Performance and Structures of the German Science System 2013

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0. Summary

Germany has always ranked fourth in terms of the absolute number of journal publications worldwide over the past decade, with the highest annual growth rate in 2012 among the top five productive industrialized countries. Germany's share of publication has kept stable at the level of 7.2% since 2008 though it experienced a slow but continuous decrease in the first part of this decade, which could be mostly interpreted by the dramatic growth of publications contributed by threshold countries, especially China and India. The difference of publication share between Germany and Great Britain, which could be largely regarded as the results of preference for English-language journals in the SCIE and the SSCI database, however, has increasingly narrowed after the gap reached a peak in 2007. The citation number for Germany slips one spot to fourth place, which is overtaken by China in 2012. Germany's citation share is 2.9% higher than its percentage of all publications in 2010, and the gap of shares has showed continuously increasing trends, implying Germany's citation share rises faster than its publication share. At the same time, Germany has maintained a steady upward trend and ranked third based on the observed citation rate since 2007. However, Germany experiences a rather large fluctuation based on the SR values in the latest three years for unclear reasons, from the highest point of 10.0 to the lowest point of 4.7. Germany has comparably quickly increased its IA figure that reaches a similar level like Great Britain and ranked third among top ten productive countries since 2008. In terms of the number of the top 10% highest cited papers, Germany also ranks fourth worldwide, with the highest compound annual growth rate (CAGR) among the top five productive industrialized countries of 4.1%. At the same time, Germany has promoted its share of highest cited papers within its total number of publications, ranking from ninth to fifth in 2011, with the figure of 16.2%; it ranks second among the top ten productive countries, only following the USA. In terms of the number of conference proceedings, Germany has also ranked fourth worldwide.

Spain, with outstanding bibliometric performance, shows the highest CAGR of their absolute number of publications and citations, the fastest increase of the publication share as well as citation rate among observed industrialized countries, and the largest growth of citation share worldwide except China, as well as obvious rises of SR and IA values, indicating its efforts on improving scientific capacity and academic impact.

Among BRICS, which are five representatives of emerging countries,[1] China not only becomes the second largest productive country, but also owns the third largest citation number now. Its differences between the publication share and the citation share have continuously and quickly narrowed over the decade though the citation rate for China remains below the world average as do those of other threshold countries. At the same time, China and South Africa show very positive SR values in combination with still very negative IA values due to

[1] For better comparability, Mexico was added in the respective analyses as suggested byJim O'Neill from Goldman Sachs (http://www.merit.unu.edu/archive/docs/hl/200611_Sergey%20-%20Conference%20Report.pdf).

their publications published in journals with limited international visibility. Improving innovation capability but not increasing publication numbers in poor impact journals is what they have in common.

1. Introduction to this issue

The essential of science is to discover the intrinsic characters of nature, which sets up a knowledge system in terms of fundamental rules about the objective world. Such a science system is the precursor and resource for the development and innovation of technologies. That is also the reason why the topic in this report has been continuously analyzed for years in the studies of the German innovation system. Basic science plays an indispensible role for the social and economical developments. First, talent fostering is dependent on the processes of performing scientific researches, in which the innovative patterns of thinking would be raised to solve those problems faced, and the spirit of following truth would be gained to find the actual rules concealed. Furthermore, each technological revolution should have a root in the great scientific breakthroughs though it is still hard to prove the relationship between science and technology directly since knowledge transfer is a complex and time consuming process. However, it is an acceptable method to understand the scientific and technologic strengths, and the potential innovation capabilities by evaluating the scientific performances.

However, it is also difficult to properly appraise the countries' scientific performance since comprehensive and objective standards are lacked and diverse disciplines exist. The qualitative assessments, like peer review, were firstly put forward. Then experts developed some quantitative methods, like bibliometrics, to complement and support the qualitative methods by each other. The bibliometric metrics use statistics of scientific publications and their citations to measure the performance and impact of national science systems, as parts of national innovation systems. The basis of this method is that scientific impact could be measured by citations attracted by published papers because most scientific achievements are published in journals, where scientists can read it and cite it as proofs and research foundations.

In this study, Germany's trends in publication and citation performance are analyzed in a global context during the period between 2002 and 2012. Other industrialized countries included are the USA, Great Britain, Japan, France, Canada, Italy, Spain, the Netherlands, Switzerland, Sweden, Denmark, and Finland; at the same time, BRICS, the five leading threshold countries– Brazil, Russia, India, China and South Africa, as well as Mexico are also closely observed.

Following issues are related to the methodological basis in this study. Firstly, the journal publications are retrieved from the Science Citation Index Expanded (SCIE) and the Social Science Citation Index (SSCI), and conference proceedings are from the "Social Sciences and Humanities Proceedings" and the "Scientific and Technical Proceedings" (Proceeding database), which are all sub-products of the database Web of Science (WoS) during the period 2002-2012. Secondly, the analysis covers "articles", "letters", "notes" and "reviews" for journal papers, and "articles" and "proceedings" for proceeding papers. Thirdly, this analysis is mainly based on whole counting to treat international collaborated papers, while fractional counting is also used as a comparison. Fourthly, as it is noted that the external citations are the most relevant for evaluative purpose, this study follows the recommendation of CWTC to exclude self-citation (Nederhof, 1993). As did previous EFI reports, the absolute numbers as well as shares of publication and citation, Scientific Regard (SR), and International Alignment

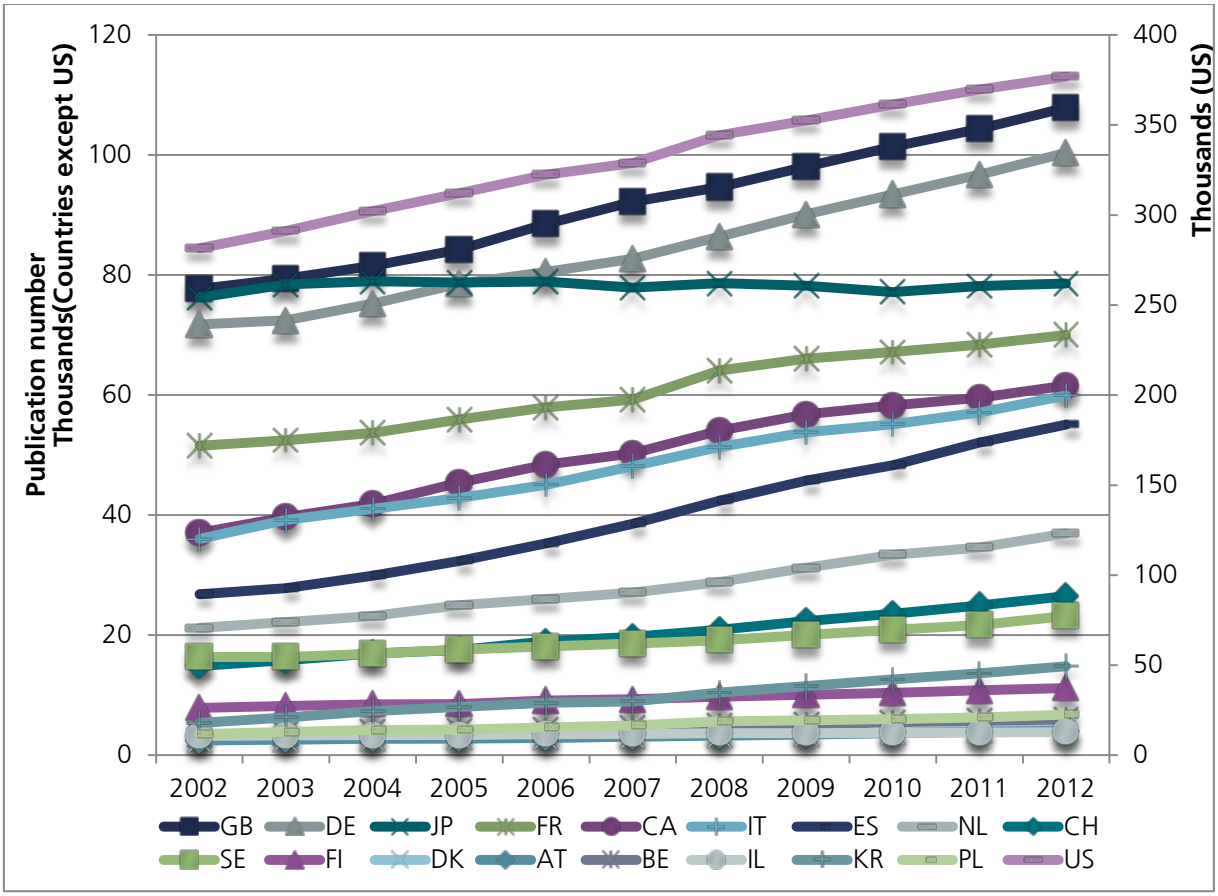
(IA) for selected countries and regions are analyzed in this report. This years' report is a short overview of latest trends and continues most of the indicators collected in earlier years of this reporting system. To keep it concise and handy, we did not include and extensive methodological overview. Interested readers in methods might be referred to Michels et al. (2013).

2. Journal publication in an international comparison

2.1 Number of publications

The absolute numbers of publications according to whole counting for the selected industrialized countries and the BRICS countries from 2002 to 2012 are showed respectively in Figure 1 and Figure 2. The publication numbers of all countries display continuously increasing trends in the latest decade except Japan and Russia. After experiencing the lowest point in 2010, Japan's publication number now has reached a level close to the highest point in 2004. The lowest point for Russia appeared in 2006, and its publications now have slightly fallen down after reaching the highest point in 2011.

Figure 1: Publication numbers of the selected industrialized countries in the SCIE and the SSCI (whole counting)

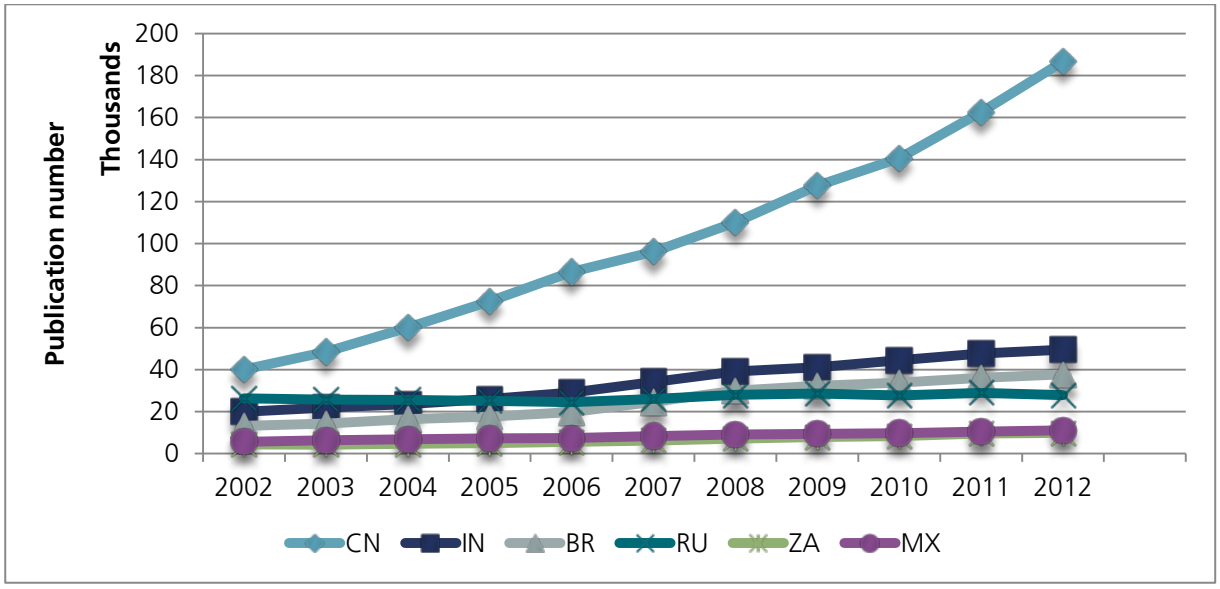


Source: Web of Science, searches and calculations by Fraunhofer ISI.

Germany has always ranked fourth in terms of the numbers of publications over the total observation period. Compared with 2011, Germany's publication numbers increase by 3.4% in 2012, which is the highest annual growth rate except that for China among the top five productive countries. However, among all observed countries, Denmark, Sweden, the Netherlands and Switzerland have rather high annual growth rates with values of 6-8%, which are just lower than that for China which has the highest figure of 14.9%. Except China and Russia, BRICS countries increase their publication numbers by 3-5% in 2012. It is noted that

Spain shows the highest compound annual growth rate (CAGR) of the publication numbers among the industrialized countries during the past ten years, followed by Denmark, with the figures of 7.5 and 6.0% respectively.

Figure 2: Publication numbers of the BRICS countries in the SCIE and the SSCI (whole counting)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

As shown in Table 1, when the publication number of a country in the year 2002 is set to 100, the index for Germany in the year 2012 is 134. There are various patterns of trends in the publication activity in the selected 24 countries over time. The table shows the fastest growing indices in the threshold countries, including China, Brazil, India and South Africa, with indices of 225 to 466. Russia is an exception among the BRICS countries with an index of 106 in 2012, which is even lower than that in 2011. Also Mexico, which is compared with the BRICS countries throughout this report, is on nearly the same level as South Africa in terms of publication numbers.

On the other hand, continual growth which is more or less above the world average level could be observed in some developed countries, including Spain, Denmark, Switzerland, the Netherlands, Canada, and Italy, with indices of 166 to 205, especially Spain, occupying the highest growth rate among industrialized countries. On the other hand, the opposite trends are shown in Sweden, Finland, Germany, Great Britain, France, and the USA. Their indices in 2012 are between 134 and 142, which are lower than the world average. On the lowest level, the increase is lowest in Japan in the latest years with an index of 103. It is noted that the indices for the top six productive countries except China are all below the world average level partly due to their huge bases of publication numbers.

EU-12 countries, joining EU formally after 2004, have shown a notably rising trend in the past decade. However it displays a turning point in 2008, before that it had a similar and quick growth trend like South Africa and Spain, while after that its growth rate has been obviously slowing down. However, the growth rate of EU-15 countries, the 15 member states in the

European Union before 2004, has always remained slightly lower compared with the world average rate during the past ten years.

Table 1: Development of the publication numbers of the selected countries and regions in the SCIE and the SSCI according to whole counting (Index 2002=100)

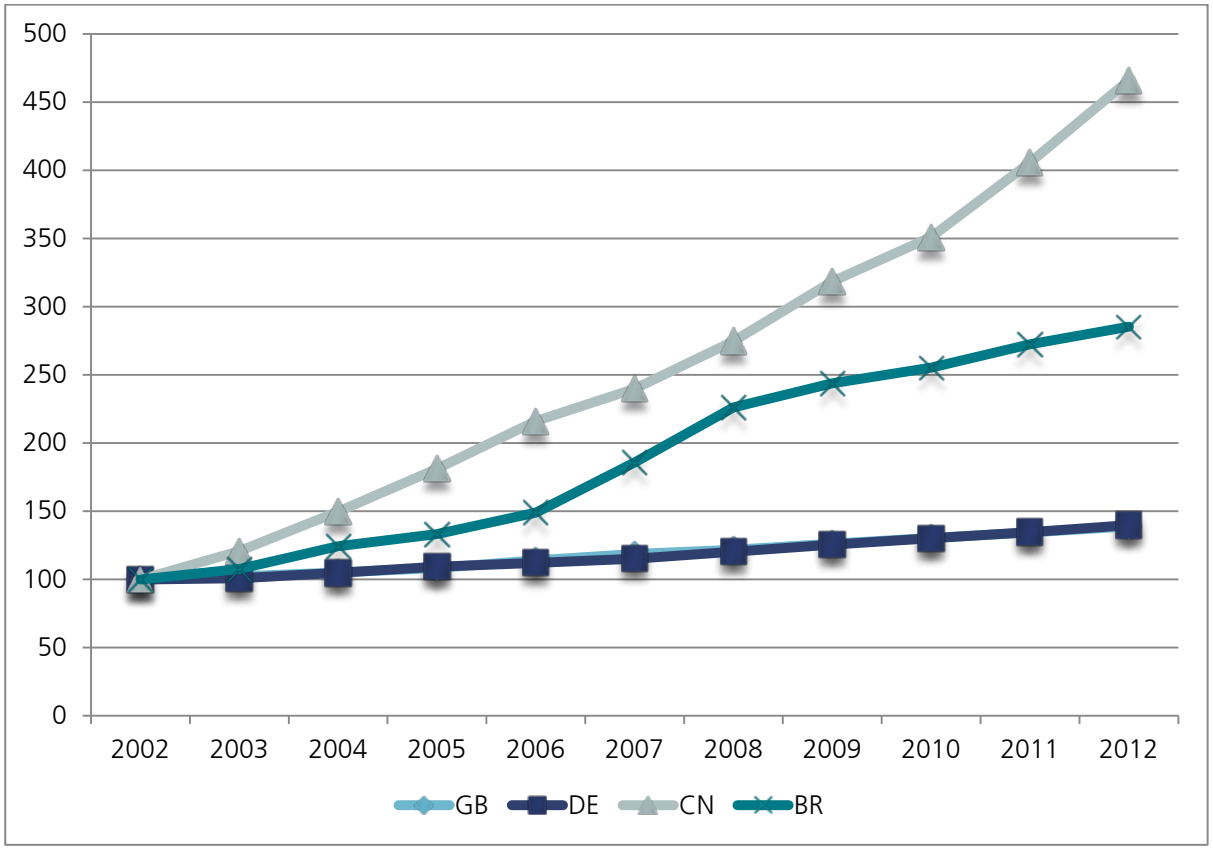
Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AT	100	106	111	113	116	125	134	139	149	159	164
BE	100	107	112	120	123	132	142	150	160	167	174
BR	100	108	124	133	149	186	226	244	255	272	285
CA	100	107	113	123	131	136	146	153	157	161	166
CH	100	106	114	118	128	133	141	150	159	168	178
CN	100	121	150	181	216	240	275	318	351	406	466
DE	100	101	105	109	112	115	120	126	130	135	140
DK	100	105	110	114	119	124	131	138	152	167	180
ES	100	104	111	121	132	144	158	170	180	194	205
FI	100	104	107	108	115	118	123	128	132	137	142
FR	100	102	104	108	112	115	124	128	130	133	136
GB	100	102	105	108	114	119	122	126	130	134	139
IL	100	103	104	104	109	110	114	114	116	117	120
IN	100	110	118	130	146	171	196	206	222	239	248
IT	100	109	114	119	125	134	142	149	153	159	166
JP	100	103	104	103	103	102	103	103	101	103	103
KR	100	117	138	150	163	167	195	214	235	254	276
MX	100	112	120	128	131	149	162	167	173	185	195
NL	100	104	109	118	123	128	136	147	157	163	174
PL	100	111	120	121	132	142	161	165	171	180	194
RU	100	98	97	95	93	99	106	109	105	110	106
SE	100	100	104	108	111	114	117	123	128	133	142
US	100	103	107	111	115	117	122	125	128	131	134
ZA	100	98	107	113	127	143	162	179	190	218	225
EU-12	100	107	114	118	129	146	166	172	177	184	192
EU15	100	103	106	111	116	120	127	132	135	140	144
EU28	100	103	107	111	117	122	130	135	139	144	148
World	100	104	109	114	120	126	135	141	145	152	157

Source: Web of Science, searches and calculations by Fraunhofer ISI.

The development in publication numbers is also illustrated for four selected countries in Figure 3. Germany and Great Britain are further analysed as representatives of industrialized countries since they have similar shares of publications, as well as even a similar level of GDP per capita. However, Germany has its own language that only predominates in the European area, but not worldwide as English does. At the same time, China and Brazil, two emerging countries, are also chosen for further analysis as they are the largest and most populous nations located in Asia and South America respectively. Brazil is also one of the most productive among the developing countries based on scientific publications, following China and India.

As shown in Figure 3, the two lines representing Germany and Great Britain almost coincide except the point in 2007, implying that the two countries have a very similar growth trend of publication numbers over the past decade. The preference for English-language journals in the SCIE and SSCI database mostly is responsible for the difference of publication numbers between Germany and Great Britain, even more so given the differences in terms of population. English-language journals may attract more citations from the global scientific community and be easily retrieved by the WoS database, while some German scientists are used to publish their achievements in German-language journals which are less frequently included in the database (Schmoch et al. 2012). At the same time, it could be seen that the publication numbers for China have kept tremendously increasing trends over the decade. Brazil also shows a similar uptrend, however, it has totally slowed down since 2008.

Figure 3: Development of the publication numbers of four selected countries in the SCIE and the SSCI according to whole counting (Index 2002=100)

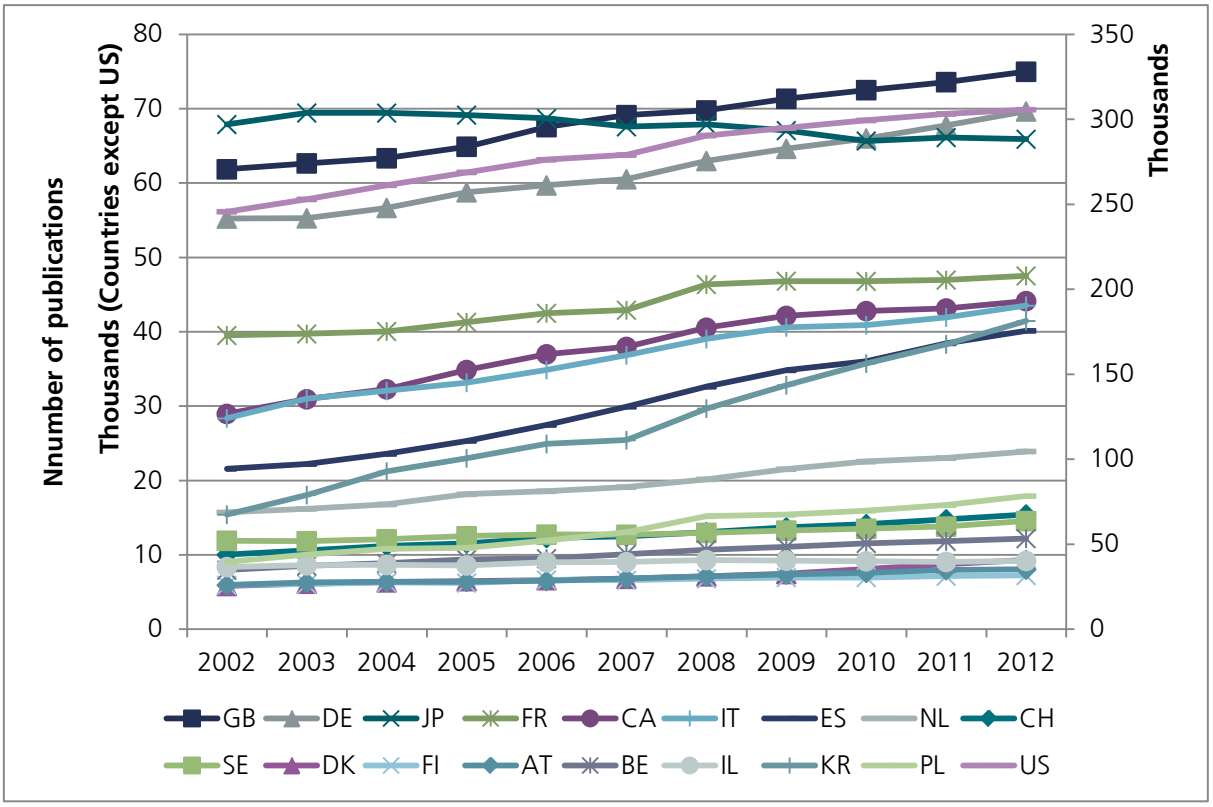


Source: Web of Science, searches and calculations by Fraunhofer ISI.

Furthermore, the publication numbers according to fractional counting are also inspected (Figure 4 and Figure 5). It can be seen that the publication numbers for all countries decrease due to the use of fractional counts, especially the figures for Switzerland, Denmark, Sweden, Finland, the Netherlands, South Africa, France, Germany and Great Britain reduce by 30-42% in 2012, implying the highly frequent international cooperation there (for a discussion of the impact of fractional counting versus whole count see Michels et al (2013)). On the other hand, the decreases for Brazil, China, India, Japan, and the USA are only between 16-19%. How-

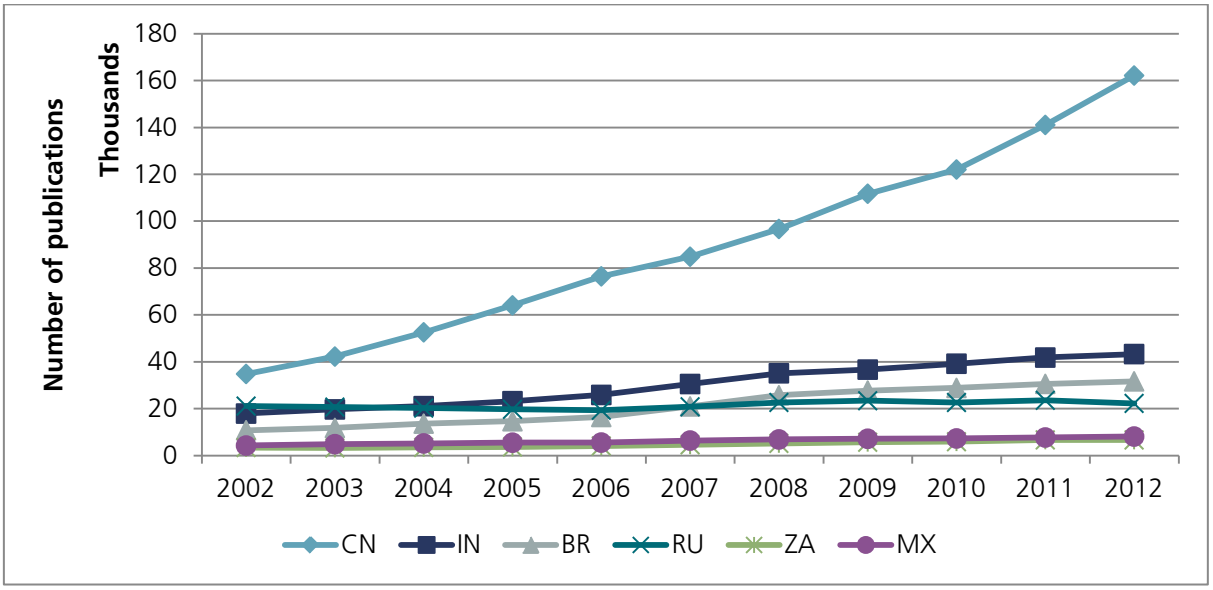
ever, the similar change trends of publication numbers for all countries can be seen, no matter which counting method is used.

Figure 4 Publication numbers of selected industrialized countries in the SCIE and the SSCI (fractional counting)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 5 Publication numbers of the BRICS countries in the SCIE and the SSCI (fractional counting)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.2 Share of publications

Though the publication numbers of all selected countries show increasing trends, the shares of publications change dissimilarly in the latest decade. In order to further understand their publication activities, the publication shares for the selected countries are displayed in Table 2, where it can be seen that Germany's share has kept stable at the level of 7.2% since 2008 though it experienced a slow but continuous decrease in the first part of this decade. Great Britain occupies about 0.5% more publication share than Germany in 2012, but it is noted that the differences between the two countries have been decreasing continually since it reached the peak of 0.9% in 2007.

Table 2: Shares of the selected countries and regions in the SCIE and the SSCI within all publications (whole counting)

Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AT	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0
BE	1.3	1.3	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.4
BR	1.5	1.5	1.7	1.7	1.9	2.2	2.5	2.6	2.6	2.7	2.7
CA	4.2	4.3	4.3	4.5	4.5	4.5	4.5	4.5	4.5	4.4	4.4
CH	1.7	1.7	1.8	1.7	1.8	1.8	1.7	1.8	1.8	1.9	1.9
CN	4.5	5.2	6.2	7.2	8.1	8.6	9.2	10.2	10.9	12.1	13.4
DE	8.1	7.8	7.8	7.7	7.6	7.4	7.2	7.2	7.2	7.2	7.2
DK	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1
ES	3.0	3.0	3.1	3.2	3.3	3.4	3.5	3.7	3.7	3.9	3.9
FI	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8
FR	5.8	5.7	5.6	5.5	5.4	5.3	5.3	5.3	5.2	5.1	5.0
GB	8.7	8.6	8.4	8.3	8.3	8.2	7.9	7.8	7.9	7.7	7.7
IL	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9
IN	2.2	2.4	2.4	2.6	2.7	3.1	3.3	3.3	3.4	3.5	3.6
IT	4.1	4.2	4.3	4.2	4.2	4.3	4.3	4.3	4.3	4.2	4.3
JP	8.6	8.5	8.2	7.8	7.4	7.0	6.6	6.3	6.0	5.8	5.6
KR	2.0	2.3	2.5	2.6	2.7	2.7	2.9	3.1	3.3	3.4	3.5
MX	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
NL	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.5	2.6	2.6	2.6
PL	1.3	1.4	1.5	1.4	1.4	1.5	1.6	1.5	1.5	1.6	1.6
RU	3.0	2.8	2.7	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.0
SE	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.7
US	31.7	31.5	31.3	30.8	30.3	29.4	28.7	28.2	28.0	27.4	27.0
ZA	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7
EU-12	3.3	3.4	3.5	3.4	3.6	3.9	4.1	4.1	4.1	4.0	4.1
EU15	34.8	34.3	34.1	33.8	33.6	33.1	32.6	32.5	32.4	32.0	32.0
EU-28	37.3	36.9	36.7	36.4	36.3	36.2	35.9	35.7	35.6	35.3	35.2
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Web of Science, searches and calculations by Fraunhofer ISI.

Similar decreases in percentage can also be found in other industrialized countries except Spain, Denmark, Canada, Italy, the Netherlands, and Switzerland. Such decreases of shares

can be mostly interpreted by the dramatic growth of publications contributed by those threshold countries, for example, China has increased its share sharply, from 4.5% to 13.4% in the decade. The fastest increase of the publication share for Spain is noted among the observed industrialized countries.

Again, comparison of the publication shares based on whole counting and fractional counting in 2012 is made (Table 3). It can be seen that all selected countries keep the same ranking sequences even based on different counting methods except Spain and India, which swop ranks due to Spain's more international cooperation achievements than that for India.

Table 3 Comparison of publication shares for the selected countries in the SSCI and SCIE according to whole and fractional counting in 2012

Country/region	Whole count (%)	Rank	Fractional (%)	Rank
AT	1.0	20	0.6	22
BE	1.4	18	0.9	18
BR	2.7	12	2.3	12
CA	4.4	7	3.2	7
CH	1.9	15	1.1	16
CN	13.4	2	11.6	2
DE	7.2	4	5.0	4
DK	1.1	19	0.7	19
ES	3.9	9	2.9	11
FI	0.8	22	0.5	23
FR	5.0	6	3.4	6
GB	7.7	3	5.4	3
IL	0.9	21	0.7	20
IN	3.6	10	3.1	9
IT	4.3	8	3.1	8
JP	5.6	5	4.7	5
KR	3.5	11	3.0	10
MX	0.8	23	0.6	21
NL	2.6	13	1.7	13
PL	1.6	17	1.3	15
RU	2.0	14	1.6	14
SE	1.7	16	1.0	17
US	27.0	1	21.9	1
ZA	0.7	24	0.5	24

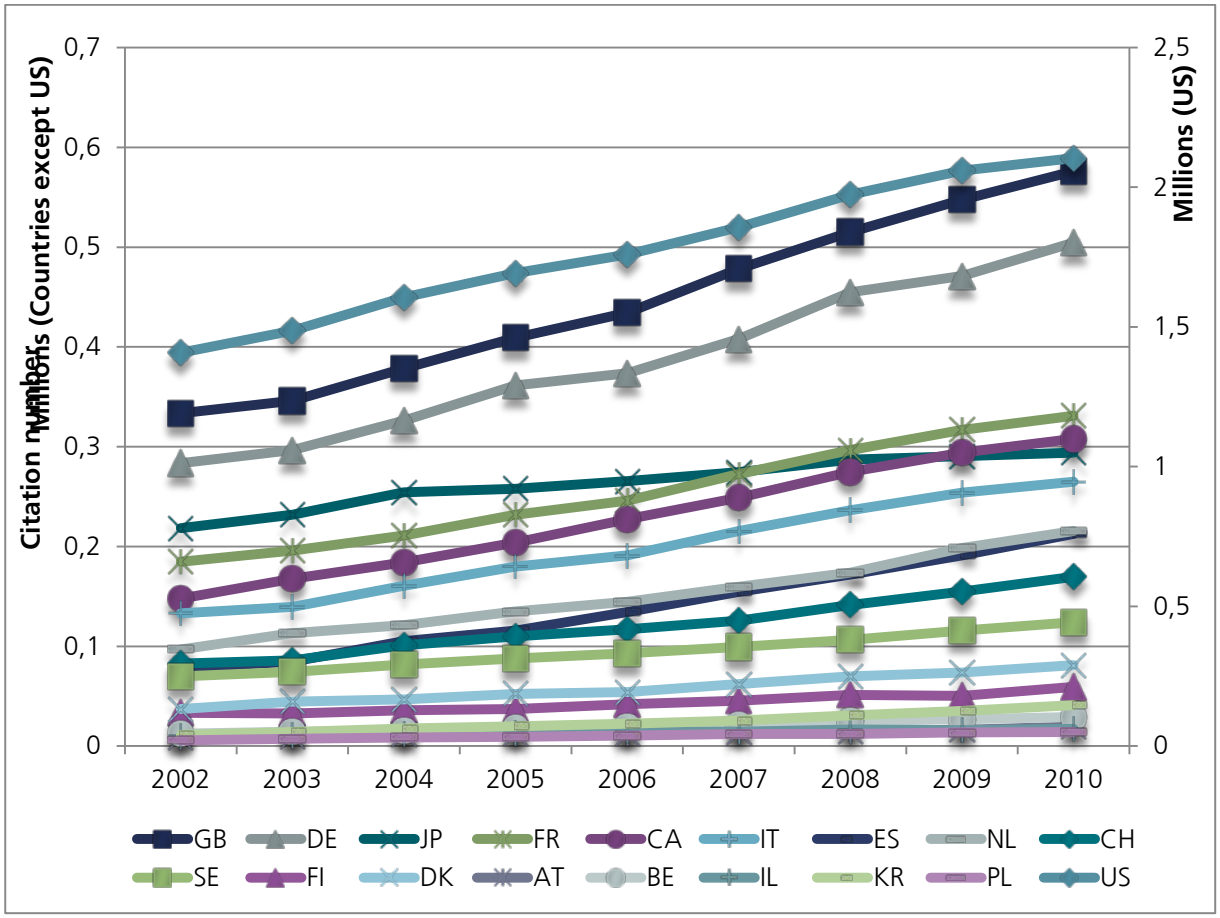
Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.3 Number of citations

Figure 6 and Figure 7 show the absolute numbers of citations for the selected 18 countries, which all display continuously increasing trends. Such increases result not only from the overall growing number of publications retrieved in the database, but also from the sustained growth of the number of references per paper in all fields (Larsen/von Ins 2010) which in turn leads to an increased number of total citations. It can be found that among the industrialized

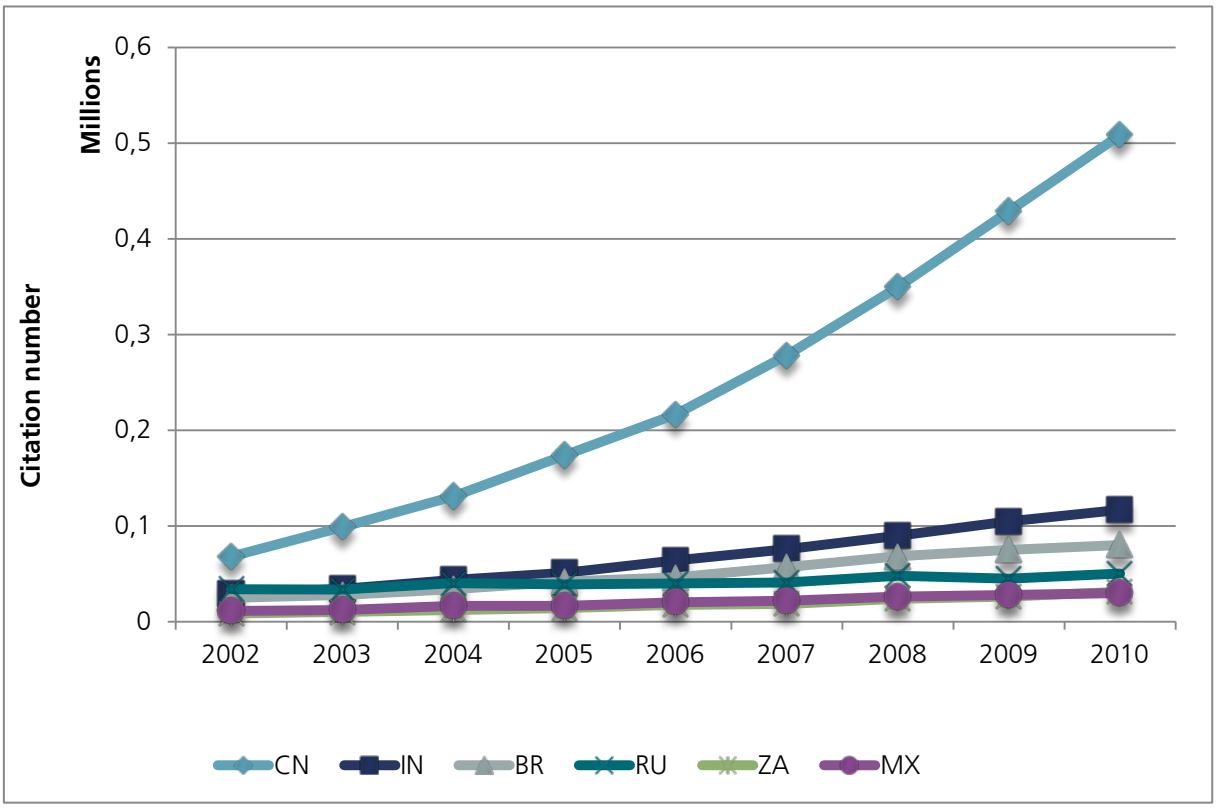
countries, Spain has the highest CAGR of the citation numbers, with a value of 10.5%, followed by the Netherlands and Denmark with values of above 8%; while among BRICS, it is China that displays the highest CAGR with a value of 22.3%, followed by India and South Africa with values of above 14%. Again, Mexico performs very similar to South Africa in terms of citations. Germany stays at an intermediate level, with a figure of 5.9%, while its citation number slipped one spot to fourth place, which was overtaken by China in 2010.

Figure 6: Citation numbers of the selected industrialized countries in the SCIE and the SSCI according to whole counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

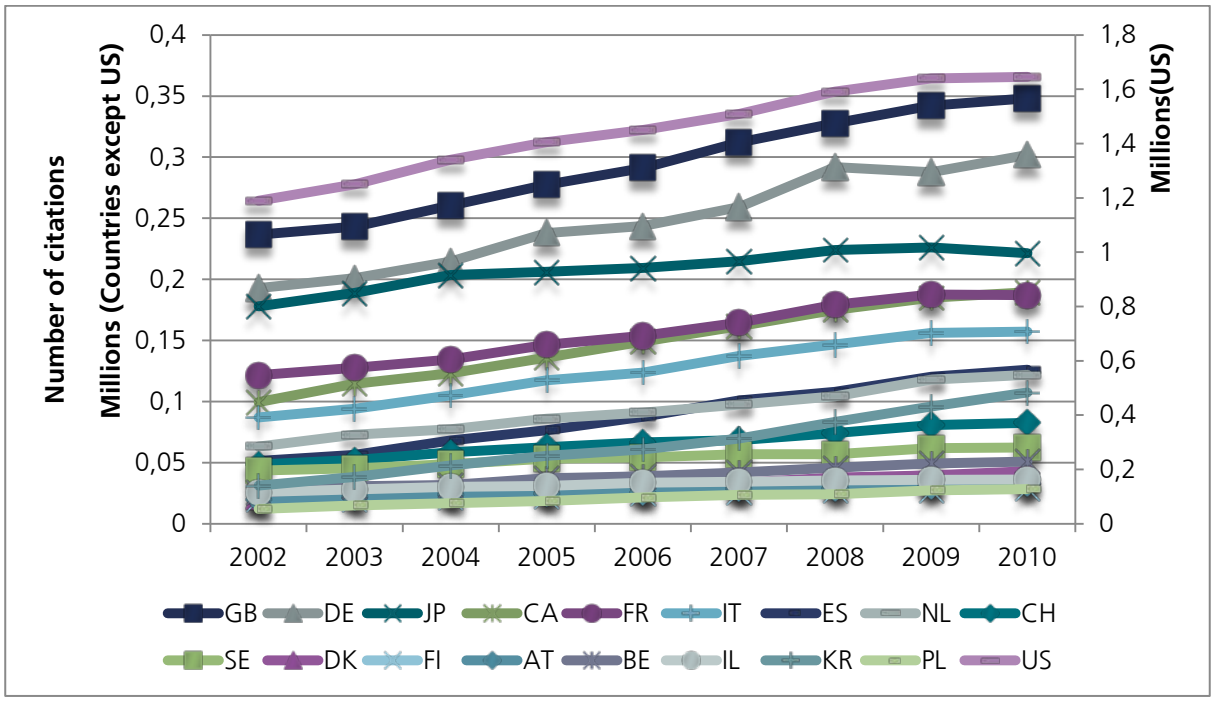
Figure 7: Citation numbers of the BRICS countries in the SCIE and the SSCI according to whole counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

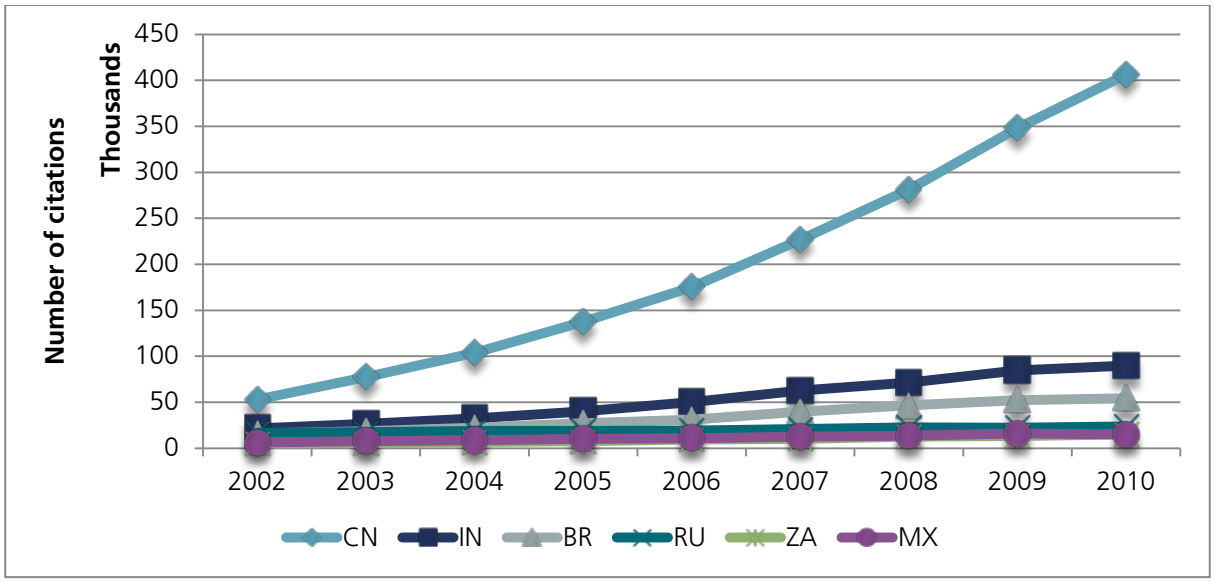
Also, the citation numbers according to fractional counting are observed (Figure 8 and Figure 9). It can be seen that the numbers for all countries decrease compared with the whole counts, especially the figures for Russia, South Africa, Switzerland, and Finland, reduce by over 50% in 2012, implying the highly frequent international cooperation there like Switzerland, or higher global impacts attracted by international cooperation outputs there like Russia. On the other hand, the decreases for China, the USA, India, and Japan are less than 25%. The figure for Germany is 40%.

Figure 8 Citation numbers of the selected industrialized countries in the SCIE and the SSCI according to fractional counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 9 Citation numbers of the BRICS countries in the SCIE and the SSCI according to fractional counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.4 Share of citations

Table 4 shows the changes of citation shares of the selected countries and regions. It can be found that the time trends based on the citation shares were largely in accordance with that of the publication shares. Germany ranks fourth in the world in 2012, following the USA, Great Britain, and China. As to the trends of the citation shares, the USA decrease most during the

past ten years, from 50.4 to 42.2%, followed by Japan and Great Britain. However, Germany, France, Finland, and Sweden show no changes during the same period. Spain displays the largest increase of citation share worldwide except China, with the growth of 1.5 and 7.8% respectively.

Table 4: Shares of the selected countries and regions in the SCIE and the SSCI within all citations according to whole counting (3 year window)

Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.4
BE	1.6	1.7	1.7	1.9	1.8	1.9	2.0	2.0	2.1
BR	0.9	0.9	1.0	1.2	1.2	1.4	1.5	1.6	1.6
CA	5.3	5.6	5.6	5.7	5.9	6.0	6.1	6.1	6.2
CH	3.0	2.8	3.1	3.1	3.0	3.0	3.1	3.2	3.4
CN	2.4	3.3	4.0	4.8	5.6	6.7	7.8	8.9	10.2
DE	10.1	9.8	9.9	10.1	9.7	9.8	10.1	9.8	10.1
DK	1.3	1.5	1.4	1.5	1.4	1.5	1.6	1.5	1.6
ES	2.8	2.8	3.2	3.2	3.5	3.7	3.8	4.0	4.3
FI	1.2	1.1	1.1	1.0	1.1	1.1	1.1	1.0	1.2
FR	6.6	6.5	6.4	6.5	6.4	6.6	6.6	6.6	6.6
GB	11.9	11.5	11.4	11.4	11.3	11.5	11.4	11.4	11.6
IL	1.4	1.4	1.4	1.4	1.4	1.2	1.3	1.2	1.2
IN	1.0	1.1	1.3	1.4	1.7	1.8	2.0	2.2	2.3
IT	4.8	4.6	4.9	5.0	5.0	5.2	5.2	5.3	5.3
JP	7.8	7.7	7.7	7.2	6.9	6.6	6.4	6.0	5.9
KR	1.4	1.7	1.9	2.0	2.1	2.2	2.4	2.6	2.9
MX	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6
NL	3.5	3.8	3.7	3.8	3.8	3.8	3.9	4.1	4.3
PL	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0
RU	1.2	1.1	1.2	1.1	1.0	1.0	1.1	0.9	1.0
SE	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.5
US	50.4	49.3	48.5	47.1	45.9	44.6	43.8	42.7	42.2
ZA	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.6
EU-12	2.0	2.1	2.3	2.3	2.5	2.6	2.6	2.7	2.8
EU15	39.1	38.7	38.5	38.9	38.6	38.7	38.7	38.5	38.6
EU28	40.2	39.9	39.7	40.1	40.0	40.1	40.1	39.9	40.1
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Web of Science, searches and calculations by Fraunhofer ISI.

Again, comparison of the citation shares based on whole counting and fractional counting in 2012 is made (Table 5). It can be seen that except the US, Germany, Canada, Italy, Brazil, and South Africa, the countries have all changed their ranks based on different counting methods. In general, the rankings of countries which have more papers contributed by multi-nations would drop according to the fractional counting, and vice versa.

Table 5 Comparison of citation shares for the selected countries in the SSCI and SCIE according to whole and fractional counting in 2010 (3 year window)

Country/region	Whole count (%)	Rank	Fractional (%)	Rank
AT	1.4	18	0.7	19
BE	2.1	15	1.0	16
BR	1.6	17	1.1	15
CA	6.2	6	3.8	6
CH	3.4	11	1.7	13
CN	10.2	3	8.1	2
DE	10.1	4	6.1	4
DK	1.6	16	0.9	17
ES	4.3	10	2.5	9
FI	1.2	20	0.6	20
FR	6.6	5	3.7	7
GB	11.6	2	7.0	3
IL	1.2	19	0.7	18
IN	2.3	14	1.8	12
IT	5.3	8	3.2	8
JP	5.9	7	4.4	5
KR	2.9	12	2.2	11
MX	0.6	24	0.3	24
NL	4.3	9	2.4	10
PL	1.0	21	0.6	21
RU	1.0	22	0.5	22
SE	2.5	13	1.2	14
US	42.2	1	33.0	1
ZA	0.6	23	0.3	23

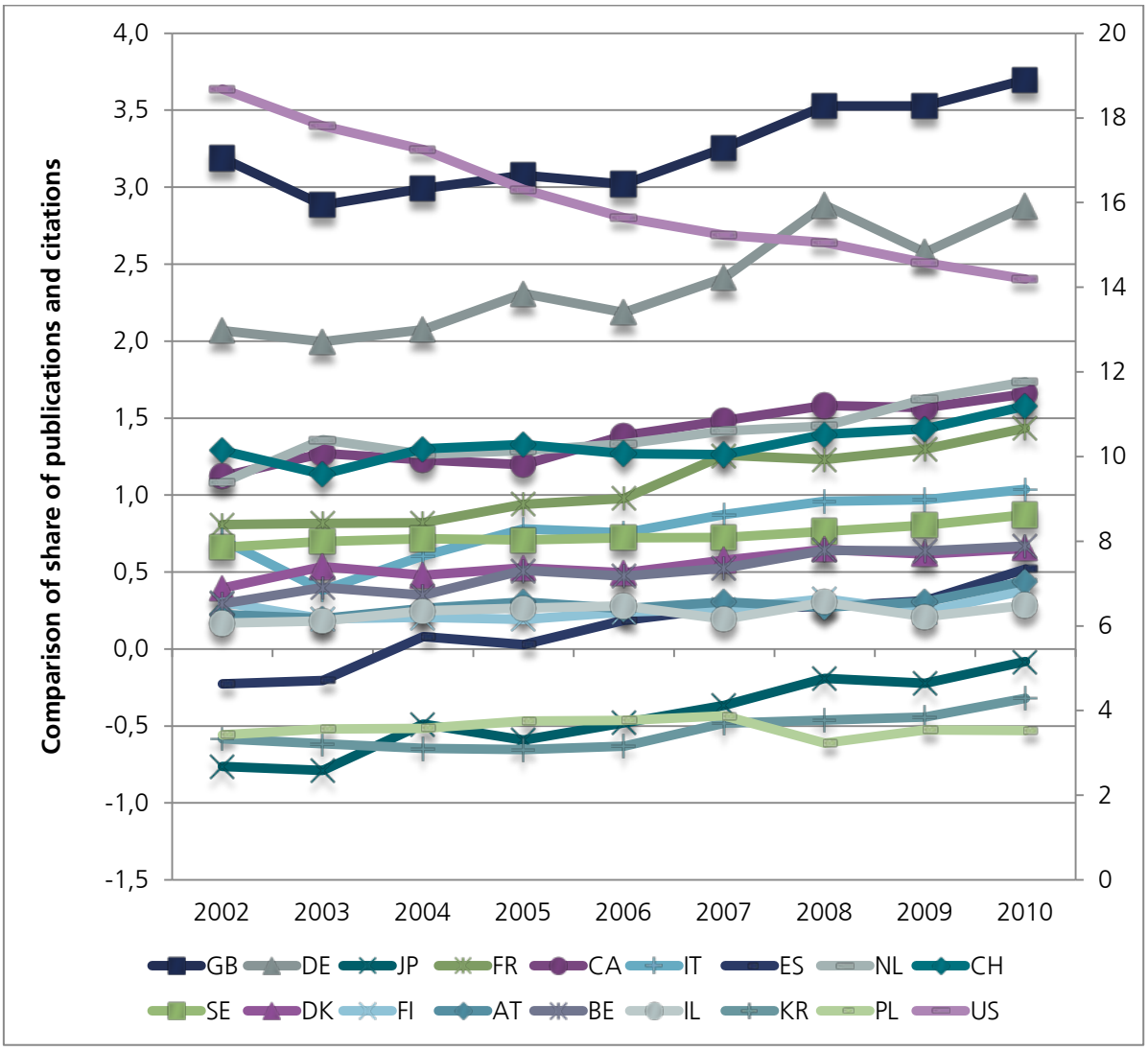
Source: Web of Science, searches and calculations by Fraunhofer ISI.

As Figure 10 and Figure 11 show, both the Germany-authored paper number and the citation number rank fourth in the world in 2012. But Germany accounts for 10.1% of all citations, about 2.9% higher than its percentage of all publications. It follows the USA and Great Britain, with differences between shares of publications and shares of citations of 14.2 and 3.7% respectively. The above-mentioned countries have kept a comparably stable performance according to their ranks, and Germany has always ranked third in the world based on the difference between share of citations and publications in the past decade. On the other hand, it also can be observed that China is in the opposite way, receiving 10.2% of citations with 13.4% of publications though it has increased its citation shares steadily year by year. India, Brazil and Russia seem to perform the similar way like China, about 1% difference between shares of papers and citations. Compared with them, however, South Africa shows better performance with equal shares of citations and publications, even slight better than that for Japan.

At the same time, it is noted that all observed countries show continuously positively increasing trends based on the differences between shares of citations and publications, except the USA and Brazil which are the exact opposite, implying that the citation shares raise faster

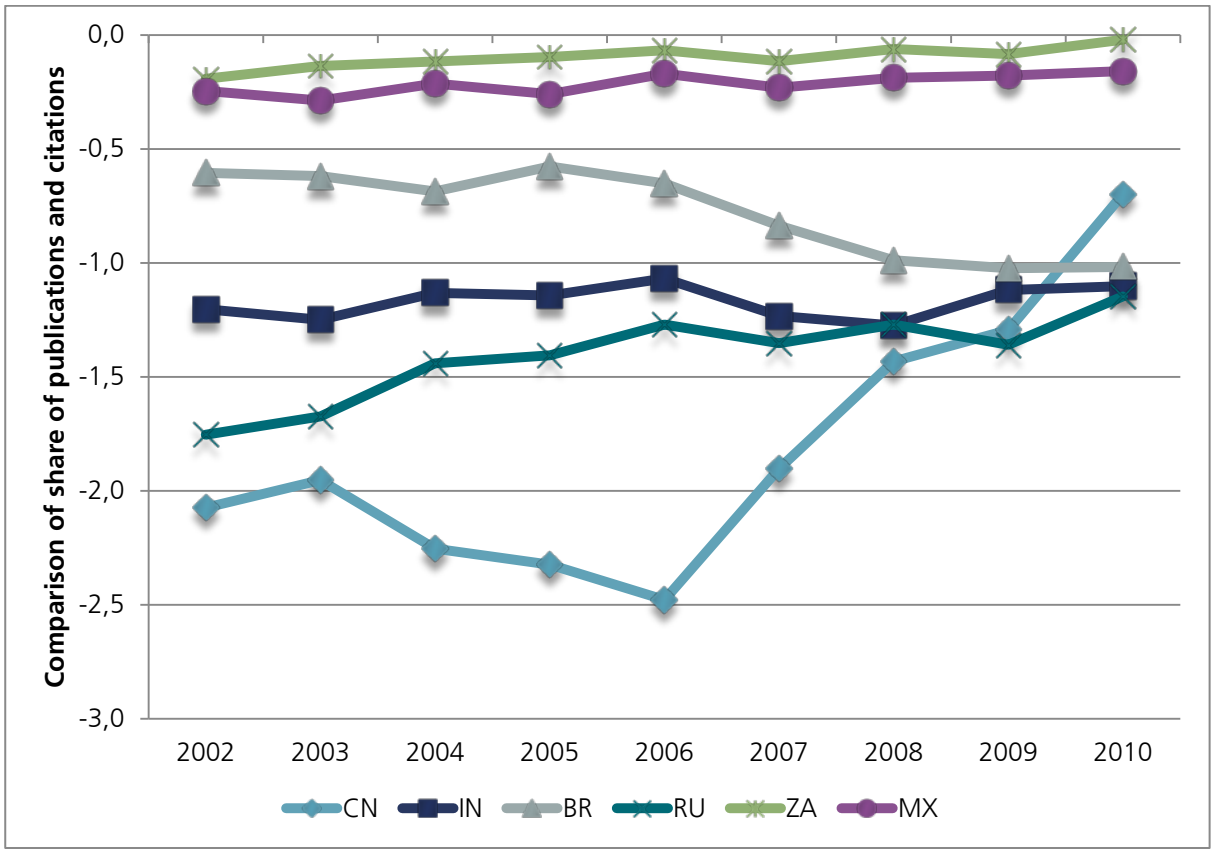
than the publication shares among those countries over the past decade. Germany reaches the highest level in recent three years. Also, it can be found that the gap for China had continued to widen until 2006, which however has been narrowed greatly since 2007, implying China is making efforts to increase the citation numbers to match its publication numbers.

Figure 10: Comparison of the shares of citations and publications for the industrialized countries in the SCIE and the SSCI (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 11: Comparison of the shares of publications and citations for the BRICS countries in the SCIE and the SSCI (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.5 Observed citation rate

It can be seen that all observed countries have increased the citation rates big or little in the past decade (Table 6). Among the top ten productive countries, Germany has overtaken Canada and ranked third based on the observed citation rate since 2005, with a moderately increasing compound annual growth rate (CAGR) of 4.0%. Switzerland, the Netherlands, and Denmark have remained stable, excellent performances in terms of the citation rate, which is defined as the number of citations over the number of publications. Among all observed industrialized countries, Spain owns the fastest increase rate based on the citation rate, with a CAGR of 5.3%. Compared with 2011, the USA have slipped one spot to fifth place, which is overtaken by Sweden in 2012. The citation rate for China has gone up fastest among all countries, with the highest CAGR of 9.9%, followed by South Africa and India, with the values of 8.7 and 7.6% respectively.

It is noted that the EU-12 countries' shares of total citations has not kept pace with its increasing publication shares. The difference between citation share and publication share for EU-12 reaches -1.2% in 2010, which leads to a rather low citation rate which is only higher than that for India, Brazil and Russia, and much lower than the world average level. Russia has always been the lowest ranked among the observed countries in the past ten years.

Table 6: Observed average citation rates for the selected countries and regions in the SCIE and the SSCI according to whole counting (3 year window)

Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT	3.9	3.9	4.4	4.7	4.6	5.0	4.9	5.1	5.7
BE	3.9	4.2	4.3	4.9	4.9	5.2	5.5	5.6	5.7
BR	1.9	2.0	2.0	2.4	2.3	2.3	2.3	2.3	2.4
CA	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.2	5.3
CH	5.6	5.4	6.0	6.3	6.2	6.4	6.8	6.9	7.2
CN	1.7	2.0	2.2	2.4	2.5	2.9	3.2	3.4	3.6
DE	4.0	4.1	4.3	4.6	4.6	4.9	5.3	5.2	5.4
DK	4.5	5.1	5.2	5.6	5.5	6.1	6.4	6.4	6.5
ES	2.9	3.0	3.5	3.6	3.8	4.0	4.1	4.2	4.4
FI	4.2	4.0	4.2	4.4	4.6	4.9	5.3	5.0	5.7
FR	3.6	3.7	3.9	4.1	4.2	4.6	4.6	4.8	4.9
GB	4.3	4.4	4.6	4.9	4.9	5.2	5.4	5.6	5.7
IL	3.6	3.8	4.2	4.4	4.5	4.4	4.9	4.7	5.0
IN	1.5	1.5	1.8	2.0	2.2	2.2	2.3	2.5	2.6
IT	3.7	3.6	3.9	4.2	4.2	4.5	4.6	4.7	4.8
JP	2.9	3.0	3.2	3.3	3.4	3.5	3.7	3.7	3.8
KR	2.2	2.4	2.6	2.7	2.8	3.0	3.2	3.3	3.5
MX	1.9	1.9	2.4	2.3	2.7	2.6	2.8	2.9	3.1
NL	4.6	5.1	5.2	5.4	5.6	5.9	6.0	6.4	6.5
PL	1.8	2.0	2.2	2.4	2.4	2.6	2.3	2.5	2.5
RU	1.3	1.3	1.6	1.5	1.6	1.6	1.7	1.6	1.8
SE	4.3	4.5	4.8	5.0	5.1	5.3	5.6	5.8	5.9
US	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.8	5.8
ZA	1.9	2.3	2.6	2.8	3.1	3.0	3.4	3.3	3.7
EU-12	1.9	2.0	2.2	2.3	2.5	2.5	2.4	2.5	2.7
EU15	3.5	3.7	3.9	4.1	4.1	4.3	4.5	4.6	4.6
EU28	3.4	3.5	3.7	3.9	4.0	4.1	4.2	4.3	4.3
World	3.1	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.9

Source: Web of Science, searches and calculations by Fraunhofer ISI.

Also, comparison of the citation rates according to whole and fractional counting is made in Table 7. It can be seen that the differences between two kinds of counting methods are large for Russia, South Africa, and Finland, implying that the international cooperation papers from those countries have attracted much more citations than the papers contributed by a single country. At the same time, the differences for the USA, Japan, China, and India are small, implying that the international cooperation papers have only got a little more citations compared with the papers produced by a single country. At the same time, the considered countries are affected to different extents in terms of rankings when fractional counting is used. The USA's rank rises to second due to its low share of co-publications with authors from foreign countries and the high citation numbers attracted by the papers issued only by American scientists. Germany also promotes one spot to seventh place according to fractional counting.

Table 7 Comparison of the citation rates for the selected countries in the SSCI and SCIE according to whole and fractional counting in 2010 (3 year window)

Country/region	Whole count	Rank	Fractional	Rank	whole/fractional
AT	5.7	9	4.3	10	1.3
BE	5.7	7	4.4	9	1.3
BR	2.4	23	1.9	22	1.3
CA	5.3	11	4.4	8	1.2
CH	7.2	1	5.8	1	1.2
CN	3.6	18	3.3	17	1.1
DE	5.4	10	4.6	7	1.2
DK	6.5	3	5.3	4	1.2
ES	4.4	15	3.5	15	1.3
FI	5.7	6	4.2	11	1.4
FR	4.9	13	4.0	12	1.2
GB	5.7	8	4.8	5	1.2
IL	5.0	12	3.9	13	1.3
IN	2.6	21	2.3	20	1.1
IT	4.8	14	3.8	14	1.2
JP	3.8	16	3.4	16	1.1
KR	3.5	19	3.0	18	1.2
MX	3.1	20	2.1	21	1.5
NL	6.5	2	5.4	3	1.2
PL	2.5	22	1.8	23	1.4
RU	1.8	24	1.0	24	1.7
SE	5.9	4	4.6	6	1.3
US	5.8	5	5.5	2	1.1
ZA	3.7	17	2.6	19	1.5

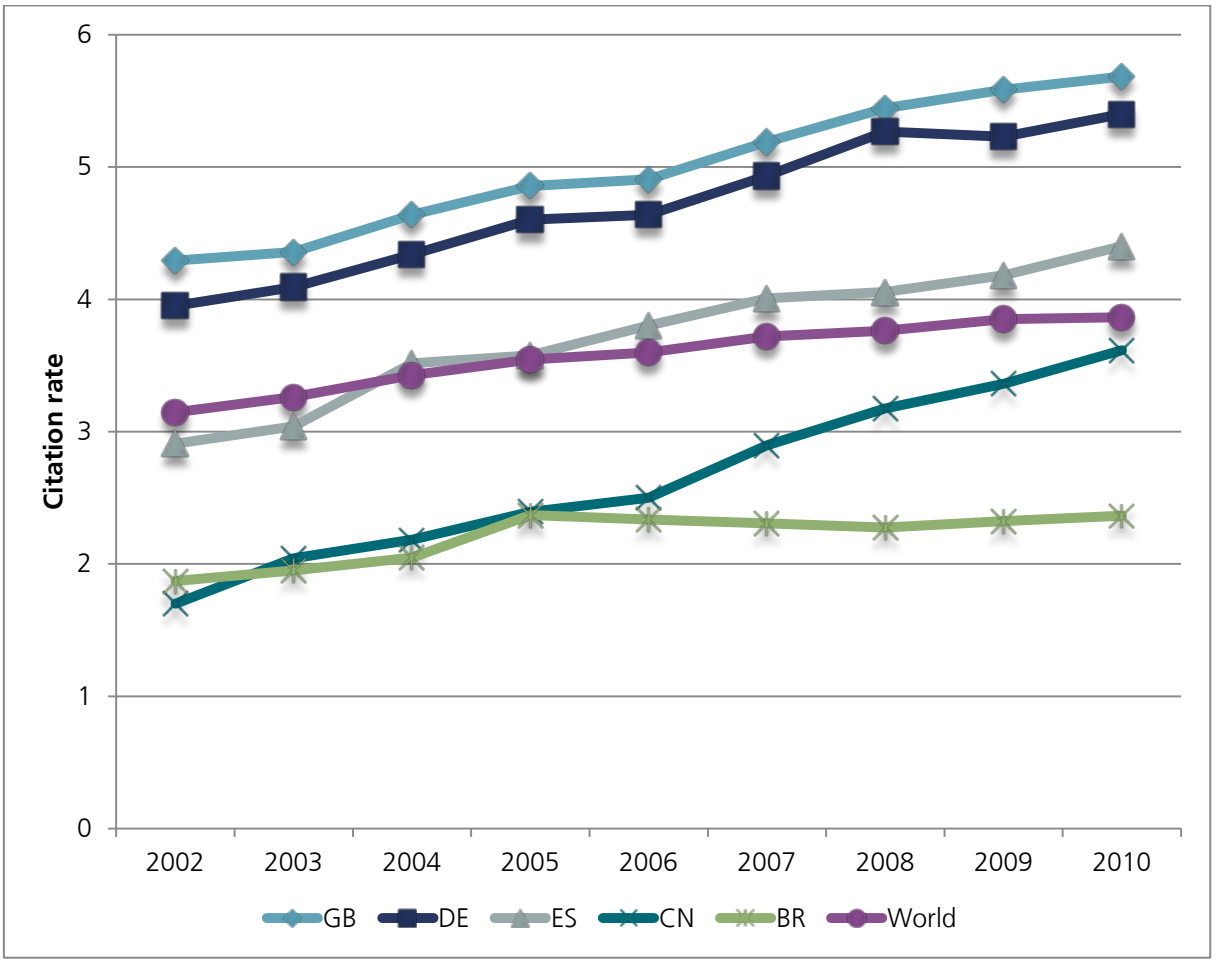
Source: Web of Science, searches and calculations by Fraunhofer ISI.

Again the citation rates for the selected six countries are illustrated in order to understand the indicator better (Figure 12). Great Britain and Germany maintain steadily and similarly upward trends and ranks in the past ten years, and both countries increase beyond the world average level. Great Britain has always been somewhat higher than Germany mostly due to the language bias mentioned above. Such bias can be strengthened when more and more publications contributed by authors from China and India, where English are the first foreign language and official language respectively, and English-written papers would be certainly read and cited more.

On the other hand, it can be seen that China has increased its citation rate over the last decade, especially after 2006, at a quick speed which is much higher than the world average level, with a CAGR of 44.6% during the last five years. The growth partly results from the related China's science & technology policy, which urged Chinese scientists to improve research quality but not only quantity. In addition, Chinese authors tend to cite other Chinese authors more than foreign authors. This also increases the citation rates, especially for Chinese and discriminates foreigners. However, the citation rate for China is still lower than the world average level, and cannot catch up with those industrialized countries with more advanced

scientific development and innovation capability. It is noted that South Africa, China, and Brazil were almost at the same level at the beginning of the decade, the first two finally reach the BRICS countries' highest points, with citation rates of about 3.7 in 2012. However, Brazil shows a totally stagnation without any improvement since 2006.

Figure 12: Observed average citation rate for the selected countries in the SCIE and the SSCI according to whole counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.6 Journal-specific Scientific Regard (SR)

Table 8 displays the scientific performances in the selected countries according to the journal-specific Scientific Regard (SR). It can be seen that Germany experiences a rather large fluctuation based on the SR values in the latest three years, which reached the highest point at the similar level to the Netherlands in 2008, with a figure of 10, then showed a sheer drop in 2009 and a moderate increase in 2010, with the figure of 6.4. At the same time, similar fluctuation in Finland is more obvious, which plummeted to the lowest points in 2003 and 2009, with figures of 4, and rushed to the highest points in 2002 and 2010, with figures of about 13. Finland's small publication number should be partly responsible for the instability of the SR values; however, the reason for Germany is unclear at present. It is impressive that Switzerland and Denmark have always been at the top and stable level over the decade. At the same

time, Spain shows an obviously increasing trend, with the highest increases of 6.5 among the industrialized countries. On the other hand, all BRICS countries except Russia which shows a fluctuation at a rather low level, display strong upward trends in terms of the SR values, implying that the papers contributed by these countries have increasingly received more citations than other papers published in the same journals.

Table 8: Index of the journal-specific Scientific Regard (SR) for the selected countries and regions in the SCIE and the SSCIE according to whole account

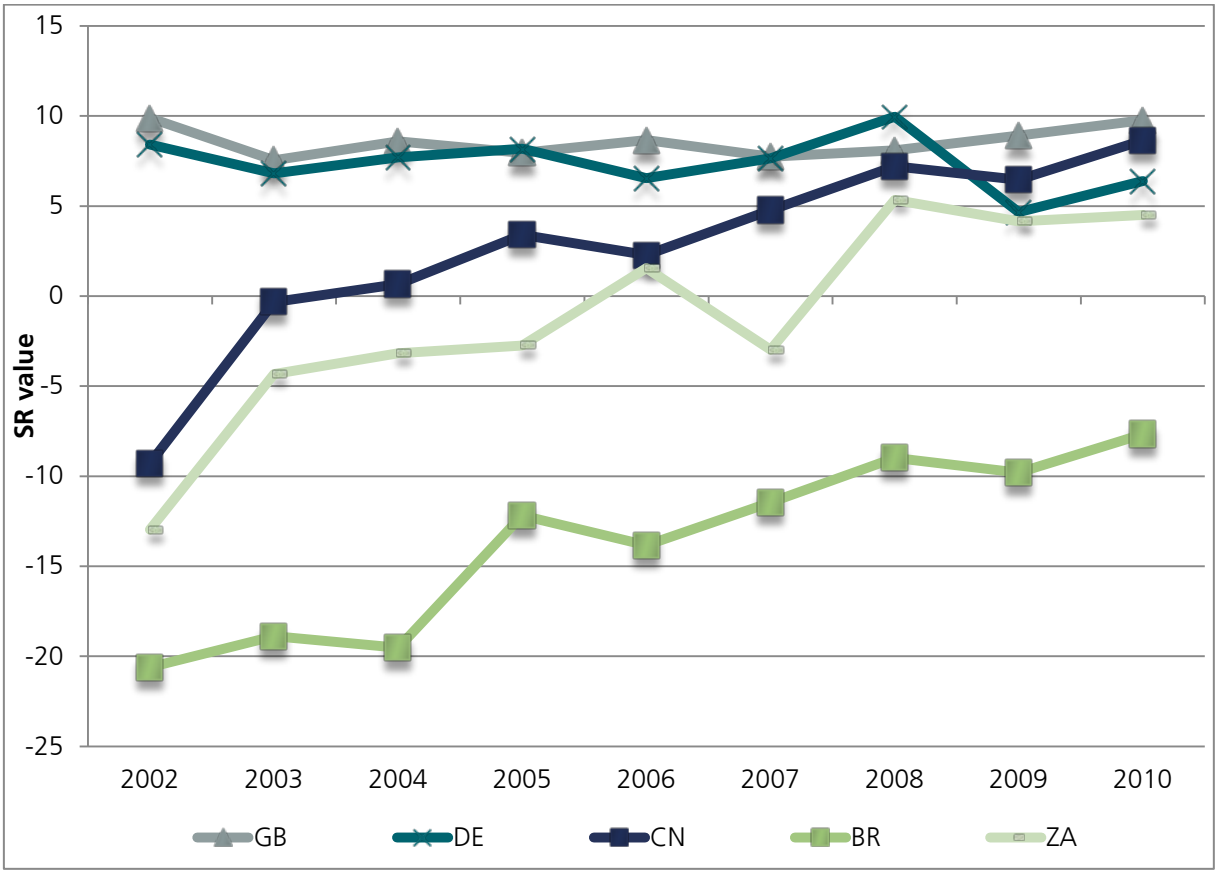
Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT	7	8	9	10	8	9	5	8	12
BE	8	10	6	12	10	10	14	11	13
BR	-21	-19	-20	-12	-14	-12	-9	-10	-8
CA	5	7	6	5	6	6	8	7	8
CH	17	14	16	16	16	14	15	15	17
CN	-9	0	1	3	2	5	7	7	9
DE	8	7	8	8	7	8	10	5	6
DK	11	16	14	17	14	17	19	15	15
ES	-5	-5	0	-2	1	0	2	0	2
FI	13	4	5	5	10	9	10	4	14
FR	3	2	2	2	3	4	3	3	3
GB	10	8	9	8	9	8	8	9	10
IL	-7	-6	-3	-2	2	-6	-2	-7	-4
IN	-18	-17	-15	-12	-8	-10	-7	-4	-2
IT	3	-4	0	2	1	3	3	3	4
JP	-8	-9	-7	-8	-7	-7	-8	-11	-8
KR	-7	-4	-1	-3	-1	-4	-1	-1	1
MX	-24	-25	-15	-21	-5	-12	-5	-8	-4
NL	8	14	10	9	9	10	9	12	10
PL	-15	-8	-5	-8	-7	0	-9	-7	-9
RU	-9	-12	-4	-8	-6	-12	-5	-14	-3
SE	11	11	11	10	11	8	9	10	12
US	9	8	8	8	7	7	7	7	7
ZA	-13	-4	-3	-3	2	-3	5	4	5
EU-12	-13	-11	-8	-9	-7	-3	-9	-7	-6
EU15	2	2	2	2	2	2	2	2	2
EU28	1	1	1	1	1	1	1	1	1
World	0	0	0	0	0	0	0	0	0

Source: Web of Science, searches and calculations by Fraunhofer ISI.

The SR values for the selected countries are again illustrated in Figure 13, where it can be found that Great Britain displays a more stable trend compared with Germany in the past ten years, with figures of about 9. It is noted that China and South Africa have very good performances based on the SR values, and China's figure has even gone beyond Germany's level, and reaches a similarly high level like Great Britain in 2010. However, the conclusion inferred from the result is just that China's and South Africa's publications are attracting citations at or above the expected citation rates for the respective journals. Further inspections to identify

their international position are needed. As shown in Table 10 in the next section of this report, the International Alignments (IA indices) for China and South Africa are much lower than the world average level though both countries have increased their IA figures remarkably, with values of -20 and -18 respectively, which is entirely different from that for Germany and Great Britain with rather high positive figures. When the SR and IA values for China and South Africa come up together, the conclusion can be drawn that China's and South Africa' scientists get used to publishing their achievements in lower impact journals with lower expected citations, but get more citations than other papers in the same journals. So at present the most urgent thing for these countries is to improve their research quality and make efforts to issue their scientific results in higher international impact journals, but not to publish as many papers as possible in low visible journals.

Figure 13: Index of the journal-specific Scientific Regard (SR) for five selected countries in the SCIE and the SSCI according to whole counting



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Again, the SR values according to fractional counting are calculated and similar time trends for the selected countries can be found. The different values and ranks based on whole and fractional counting in 2013 are shown in Table 9. It can be seen that both ranks for Finland and Sweden drop six, and their positions row ninth and tenth respectively according to fractional counting, implying their national collaboration publication and single-authored publications have not attracted as many citations as the international collaboration publications compared with other publications appeared in the same journals. On the contrary way, the places

for the USA, China, and Germany improve between three and five, implying their national collaboration publications and single-authored publications reach better performances based on the SR values. Only Canada and Brazil have the same ranks based on both counting methods, while the places for other countries move up or down within two.

Table 9 Comparison of the SR values for the selected countries in the SSCI and SCIE according to whole and fractional counting in 2010 (3 year window)

Country/region	Whole count	Rank	Fractional	Rank
AT	12	5	1	10
BE	13	4	3	7
BR	-8	22	-16	21
CA	8	10	1	9
CH	17	1	9	2
CN	9	9	7	3
DE	6	12	1	8
DK	15	2	9	1
ES	2	16	-8	18
FI	14	3	0	11
FR	3	15	-5	15
GB	10	8	4	5
IL	-4	20	-15	20
IN	-2	18	-7	17
IT	4	14	-5	13
JP	-8	23	-13	19
KR	1	17	-5	14
MX	-4	21	-25	24
NL	10	7	4	6
PL	-9	24	-22	23
RU	-3	19	-21	22
SE	12	6	0	12
US	7	11	5	4
ZA	5	13	-7	16

Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.7 International Alignment (IA)

Table 10 shows the International Alignment (IA index) for selected countries, where it can be seen that the IA values for the non-English speaking countries including Germany, Italy, France, and Spain were at the lowest level among those European-American countries a decade ago, while Germany has increased its figures at a rather rapid speed and ranked third among top ten productive countries since 2008, following the USA and Great Britain, implying that German scientists have increasingly preferred to release their achievements to the international community in higher visible journals. Switzerland always has the highest IA-index of 42 besides its highest SR figure, indicating its excellent performance in scientific researches.

On the other hand, the USA have been overtaken by the Netherlands and Denmark in terms of the IA values, and slipped to fourth among the selected countries since 2009. The index for Japan has improved up to 6.7, and became the only Asian country above the world average level since 2004. It is noted that EU-12 countries still have a poor performance based on the SR as well as the IA indices, implying the new EU members' scientists have published their papers in the comparably low impact journals and received less citations compared with other papers in the same journals in the past ten years. During the same period, Russia has remained at the lowest level and showed a totally stagnant trend all the time, as does India after 2006.

Table 10: Index of the International Alignment (IA) for the selected countries and regions in the SCIE and the SSCI according to whole counting

Country/region	2002	2003	2004	2005	2006	2007	2008	2009	2010
AT	14	11	16	19	17	19	21	20	26
BE	13	16	17	20	20	22	24	27	26
BR	-30	-31	-31	-27	-29	-35	-39	-39	-39
CA	19	19	19	19	20	22	22	23	23
CH	38	36	38	38	36	38	41	41	42
CN	-48	-43	-43	-40	-37	-29	-24	-20	-15
DE	14	16	16	18	19	20	23	26	27
DK	24	28	27	28	28	31	34	35	35
ES	-3	-2	3	3	4	8	6	8	12
FI	17	16	16	16	15	18	23	22	24
FR	11	11	11	14	13	17	18	19	21
GB	21	21	21	23	22	25	28	28	28
IL	19	20	22	23	20	22	27	26	29
IN	-53	-52	-44	-44	-39	-40	-40	-36	-35
IT	13	12	13	15	15	15	17	17	17
JP	-1	-1	1	0	0	2	6	7	7
KR	-27	-27	-28	-25	-24	-16	-16	-15	-11
MX	-24	-28	-21	-23	-22	-24	-23	-19	-19
NL	28	30	31	32	33	35	37	37	39
PL	-38	-37	-37	-32	-31	-34	-38	-34	-32
RU	-66	-67	-63	-64	-63	-63	-63	-64	-62
SE	20	22	23	23	24	27	30	30	31
US	36	35	34	33	33	34	34	34	33
ZA	-35	-29	-24	-19	-15	-20	-16	-18	-8
EU-12	-37	-35	-34	-31	-29	-34	-36	-33	-30
EU15	10	10	10	12	12	13	15	15	16
EU28	6	7	7	8	8	9	10	10	11
World	0	0	0	0	0	0	0	0	0

Source: Web of Science, searches and calculations by Fraunhofer ISI.

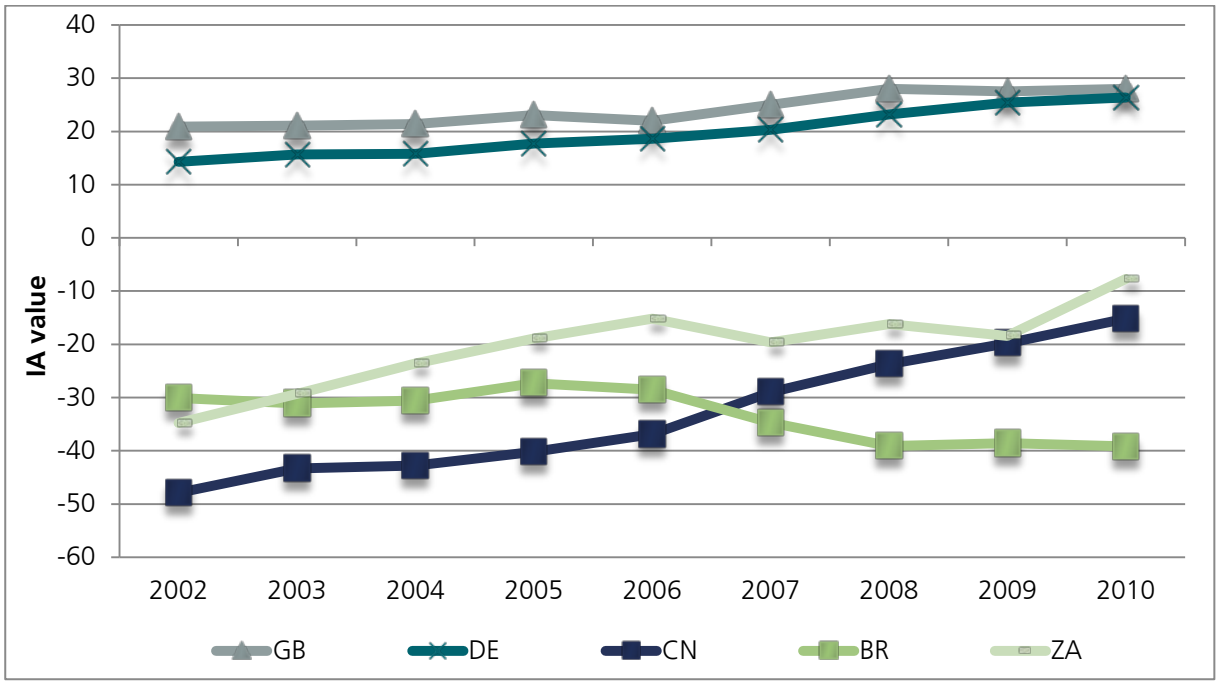
Five selected countries are illustrated again in Figure 14. It can be seen that compared with Great Britain, the IA value for Germany rises more quickly in the latest two years, with a figure of 26 in 2010 that reaches a similar level like Great Britain. However, the SR value for

Germany is somewhat lower than that for Great Britain at the same time, indicating that both authors of Germany and Great Britain have published their papers in journals with rather high scientific visibility and got more citations than other papers in the same journals, while citations got by German papers are still slightly below that received by British.

On the other hand, it is noted that South Africa ranks first among the BRICS countries in terms of the IA index which started with a rather low base at the beginning of the decade; while it is now still below the world average. China displays an upward trend all the time and obvious growth in its IA figures after 2006, implying that Chinese scientists have made efforts to publish more papers in higher impact journals and improve the international influence. On the contrary, entirely opposite trends can be found in Brazil, where the figures have already declined dramatically since 2007.

Also, the IA values for the selected countries according to fractional counting are observed. It can be seen in Table 11 that the differences of the IA values for the selected countries between the ranks based on different counting methods are much less than that of the SR values, implying that the international collaboration publications and other publications for the selected countries, except the USA and Finland whose ranks move up and down by two respectively, have been published in the journals at a similar impact level. However, Finland's papers contributed by international collaborations have been issued in journals with higher visibility than the papers by national authors only.

Figure 14: Index of the International Alignment (IA) for five selected countries in the SCIE and SSCIE according to whole counting



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Table 11 Comparison of the IA values for the selected countries in the SSCI and SCIE according to whole and fractional counting in 2010 (3 year window)

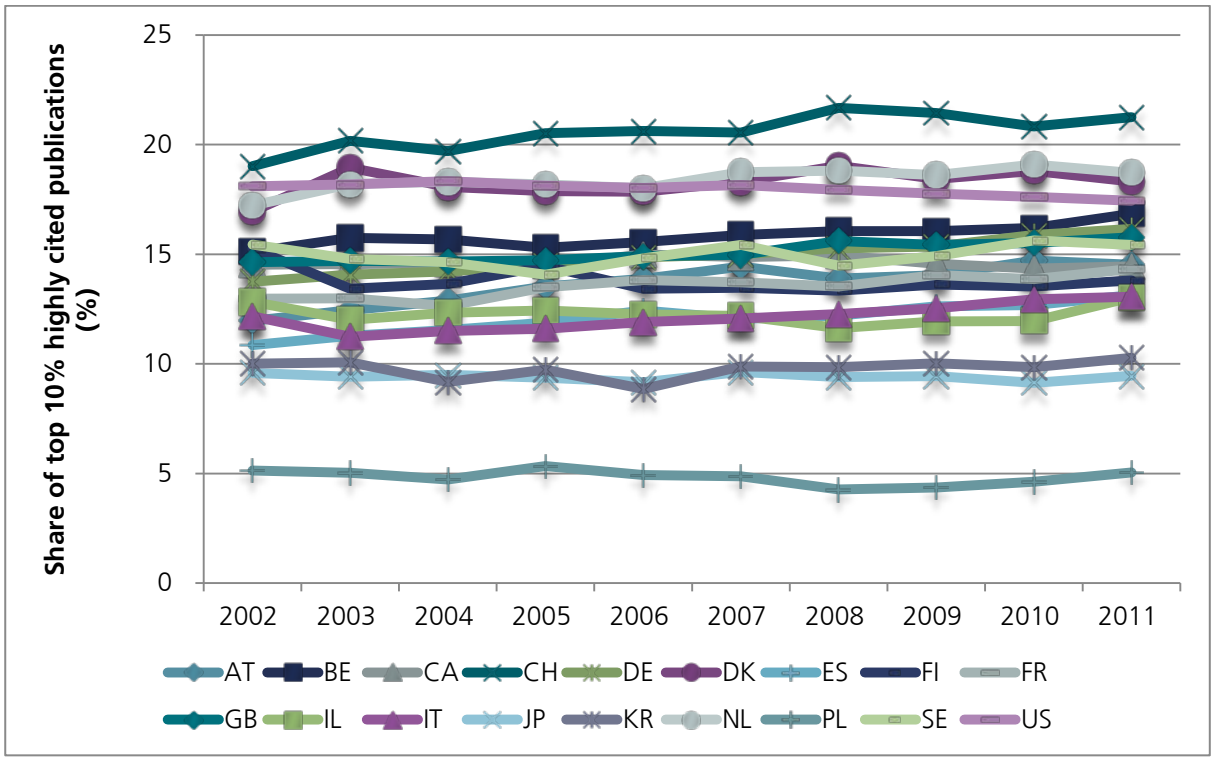
Country/region	Whole count	Rank	Fractional	Rank
AT	26	9	10	11
BE	26	10	10	10
BR	-39	23	-50	22
CA	23	12	13	9
CH	42	1	32	1
CN	-15	19	-22	18
DE	27	8	16	8
DK	35	3	23	4
ES	12	15	-2	16
FI	24	11	7	13
FR	21	13	9	12
GB	28	7	18	5
IL	29	6	17	7
IN	-35	22	-42	21
IT	17	14	5	14
JP	7	16	0	15
KR	-11	18	-20	17
MX	-19	20	-36	20
NL	39	2	29	3
PL	-32	21	-50	23
RU	-62	24	-80	24
SE	31	5	18	6
US	33	4	29	2
ZA	-8	17	-33	19

Source: Web of Science, searches and calculations by Fraunhofer ISI.

2.8 Top 10% highest cited publications

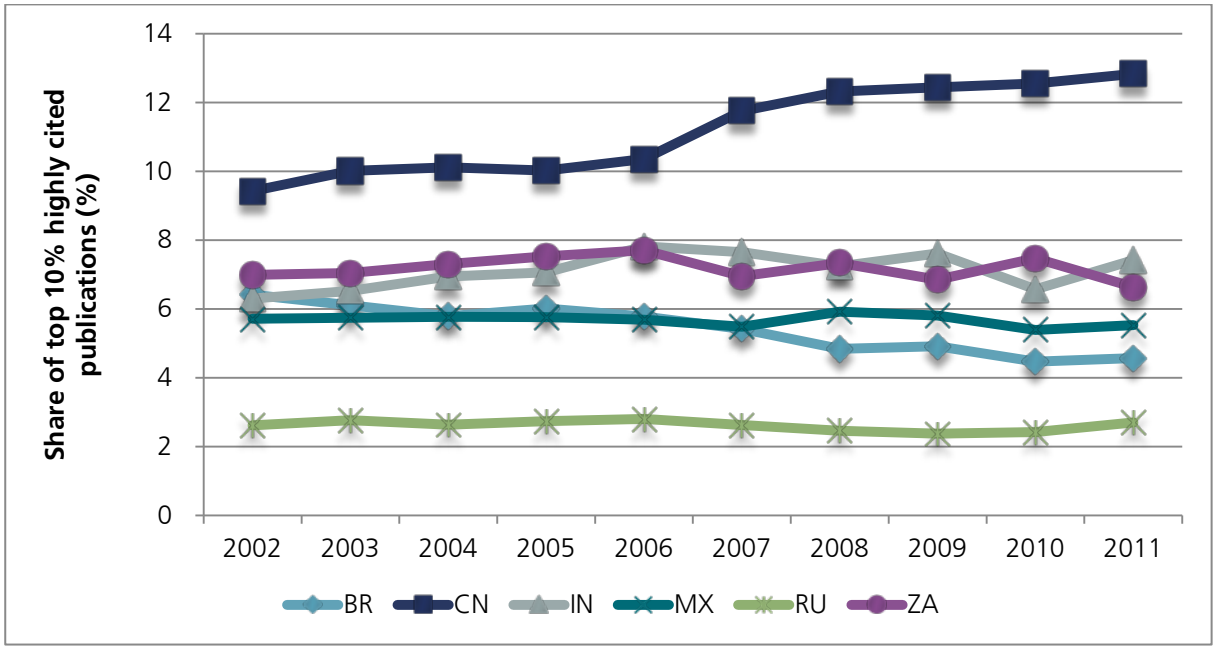
In order to explore countries where researchers have issued papers which have more impacts in the global scientist community, the top 10% highest cited publications from 27 fields are retrieved. Here only fractional counting is used because it is easier to understand the results since the sum of the country shares is equivalent to the total number of publications for a fractional counting. The shares of top 10% highest cited papers within all publications for each observed country are shown in Figure 15 and Figure 16. It can be found that the share for Switzerland has always ranked first in the past decade, and it is amazing that Switzerland's one out of five publications belong to the top 10% highest cited papers, followed by the Netherlands and Denmark. Germany has promoted the shares during the past ten years, ranking from ninth to fifth in 2011, with the share of 16.2%; it ranks second among the top ten productive countries, only following the USA. As to the growth rate, China, Spain, India, and Germany have the highest figures, which increase by 1.4-1.2 times respectively over the latest decade. On the contrary, the USA, South Africa, Finland, and Brazil have decreased the numbers to 71-96% of their original numbers in 2002.

Figure 15 Shares of the top 10% highly cited publications for the industrialized countries according to fractional counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 16 Shares of the top 10% highly cited publications for the BRICS countries according to fractional counting (3 year window)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

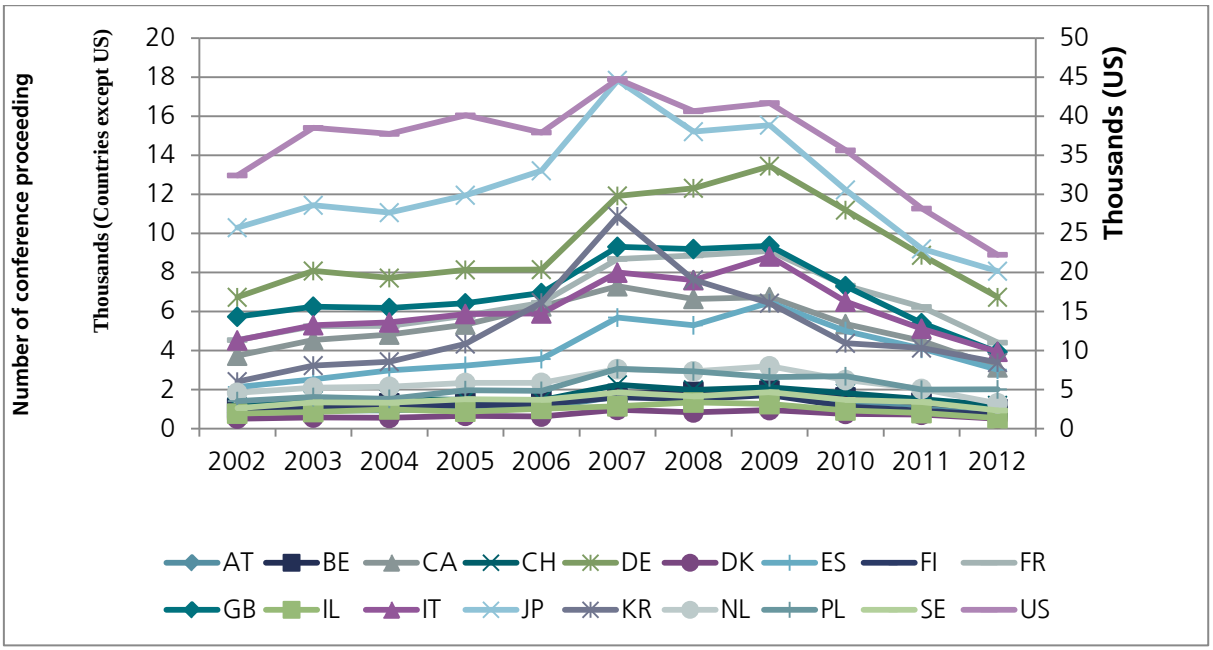
3. Conference proceedings in an international comparison

3.1 Number of publications

Apart from analyses on the journal publication activity for the selected countries and regions, conference proceedings are also illustrated in this report. It can be found in Figure 17 and Figure 18 that the publication numbers in the Proceeding database have not shown a continuously increasing trend, and almost all countries reached peaks based on the numbers of proceedings during 2007-2009. It was shown by Michels and Fu (2013) that it takes much longer for conference proceedings to be put into the database. Therefore, the data for 2011 and 2012 might still be incomplete and therefore should be interpreted with caution.

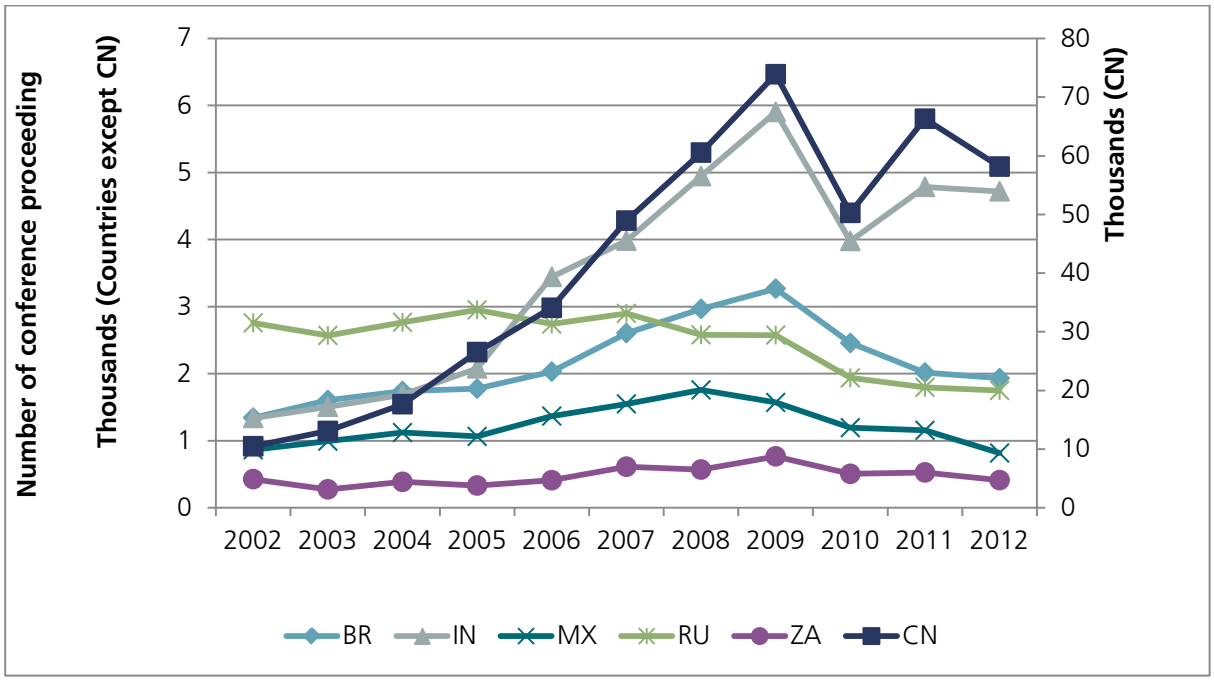
Publication numbers in the proceedings' database are only 12-23% as many as that in the SCIE and SSCI database during the past ten years. China has ranked first according to the numbers of proceeding papers worldwide since 2007, followed by the USA and Japan. Germany has always ranked fourth in the past ten years, while Great Britain slipped three spots to the eighth place in 2012.

Figure 17 Publication numbers of the selected industrialized countries in the Proceeding database (fractional counts)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 18 Publication numbers of the BRICS countries in the Proceeding database (fractional counts)

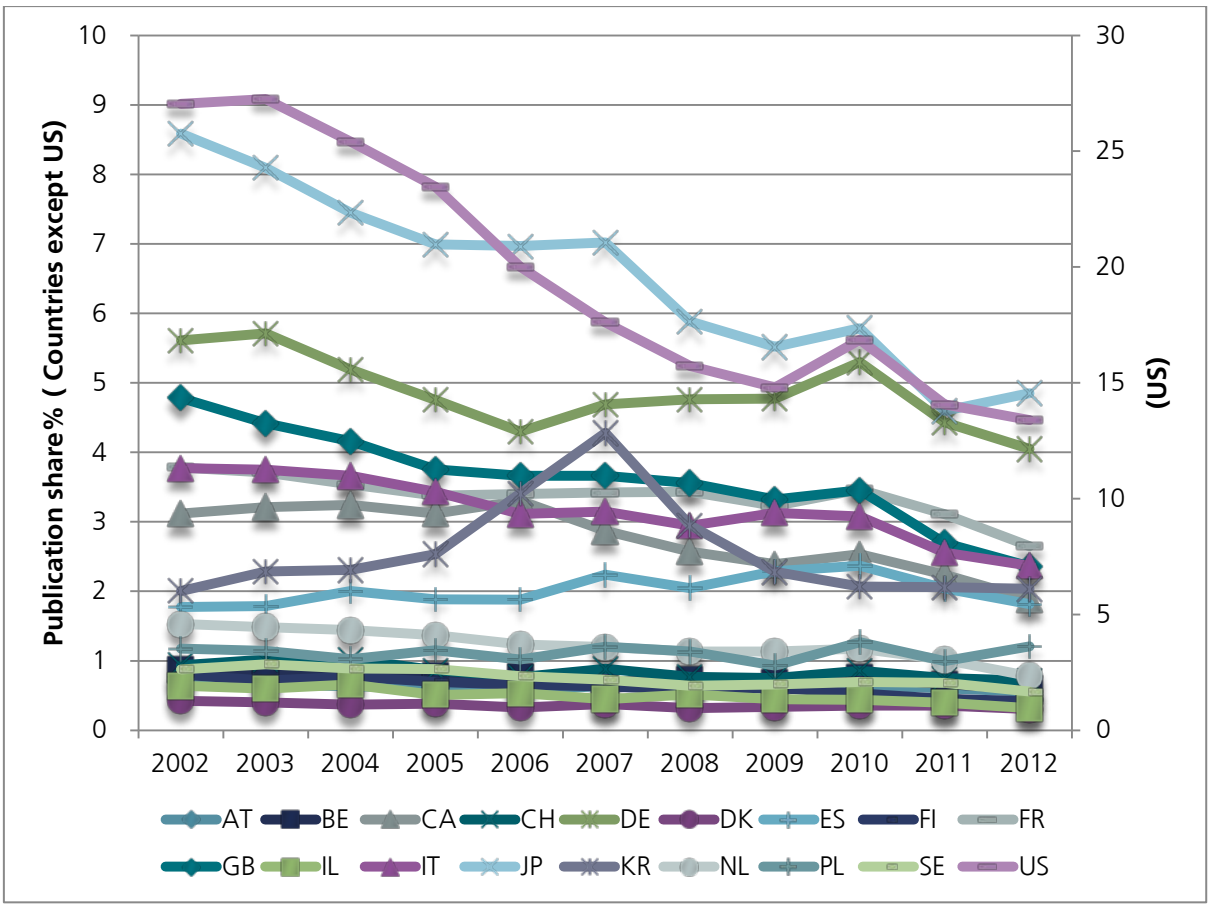


Source: Web of Science, searches and calculations by Fraunhofer ISI.

3.2 Share of publications

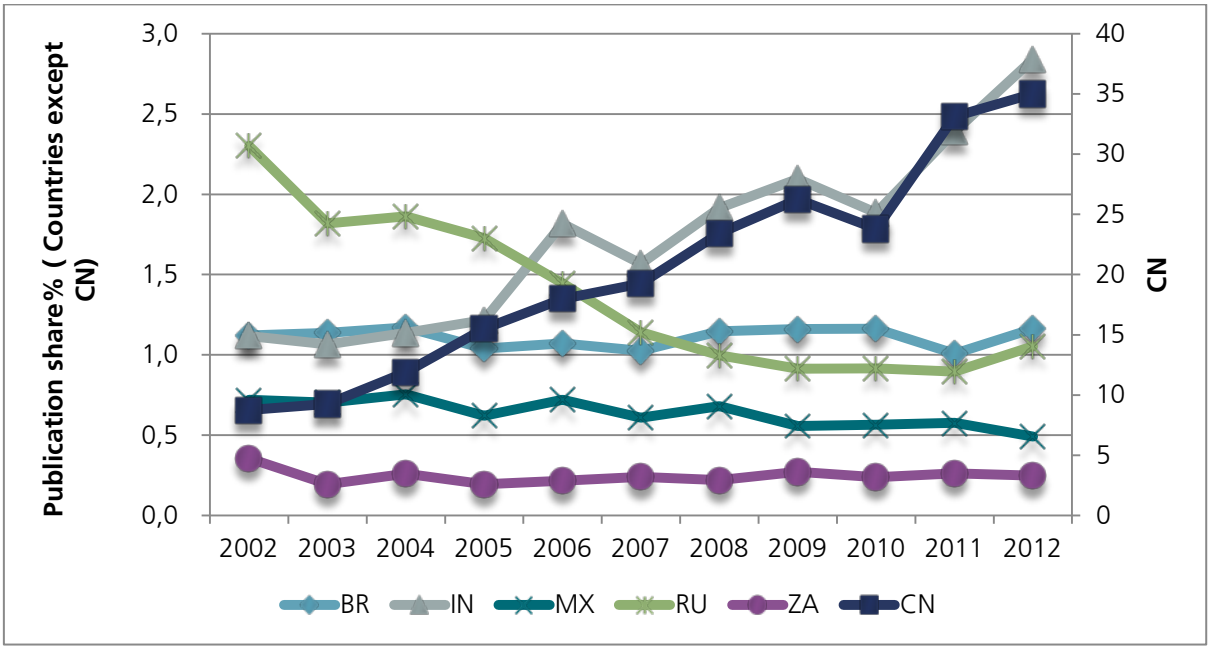
Figure 19 and Figure 20 show the shares in the total publications covered in the Proceeding database for the selected countries in the past decade. It can be seen that the percentage share for China has increased by 4 times, and ranks first worldwide since 2007, with the share of 35%. It can be noted that one out of three proceeding papers comes from China. India has the second highest growth, which has increased its share by 2.5 times in ten years. Other selected countries all show zero growth or a decline in terms of the publication shares. Even more, the shares for the USA, Great Britain, and Russia were decreasing by over half in the past decade. Germany's share has also decreased from 5.6 to 4.1%.

Figure 19 Shares (%) for the selected industrialized countries in the Proceeding database (fractional counts)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

Figure 20 Publication shares (%) for the BRICS countries in the Proceeding database (fractional counts)



Source: Web of Science, searches and calculations by Fraunhofer ISI.

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Appendix: Country Code list

Country code	Country
AT	**Austria**
BE	**Belgium**
BR	Brazil
CA	Canada
CH	Switzerland
CN	China
DE	Germany
DK	Denmark
ES	Spain
FI	Finland
FR	France
GB	Great Britain/United Kingdom
IL	Israel
IN	India
IT	Italy
JP	Japan
KR	South Korea
MX	Mexico
NL	Netherlands
PL	Poland
RU	Russian Federation
SE	Sweden
US	United States
ZA	South Africa