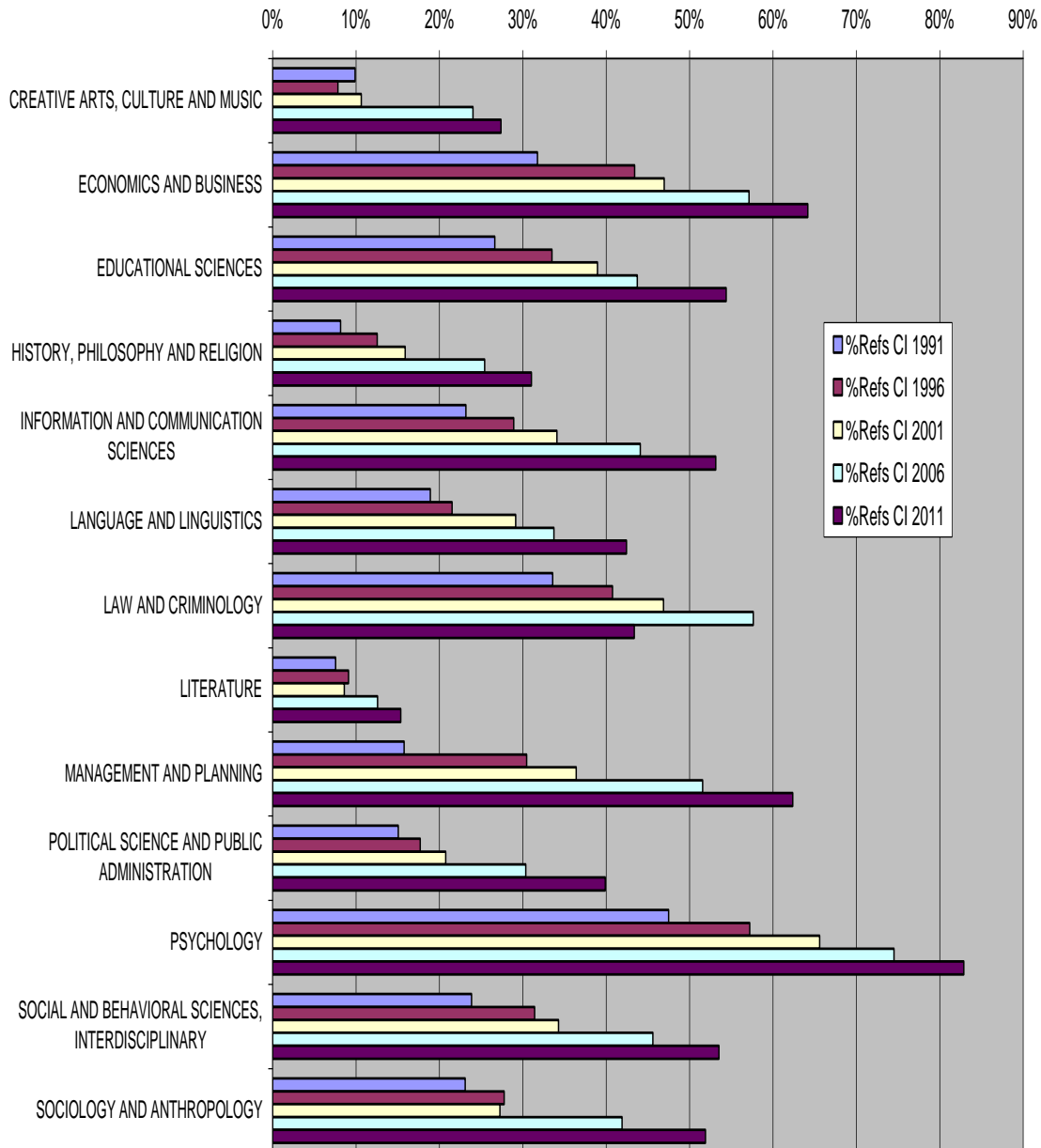
Figure 4: Trends in coverage percentages for German output in social sciences and humanities disciplines, 1991-2011.

The data in Figure 4 clearly show that for German output in the social sciences and humanities, the percentages coverage in terms of references inwards the WoS database was low in 1991, and has increased ever since. Remarkable fact is here the divergence of the disciplines of the social sciences as compared to the humanities disciplines: while the social sciences disciplines tend to become more and more focused on the journal literature as covered by the WoS database, the humanities and

law keep hanging at roughly around 40% of the references focused on WoS journal literature. This is illustrated in Figure 5, which is a close-up of the last period presented in Figure 4, namely the share of references given by these disciplines in 2011 towards other WoS covered journal literature. For reasons of clarity, we have indicated the disciplines in exactly the same colour codes as previously for the whole WoS database.

Figure 5: Coverage percentages for German output in social sciences and humanities disciplines, 2011.
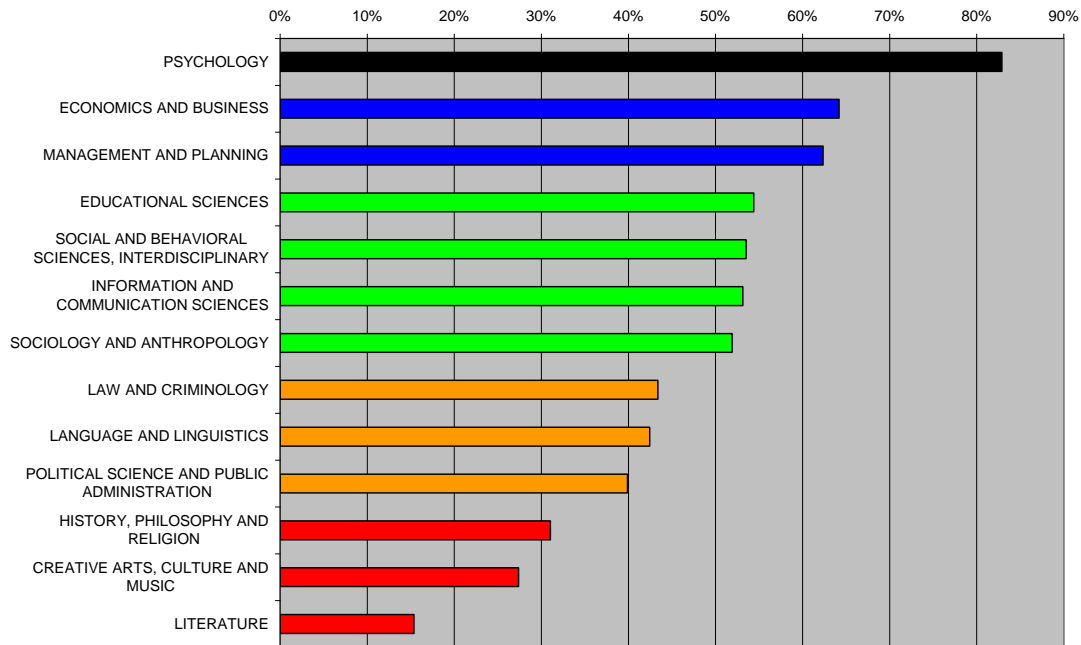
## Back to language as a factor of influence in bibliometric analyses

Compared to the global situation, as indicated by the results in Figure 2, some of the fields in the social sciences (Psychology, Economics & business, and Management & planning), German researchers have an even stronger focus on the WoS covered journal literature in their 2011 publications. So next to the trend of growing focus on international journal literature (as displayed in Figure 4), we also notice a relatively stronger focus of German scholars as compared to their international colleagues. on WoS covered journal in the period 2010/2011 by German scholars in the social sciences domains. However, this does not hold so strong for the humanities and law. However, this does not mean that application of bibliometrics in the social sciences domains is a valid approach when conducting research assessments of German scholarly activity in the

SSH domains, as will be shown when we to refocus our attention back to the issue of language.

Figures 6 and 7 below show the languages effects of German publications (in the combined output in the SSH domains) in both English and German on output and impact scores, covering the period 1981-2011.

In Figure 6 we clearly observe the change in focus in the German scholarly community when it comes to publishing in internationally oriented journal literature as covered in the WoS database, as already in the period before the new millennium, an increase of output in English is observed, which accelerates from then onwards. The output in German language in the WoS database is more or less stable in time, with some 700-800 publications per 5 year.

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Figure 6: Trends in German output in social sciences and humanities disciplines, in both German and English language, 1981-2010.
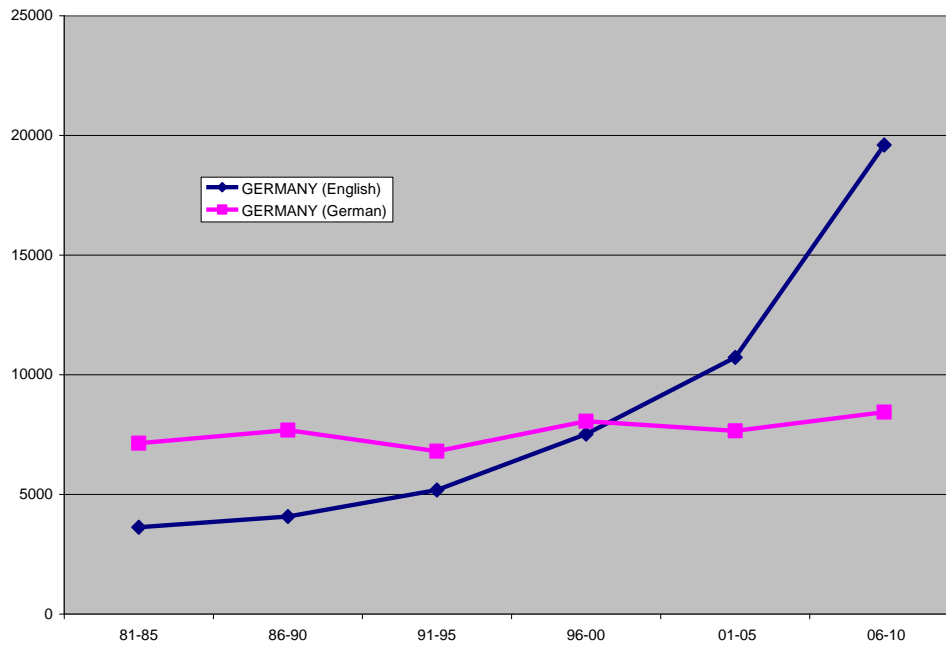
If we then change our focus on the field normalized impact (MNCS) of these two components of German SSH output have, we find a completely different picture (Figure 7). From the early years of our analysis, we observe a difference in impact, and this gap has increased ever since: while the English language part of German SSH output has increased its' impact, rising to even 20% above worldwide average impact level in the period 2006-2010, the impact level of the German language part of the German SSH domains output has decreased to a level of 60% below worldwide average impact level in 2006-2010.

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Figure 7: Trends in impact scores for German output in social sciences and humanities disciplines, in both German and English language, 1981-2010.
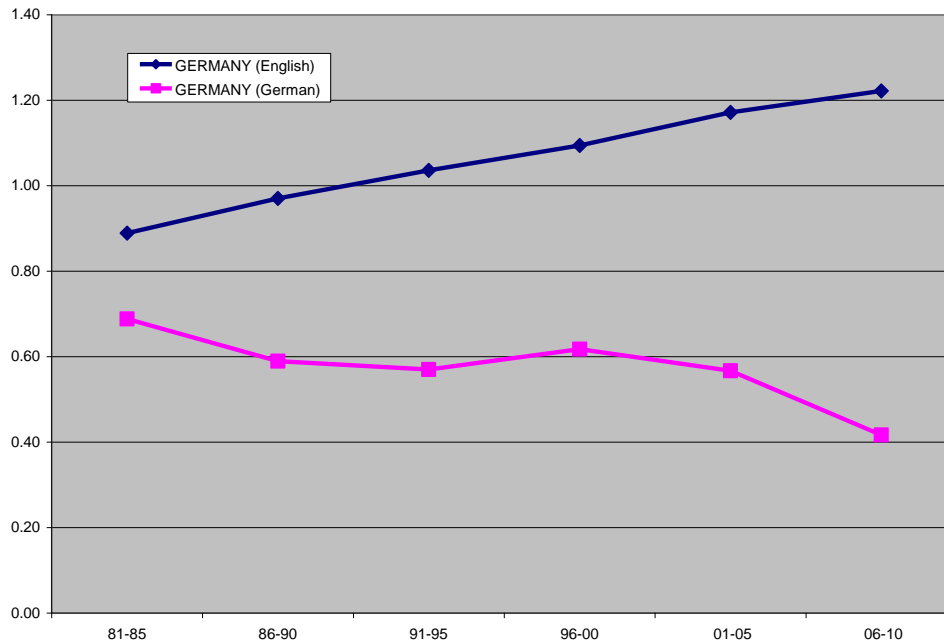
When we next look at the various disciplines within the German SSH research landscape, we observe some variations in the patterns in both output and impact.

In Tables 1a and 1b we present the trends in output and impact scores for German output in the social sciences and humanities disciplines, disaggregated into the English and German language components. The trends are made by grouping output in blocks of five years. With respect to output trends, as presented in Table 1a, we observe that the English language

component of German output in the SSH disciplines increases over time, while the German language component either increases, or shows a stable pattern (e.g., in Economics & business, History, philosophy & religion, to name a few). In some disciplines, we notice a strong increase very early in the period of thirty years we are studying, while in other disciplines this increases takes off somewhat later in time.

Table 1a: Trends in German output in SSH disciplines, English and German language, 1981-2010

	81-85	86-90	91-95	96-00	01-05	06-10
CREATIVE ARTS, CULTURE & MUSIC (English)	219.0	236.8	299.5	359.8	379.3	558.8
CREATIVE ARTS, CULTURE & MUSIC (German)	683.0	816.0	841.8	998.0	845.5	922.3
ECONOMICS & BUSINESS (English)	612.3	717.0	919.3	1508.8	2547.8	5196.3
ECONOMICS & BUSINESS (German)	253.3	321.0	303.0	289.0	238.0	259.0
EDUCATIONAL SCIENCES (English)	159.8	186.0	202.3	248.5	349.5	824.5
EDUCATIONAL SCIENCES (German)	526.3	392.8	475.5	495.0	539.0	817.0
HISTORY, PHILOSOPHY & RELIGION (English)	352.0	438.3	476.3	632.8	966.8	1540.0
HISTORY, PHILOSOPHY & RELIGION (German)	1573.3	1837.0	1394.3	1719.5	1687.0	1761.3
INFORMATION & COMMUNICATION SCIENCES (English)	157.0	174.8	212.3	272.0	297.5	517.0
INFORMATION & COMMUNICATION SCIENCES (German)	342.5	341.0	154.0	204.0	178.0	126.3
LANGUAGE & LINGUISTICS (English)	189.3	211.3	234.0	361.3	509.0	743.0
LANGUAGE & LINGUISTICS (German)	531.0	501.3	388.3	578.0	477.5	540.0
LAW & CRIMINOLOGY (English)	227.3	193.5	354.0	697.3	738.8	999.5
LAW & CRIMINOLOGY (German)	417.0	446.0	338.8	258.0	172.3	452.3
LITERATURE (English)	273.8	237.3	225.3	261.3	320.8	301.3
LITERATURE (German)	721.0	795.8	550.3	801.3	693.5	706.0
MANAGEMENT & PLANNING (English)	175.3	160.3	223.0	322.3	548.8	1268.8
MANAGEMENT & PLANNING (German)	117.0	137.0	131.0	149.0	151.0	202.0
POLITICAL SCIENCE & PUBLIC ADMINISTRATION (English)	416.0	431.3	444.0	457.0	607.8	1076.3
POLITICAL SCIENCE & PUBLIC ADMINISTRATION (German)	590.3	694.5	740.5	625.0	591.0	718.3
PSYCHOLOGY (English)	831.8	1140.8	1670.0	2607.3	3802.5	6212.8
PSYCHOLOGY (German)	1497.8	1526.8	1507.5	2015.5	2054.8	2225.8
SOCIAL & BEHAVIORAL SCI., INTERDISCIPLINARY (English)	320.3	265.5	315.8	370.8	573.5	934.3
SOCIAL & BEHAVIORAL SCI., INTERDISCIPLINARY (German)	39.0	19.3	75.0	11.5	2.0	17.0
SOCIOLOGY & ANTHROPOLOGY (English)	274.8	292.3	363.5	430.3	609.3	1119.8
SOCIOLOGY & ANTHROPOLOGY (German)	257.3	303.3	336.8	445.8	439.0	517.3

When we look at the impact development (Table 1b), we notice somewhat different trends. Here the divide between the two components is in general much more clear, as the English language component of German output in the SSH disciplines increase in time, while the impact of the German language component of German output in the SSH disciplines tends to decrease in time. A next observation is the relative high values for English language German output in some of the SSH disciplines at the end of the period under study (the last two year blocks, for example in the disciplines Creative arts, culture & music, Information and communication sciences, Political science & public administration, and Sociology).

Table 1b: Trends in German impact in SSH disciplines, English and German language, 1981-2010

	81-85	86-90	91-95	96-00	01-05	06-10
CREATIVE ARTS, CULTURE & MUSIC (English)	2.05	1.66	1.74	1.13	1.97	2.10
CREATIVE ARTS, CULTURE & MUSIC (German)	0.95	0.97	0.82	0.70	0.70	0.35
ECONOMICS & BUSINESS (English)	0.58	0.85	0.78	0.95	0.89	1.07
ECONOMICS & BUSINESS (German)	0.18	0.18	0.16	0.10	0.10	0.10
EDUCATIONAL SCIENCES (English)	0.64	0.69	1.00	0.79	1.44	1.32
EDUCATIONAL SCIENCES (German)	0.32	0.40	0.34	0.40	0.53	0.45
HISTORY, PHILOSOPHY & RELIGION (English)	0.86	1.11	1.20	1.05	1.26	1.21
HISTORY, PHILOSOPHY & RELIGION (German)	1.03	0.77	0.72	0.94	0.87	0.51
INFORMATION & COMMUNICATION SCIENCES (English)	1.20	0.96	1.09	0.98	0.97	1.52
INFORMATION & COMMUNICATION SCIENCES (German)	0.56	0.44	0.57	0.21	0.12	0.08
LANGUAGE & LINGUISTICS (English)	0.91	0.71	1.31	1.32	1.38	1.32
LANGUAGE & LINGUISTICS (German)	0.73	0.60	0.74	0.59	0.44	0.44
LAW & CRIMINOLOGY (English)	0.53	0.88	0.95	0.96	0.97	1.12
LAW & CRIMINOLOGY (German)	0.45	0.18	0.17	0.18	0.10	0.24
LITERATURE (English)	1.30	1.45	0.96	0.89	1.28	1.34
LITERATURE (German)	1.23	1.04	1.17	1.17	0.86	0.86
MANAGEMENT & PLANNING (English)	1.19	0.97	0.83	1.28	1.04	1.11
MANAGEMENT & PLANNING (German)	0.09	0.16	0.12	0.08	0.09	0.10
POLITICAL SCIENCE & PUBLIC ADMINISTRATION (English)	0.92	0.89	0.93	1.10	1.41	1.34
POLITICAL SCIENCE & PUBLIC ADMINISTRATION (German)	0.45	0.43	0.41	0.35	0.24	0.18
PSYCHOLOGY (English)	0.85	0.93	1.08	1.21	1.23	1.24
PSYCHOLOGY (German)	0.36	0.32	0.37	0.43	0.44	0.41
SOCIAL & BEHAVIORAL SCI., INTERDISCIPLINARY (English)	0.64	1.08	1.07	1.13	1.14	1.29
SOCIAL & BEHAVIORAL SCI., INTERDISCIPLINARY (German)	0.56	0.24	0.34	1.12	1.16	0.42
SOCIOLOGY & ANTHROPOLOGY (English)	0.93	1.09	0.92	1.31	1.27	1.46
SOCIOLOGY & ANTHROPOLOGY (German)	0.55	0.50	0.59	0.48	0.45	0.43

For three disciplines we show the development of output and impact in some more detail, as these three clearly illustrate the differences in output and impact scores.

The first discipline we show is History, philosophy & religion (Figures 8a and 8b). Here we clearly observe the larger output in German language, and an English language component of the total German output in this discipline that is rapidly increasing in volume over time. Impact wise, we notice an initial divergence, followed by a convergence, and next again a divergence. For Political science & public administration (shown in Figures 9a and 9b), we again observe a relative stable output in the German language, while the English language part surpasses the German part in volume around 2001-2005. The impact in this discipline shows a higher impact for the English language component from the early 1980's onwards, and that distance is impact level has only increased ever since. Finally, In Psychology (Figures 10a and 10b), the output of the English language component has surpassed the German language component already in 1991-1995, while the impact pattern resembles that of Political science and public administration, while the difference in impact has stabilized over the last periods.

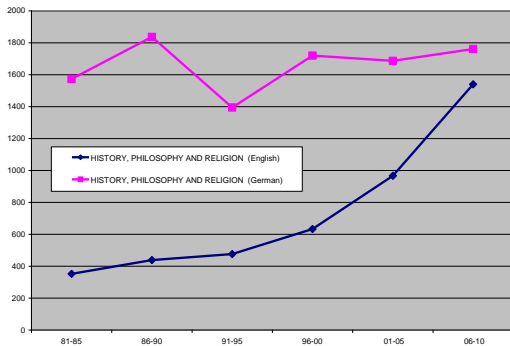**Figure 8a: Output in History, philosophy & religion, 1981-2010**

Figure 8b: Impact in History, philosophy & religion, 1981-2010
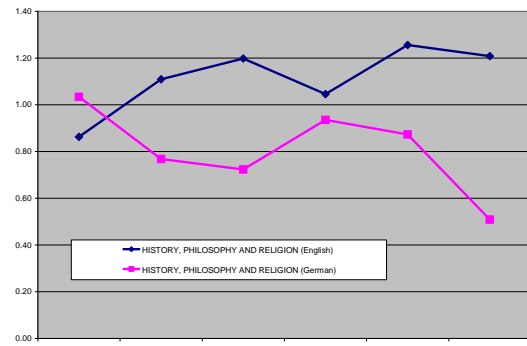

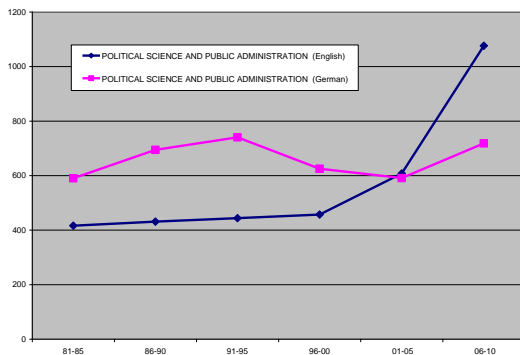**Figure 9a: Output in Political science & public administration, 1981-2010**

Figure 9b: Impact in Political science & public administration, 1981-2010
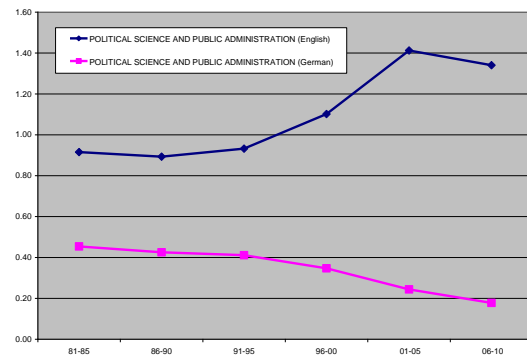

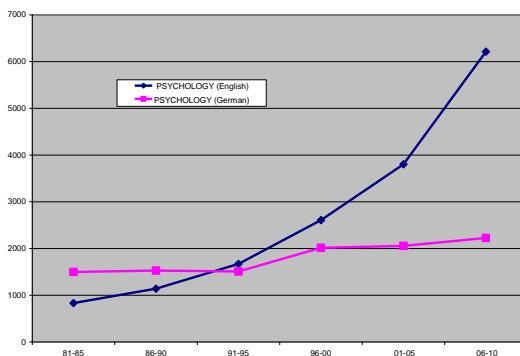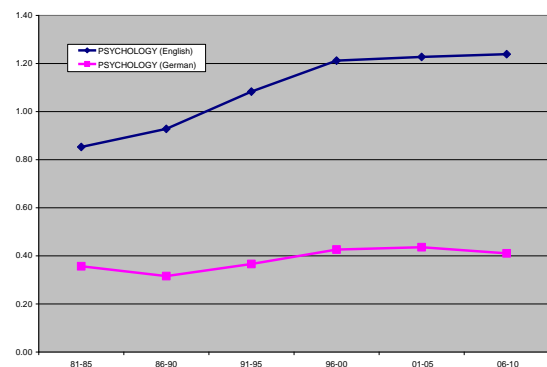**Figure 10a: Output in Psychology, 1981-2010**

Figure 10b: Impact in Psychology, 1981-2010

So we have seen that output in English language in the SSH disciplines has increased, while the German language component per discipline remained relatively stable. Another clear observation is the (much) higher impact levels related to the English language component of the German output in the SSH disciplines, while the impact of the German language part seems to evaporate completely.

Now that we have seen that the language of publication influences impact scores of German scholars in the SSH disciplines, we move our focus on the issue of coverage again, as the coverage analysis on further underlines the focus of German scholars in the SSH disciplines, and the relevance of WoS covered journal literature in their publication tradition. We show for three moments in time (1991, 2001, and 2011 publications) the focus on the WoS covered journal literature. We have chosen these three years, as these provide us with a ten year period back in time each, being very up-to-date with the 2011 publications. The results of this analysis are displayed in Figure 11. Here we show per discipline, and the two languages involved, for the three years men-

tioned, the coverage percentage as we presented previously in the study.

We clearly observe that for almost all disciplines the focus on the WoS covered journal literature increases when we look at the English language component per discipline in which German scholars are active. This is somewhat less well visible in the last period for Law & criminology. We also note that for some of the social sciences oriented disciplines the focus on WoS covered journal literature in the German language component also increases (Educational sciences, management & planning, Political science & public administration, Psychology, and Sociology & anthropology). However, we need to stress that this focus is still relatively low (below 60% of the references focused on WoS covered journal literature), which indicates that scientific communication to a large extent is focused on other types of scientific communication than international English language journals.. And this is thereby still too low in most cases to function as a solid basis in evaluation studies.

Figure 11: Trends in coverage percentages for German output in social sciences and humanities disciplines, in both German and English language, 1991-2001-2011.
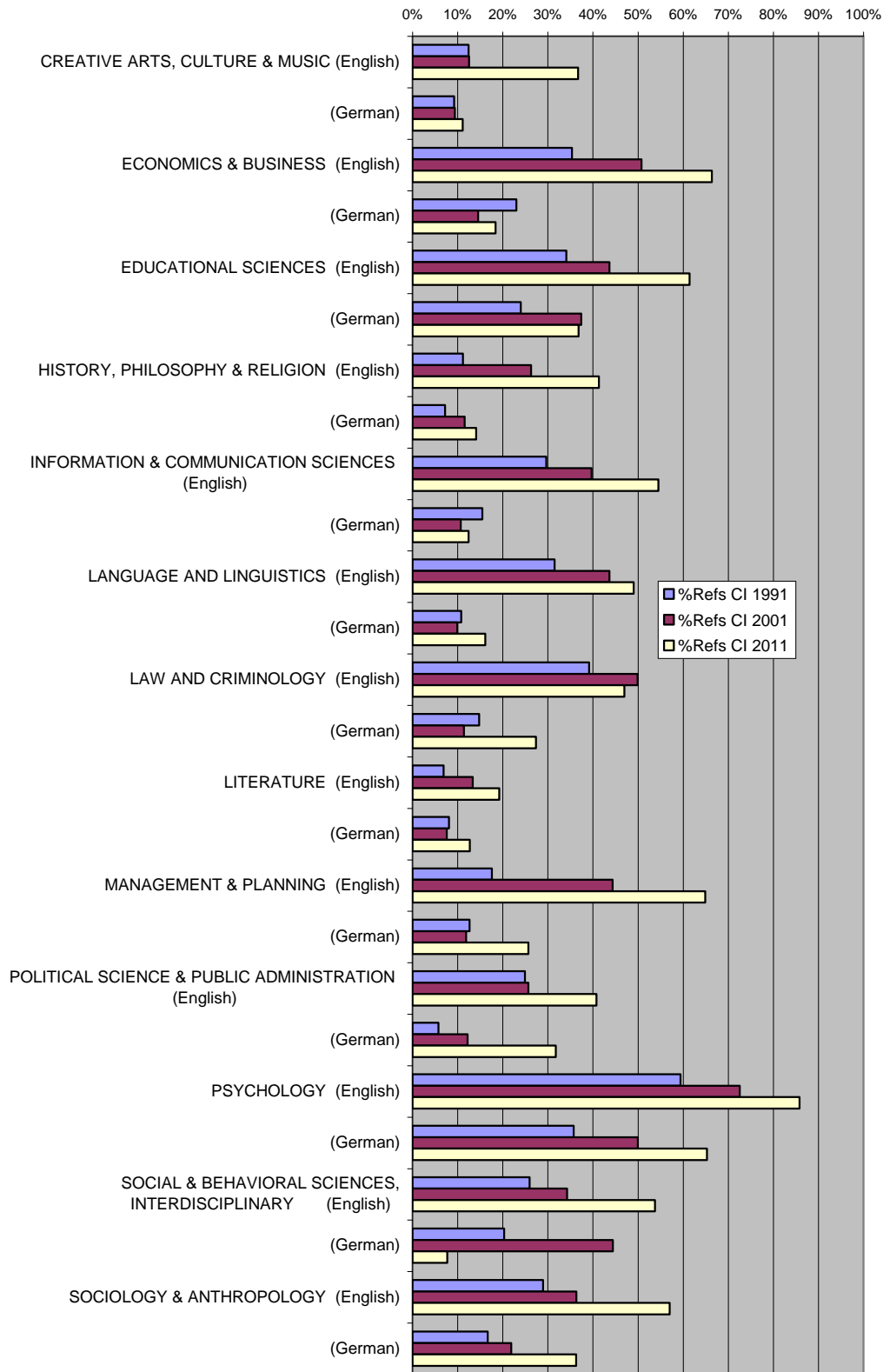
Conclusions and discussion

In this study we focused on the role of language of publication in a non-English language country, in the disciplines in the social sciences, humanities, and law. It is well known that bibliometric techniques can be very helpful in research assessments in the natural and life sciences and biomedicine, as the main communication medium in these domains are internationally oriented journals, preferably written in English. These journals are very well covered in large bibliographic, multidisciplinary databases such as WoS and Scopus. However, for scholarly activity outside the natural and life sciences and biomedicine, bibliometric techniques based upon the journal literature as covered in these databases do not function adequately in research quality assessments. This applies to the engineering domain, but particularly to the social sciences, law, and humanities disciplines. In this study we focused on output in these disciplines from a German perspective, thereby combining the factors of coverage of these domains in the WoS with the element of language of publication.

We clearly noticed that publishing in English is becoming more and more common for German scholars in the SSH disciplines, as they focus their work more and more on the journals in the WoS, and the references relate more and more to other journal literature in the WoS. Another important finding was that the volume of German language output in the SSH disciplines was relatively stable in time, which indicates that a certain level of scholarly communication in German language is a permanent factor in the German scholarly output in the SSH disciplines. For this part of the output of German scholars in the SSH disciplines, we did not find a similar increasing focus on the WoS covered journal literature. And this could not be explained by any significant structural differences in length of reference lists attached to the two parts of German output in the SSH disciplines, as these tend in general to become longer over time, but also show fluctuations in various directions.

This suggests that separate patterns of scholarly communication exist within Germany, consisting of national language scientific communication and internationally oriented English language scientific communication, which perhaps occurs in more large non-English language countries in Europe, such as France, Spain, and Italy. We then expect there to be a domestic audience, and a more international audience, where the domestic audience can take note of what is going on in the English-written part of the national output in the disciplines as well, while the international audience does in general not have insight in the non-English language written publications from that same country. A nice example of a bibliometric case study is a recent publication on two German universities in the field of Political science (Chi, 2012), in which both the internal coverage and the external coverage are analysed, in the context of the language issue playing a role in German social sciences research. The study shows the variety of outputs, both in terms of output types (books, chapters, conference contributions, etc.) as well as in various languages, against the relative poor coverage of the field of political science in the WoS.

For some domains, such as national law, national politics, social and economic policy, users of scientific outlets of social sciences and humanities are also fellow countrymen/women for whom the use of an international medium does not make much sense in general. This does not preclude national issues from also being debated within an international scientific context. The conclusion must be that these disciplines have a much broader and more stratified audience than merely international scientific colleagues. The communication of knowledge to this audience has to be evaluated in an appropriate manner. Even though researchers in the humanities and the social sciences may communicate primarily with their peers, due to their publication and communication culture they stand in a different position towards their non-peer audience, and they tend to be more involved in the public debate than their colleagues in other research fields. Audiences may partly be found outside the scientific community, as is usual for legal studies or policy-oriented research. The audiences of social sciences, humanities, and law scholars are not simply to be considered as passive consumers of research, since they are in many cases the best informed and concerned users of the information.

This brings us to a conclusion that quality assessments of scholarly activity in the social sciences, the humanities and law are highly problematic, if not impossible, to be based upon publications covered in the Web of Science (as in this study was shown) or Scopus only (see also Moed et al, 2002). Both the coverage as well as the language issue, causes to make both the output as well as the impact of influence dimension to a large extent invisible. Therefore, standard bibliometric techniques as commonly applied in research

quality assessments in the natural and life sciences and biomedicine should better be avoided. A recent study on the complete output of a university, across all faculties and based upon a wide variety of publications types (van Leeuwen et al, forthcoming) as well as policy developments in the Netherlands in the realm of social sciences and humanities clearly show that much more can be done when it comes to creating a wider empirical basis upon which research assessments can be based.

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