Project report

Scientific and Technological Performance by Gender

A feasibility study on Patent and Bibliometric Indicators

Vol. II : Methodological Report

IMPROVING HUMAN RESEARCH POTENTIAL AND THE SOCIO-ECONOMIC KNOWLEDGE BASE

EUR 20309

Scientific and Technological Performance by Gender

A feasibility study on Patent and Bibliometric Indicators

Vol. II : Methodological Report

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Consiglio Nazionale delle Ricerche

This publication results from work funded by the ***European Commission, Research DG, Directorate K – Knowledge-based economy and society*** under the ***Common Basis of Science, Technology and Innovation Indicators (CBSTII)*** action of the *Support for the Development of Science and Technology Policies in Europe* sub programme of the ***Improving Human Research Potential and the Socio-Economic Knowledge Base*** specific programme of the ***Fifth Framework Progamme for Research and Technological Development*** (contract numbers ERBHPV2-CT-1999-14 and 15).

The projects were managed by Brian SLOAN of the ***Competitiveness, economic analysis and indicators unit*** **of Directorate K of Research DG.**

EUR 20309

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PREFACE

The political commitment to promote women in science at European Union level, launched in 1999, with the adoption of the Commission's Communication, and backed up by the Council and Parliament Resolutions which followed in 1999 and 2000, is strong, and growing stronger in the European Research Area.

In terms of measurable progress, there has been a significant increase in the number of women taking part in the Framework Programme, in consultative committees, monitoring activities, evaluation panels and as project co-ordinators. In the Fifth Framework Programme Monitoring Panels, the concentration of women increased from 22% in 1999 to 30% in 2000, but remained at 30% in 2001.

Considerable efforts have been mobilised in order to review the presence and participation of women in science, and a picture of uneven representation has emerged from the statistics available. On a more encouraging note, the necessary instruments for robust sex-disaggregated data in the fields of research, technology and development are slowly moving into place at supra-national level. This is vital in ensuring that future data availability can be progressively improved.

However, these surveys remain focused on human and financial inputs into scientific activities rather than on the output of science and technology. Patent and bibliometric data are commonly regarded as the best measures of scientific and technological production, so examining them from a gender perspective is important at European level. As an increasing proportion of the qualified scientific workforce, women represent a valuable resource. We therefore need to know more about the measures that should be implemented in order to help women achieve their full potential as scientists and researchers. For science to be truly excellent, the voice of women, collectively and as individual experts, must be properly represented, particularly since the system depends heavily on the peer review process.

At the present time, patent and bibliometric databases do not contain sex-disaggregated data. Using a pioneering technique, this feasibility study gives us a first insight into how many publications and patents are produced by women and men respectively, thus providing for the first time a set of sex-disaggregated S&T output data. These data provide a vital complement to the growing base of sex-disaggregated statistics of S&T, and this study marks a seminal step forward towards a better understanding of women's role in science and technology.

It is hoped that this and future studies that draw from it may contribute to unravelling the short- and long-term policy questions. These include how best to adapt the scientific system to accommodate the changing profile of the scientific workforce; what we can learn from women as scientists to improve the high standards expected by society; and the degree to which the recognition and rewards of scientific achievement are still gendered. During the sixth framework programme we hope that this report will act a springboard for future studies, that will in turn stimulate and strengthen the existing initiatives to redress important imbalances.

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ACKNOWLEDGEMENTS

The authors of this report would like to thank Brian Sloan, Brigitte Degen, Ian Perry, for support and suggestions; Ibrahim Laafia and Ugur Muldur for precious discussion; the members of the Helsinki Group and in particular Barbara Hartung from Germany and Elisa Navas from Spain for the great help offered in revising the list of first names; the Swedish consulate and the Spanish Centre of Culture in Milan for the collaboration offered.

Special tanks to Alessandra Naldi for the advice in the processing of statistical indicators and to Michele Samaja for the helpful suggestions during the report preparation.

INTRODUCTION

This report summarizes a project carried out for the European Commission[1] aimed at assessing the feasibility of producing patent and bibliometric indicators by the gender of the inventor/author. It would appear to be the first study of its kind, and the results provide some pioneering measures of sex-disaggregated S&T output and productivity.

The approach developed to genderize the data was based on identifying the sex of the first name of the author or the inventor. To do this, a comprehensive "first name database" was created, containing first names commonly used in each of the six EU countries selected for the study, and assigning a sex to each first name (some names of course can be used for both sexes).

This database was then applied to two datasets. The first was the set of patents published in 1998 by the European Patent Office which related to 100.000 inventors from the 6 EU countries selected for the study (France, Germany, Italy, Spain, Sweden and UK). The second dataset was a sample of roughly 30.000 authors of scientific publications.

The report is structured in two volumes. Volume I is the analytical report, presenting a detailed analysis of the indicators calculated using this approach for the six Member States in the study. Volume II is the methodological report, describing the creation of the first name database and the development and testing of the methodology for producing sex-disaggregated indicators of patents and scientific publications.

The present report, dealing with methodology, is split into three parts. Part 1 describes how the first name database was created and tested. Part 2 presents the methodology used to apply this database so as to sex-disaggregate inventors from the European patent dataset, and Part 3 explains how it was applied to a identify the sex of authors from the sample of scientific publications.

[1] This report describes the work performed in the framework of the EC contracts ERBHPV2-CT-1999-14 and ERBHPV2-CT-1999-15.

PART 1 Creation and testing of the first name database

This section describes the design of First Name Data Base and gives technical details on its internal structure, size, scope and expected coverage. The methodological aspects related to identification and selection of the sources, extraction of the names and their insertion into the database are discussed together with an evaluation of the level of data quality obtained.

The First Name Data Base (FNDB) is a collection of first names that at the present covers 6 European languages: English, French, German, Italian, Spanish and Swedish.
The goal has been to set up a high quality database with two objectives: (1) perform gender analysis on any list of person names and (2) allow expansion to other languages.

FNDB has been specifically developed to perform gender analyses based on the names of inventors of patents and authors of scientific publications. Its structure allows it to be easily extended to all the EU countries, following the methodology and the experience of this study.

I. DATA COLLECTION AND PROCESSING

The main aspects considered in creating FNDB have been:
- identification (taxonomy) and evaluation of the various categories of data sources
- criteria for the selection of the names from the data sources
- methods to obtain and maintain a good quality level
- procedures for database expansion (new names and languages)

I.1. Identification of the Sources

Sources can be divided in the following categories:

Dictionaries : They generally contain either commonly used names that can be found in most other sources, or unusual names extracted from literature and mythology.

Humanistic studies : They are few and restricted to the traditional names in a given language. Usually they are very accurate with very few spelling and gender assignment errors. However, the need of being formally correct may introduce problem with the names that are prevalently used for a gender and only exceptionally for the other. This aspect is discussed later in this section.

Calendars and **lists of Saints** : They include obsolete names and provide only lists of names without gender assignment. The intervention of a mother-tongue person is usually required.

Books or **Internet web sites** : These are addressed to parents either to suggest names for new-borns or to explain the meaning of the names. These sources are extremely rich and contain thousands of names. The quality in terms of spelling errors and gender assignment varies from one to another and is difficult to evaluate. Examples of poor reliability are the sites that allow the final user to add a name if it is not already included in the database. Some web sites publish the lists of the most used names in a country/linguistic area for a given year or 10 years period. Sometimes these lists go back to the beginning of 1900. These data comes from official lists and are very useful for our purposes.

Files from **Record Offices** and **phone books :** While the former are difficult to obtain, the latter represent an extended source but need the intervention of a mother-tongue person for gender assignment.

I.2. Criteria for Selection of the Sources and for Data Extraction

Spelling and gender assignment errors may appear in the original source or may be added during the manual input of data while creating FNDB. Spelling errors generally cause a proliferation of the records in the database with two consequences: (1) the database size increases, (2) a name which is misspelled in a given language may coincide with a name in another language leading to error in gender assignment.

Errors in the sources require special attention since the sources differ greatly in quality. We have classified sources in good, medium and poor quality.

Source quality	*Examples of sources*
Good	Dictionaries, lists of names obtained by Consulates or Centres of Culture, Internet files published by Academies, Universities, Governmental Organisations
Medium	Lists extracted from calendars and phone books (with manual gender assignment by a mother-tongue person), Internet sites where the addition of new names is controlled by an internal structure
Poor	Internet sites where new names can be directly added by the end-user

Fig. 1. 1. – Quality of the sources

Names have been included into First Name Data Base ver.0 only if they satisfied at least one of the following criteria:

1. They came from a good quality source
2. They appeared at least in two different medium-quality sources.

Names found only in poor quality sources have not been included in FNDB ver.0.

This approach allows to remove almost all the spelling errors and to avoid useless record proliferation in the database.
To validate and better evaluate the consequences of our strategy, we built also an extended version of the database that contained all the names found in all the selected sources. Two poor quality sources with high coverage in terms of number of names and languages were also included in the extended database.

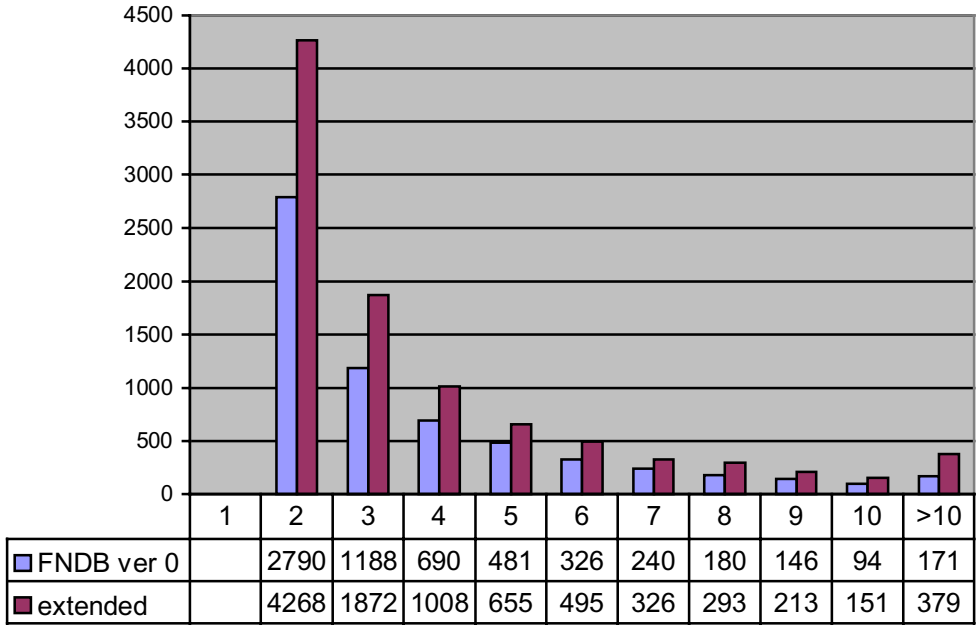
The following table shows the main characteristics of the two databases:

	FNDB ver. 0	*Extended*
n. of different sources of names	20	22
Total number of source items	23.871	60.899
n. of different names	6.441	32.710
n. of "**B**oth" cases	739	1.543

Fig. 1. 2. – Size of FNDB ver. 0 vs its extended version

The total number of records in the extended version is about 2,5 times the number of records of FNDB ver.0, the number of different names is about 5 times and the "**B**oth" cases are more than doubled.

The following diagram shows the frequency of names grouped by the number of different sources where they were found. The names found in only one source are 161 in FNDB and 23.681 in the extended database (this data is not shown in the figure for graphical reasons).



	1	2	3	4	5	6	7	8	9	10	>10
FNDB ver 0		2790	1188	690	481	326	240	180	146	94	171
extended		4268	1872	1008	655	495	326	293	213	151	379

Fig. 1.3. – Frequency of occurrences of names in FNDB ver. 0 and in the extended version

Both databases were used to assign a gender to the inventors names extracted from the EPO '98 database. The following tables show the results of the comparison between the two versions.

Country	total	FNDB ver. 0				Extended version			
		total	%	both	%	total	%	both	%
DE	55195	52958	95,9	7406	13,4	54168	98,1	8152	14,8
ES	1383	1217	88,0	155	11,2	1280	92,6	171	12,4
FR	16973	15901	93,7	5794	34,1	16629	98,0	6105	36,0
GB	15979	14968	93,7	7464	46,7	15421	96,5	7552	47,3
SE	6718	6157	91,6	919	13,7	6385	95,0	1049	15,6
Total	96248	91201	94,7	21738	22,6	93883	97,5	23029	23,9

Fig. 1.4. – Number of matched inventors in FNDB ver.0 and in the extended version

Country	total	FNDB ver. 0				Extended version			
		total	%	both	%	total	%	Both	%
DE	3608	2639	73,1	366	10,1	3068	85,0	398	11,0
ES	461	364	71,0	57	12,4	399	86,6	62	13,4
FR	1816	1374	73,7	402	22,1	1628	89,6	428	23,6
GB	5520	4853	87,9	2093	37,9	5136	93,0	2125	38,5
SE	1223	952	77,8	178	14,6	1049	85,8	197	16,1
Total	12628	10182	80,6	3096	24,5	11280	89,3	3210	25,4

Fig. 1.5. – Number of different names in FNDB ver.0 and in the extended version

The retrieval capability (i.e. the number of inventors whose first name was found in the database) increased from 94,7% to 97,5% and the number of "**B**oth" cases also increased from 22,6% to 23,9%. This increment is to be ascribed mostly to errors in the sources that can be identified only with the intervention of mother tongue people.

FNDB ver.0 already offered a more than satisfactory coverage. The addition of new sources could have lead to cost increase without significant improvement in retrieval capability. We preferred to focus in improving the overall quality of the database.

I.3. Quality Improvement

Data quality is influenced by several kind of errors that may occur in any phase of the processing. While some of them can be prevented and corrected, others can be detected but remain unsolved.
This is the case of diminutives, pet-names or short forms, which represents the major part of "Both" cases. Moreover, names are subjected to fashion; therefore names that were popular in the forties and fifties are now scarcely used. Nevertheless they represent a considerable portion of the EPO data set, because the majority of the scientists, object of this analysis, was born at that time. In addition, the use of foreign names as well as the extension to both genders of a name used in the past for only one gender has become recently common. With reference to this aspect, it is worthwhile to mention that in a few cases of rarely used names two mother tongue people of the same language classified the same name in different ways; when the gender assigned differ we reported "**B**oth" in FNDB, when one of the mother tongue person classified the name as "Not used" we applied the gender classification suggested by the other person.

There are three ways to improve the overall quality of FNDB:
1. eliminating wrong gender assignments,
2. adding the names of inventors and scientists still not included in FNDB,
3. reducing the number of names classified as "**B**oth".

The first two points have been solved with the help of mother tongue people who checked the whole database against spelling and gender errors and classified manually the names of inventors/authors still not present in data base. However, the most important action was the reduction of the number of names classified as "**B**oth". The importance of processing "**B**oth" cases is evident when considering for example the case of the data published by the US Social Security Administration (SSA). This official source contains a remarkable number (198) of very frequent names, classified as "**B**oth" that are generally used only for a specific gender. The following table reports the names that are marked as "Both" by SSA and that appear more than 100 times in EPO 98. The second column indicates the gender assigned by the other sources (**X** indicates "**B**oth" or language dependent).

Name	*Gender*	*N. of occurr. in EPO 98*
MICHAEL	M	2056
THOMAS	M	1768
JEAN	X	1643
DAVID	M	1138
JOHN	M	884
ROBERT	M	876
CHRISTIAN	M	825
RICHARD	M	728
PAUL	M	715
FRANK	M	661
MICHEL	M	634
PHILIPPE	X	552
WALTER	M	541
ANDREW	M	464
DANIEL	M	381
ERIC	M	347
GERD	X	345
JAN	X	339
MARK	M	336
CLAUDE	X	259
JAMES	M	253
Name	*Gender*	*N. of occurr. in EPO 98*
WILLIAM	M	250
ALEXANDER	M	245
ANTHONY	M	218
DOMINIQUE	X	217
BRIAN	M	213
CHRISTOPHE	M	211
CHARLES	M	155
JONATHAN	M	143
MARIE	F	141
CARL	M	136
GEORGE	M	128
FRANCIS	M	126
KENNETH	M	125
RENE	M	124
MARIA	F	115
JOSEPH	M	111
BO	X	109
KEVIN	M	107
PATRICE	X	104
RONALD	M	102
KARSTEN	X	100

Fig.1.6. – Frequently used names classified as "Both" in SSA source

It must be noticed that, since most of the 198 names defined as "**B**oth" in SSA are defined as "**M**" by the other sources, the inattentive application of SSA and of analogous sources could introduce a significant bias in the statistical analysis.

The following table shows the number of inventors classified as "**B**oth" with a version of FNDB that uses the SSA gender classification for the 198 names and with a modified version of FNDB where the 198 SSA names were classified with the specific gender according to all the other sources

Country	Number of Inventors	Both names in FNDB ver. 0	%	Both names in modified version	%
DE	55195	7406	13,4	1128	2,0
ES	1383	155	11,2	53	3,8
FR	16973	5794	34,1	1720	10,1
GB	15979	7464	46,7	262	1,6
SE	6718	919	13,7	379	5,6
Total	96248	21738	22,6	3542	3,7

Fig.1.7. – Results of the modified classification of "Both" names in FNDB ver. 0

The reduction of "**B**oth" cases was obtained in two ways:

1. assigning the prevalent gender code to the names classified as "**B**oth". For this purpose the mother tongue correctors have been asked to change into "**F**emale" or "**M**ale" the names that are prevalently used for a gender and only exceptionally for the other.
2. assigning a gender code ("**F**emale", "**M**ale", "**B**oth" or "**N**ot used") for each language to every name in FNDB. This action is critical to improve quality since a name may have different genders in different languages. This is the case, for example, of "Andrea", which is male in Italian and female in Spanish and German. If the gender is not assigned to each language for every name, "Andrea" could only by classified as "**B**oth". Moreover if "Andrea" is found only in Italian sources, Spanish and German inventors called Andrea would be classified always as "**M**ale".

As a result of the application of the improvements discussed in this paragraph FNDB ver. 1 has been implemented. Size, structure and coverage of the new version are described in section 1.2.

I.4. Diacritics and Double Names

Diacritics

The original design of FNDB allowed to distinguish between different inflections of the same name[2]. However we did not found any case of gender inflection[3] dependent. Besides the EPO database and several scientific journals rarely use diacritics in the names of authors and inventors, even if the correct spelling would require them. Sometimes tonic accents are used instead of graves ones and vice versa and the capitalisation rules of multiple names are not uniform.

To avoid useless proliferation of records, and to facilitate checking and gender assignment procedures FNDB ver. 1 has been simplified grouping all the different inflections in just one name (plain ASCII-uppercase), obtained using the translation table of Appendix A.

The German names that require umlauts ("ä ë ï ö ü") and may be transliterated (e.g. with ä converted into "ae") have been duplicated (i.e. both spellings appear in FNDB).

[2] Two spellings of the same name are called inflections when they only differ in stressed letters or special characters like "ñ", "ç", "Ó"). For example "Frederic" and "Frédéric" are inflections of "FREDERIC", while "Frederik" is considered as a different name.

[3] Cases like Michèle (French - Female) and Michele (Italian - Male) are effectively managed as "Language Dependent"

Multiple Names

It is very difficult to obtain a good coverage of double names. The chance to miss some of the possible combinations is high. On the other hand, including all the combinations would lead to a exponential growth of the database with cost increase and loss of performance. In most cases there is no way to distinguish between a compound name and a second name: in French the double names are usually separated by hyphens ("-") but similar and commonly accepted rules do not exist in other languages. Therefore it is necessary to process both cases in the same way. FNDB always uses hyphen as separator (no blanks are allowed)

Multiple names are classified accordingly to the classification of the first component classified as "F" or "M". This rule is defined in a more formal way by the following algorithm used by the gender assignment program to identify and process multiple names.

```
Erase heading and trailing spaces and change multiple spaces with a single space
Change remaining spaces with hyphens.
Convert the name using the conversion table in App. A
If the whole multiple name appears in FNDB
        Classify the name as indicated in FNDB and exit
Else
        Set the B-flag off
        Repeat for all the components of the name starting from the first one
            If the current component appear in FNDB
                    If it is classified as "F" or "M" classify the name as the current component and exit
                    If it is classified as "B" set the B flag on and continue
            End If
        End repeat
        If the B flag is on
            classify the name as "B"
        Else
            classify the name as "Unknown"
        End if
        Exit
End if
```

Fig.1.8. – Gender assignment algorithm for multiple names

II. CONTENTS

This section describes structure and size of FNDB ver.1, originated from FNDB ver.0 with the addition of new inventors' and authors' names and the corrections applied by mother tongue people.

II.1. Data Structure

FNDB ver.1 structure is arranged as a table, (see the example illustrated in fig. 2.1) and is distributed as an Excel® file or as a tab-delimited text file.

It is organised as follows:

Column 1 contains the names translated in plain ASCII-uppercase,

Column 2 contains the *generic* gender classification. If the name belongs to the same gender in all the languages in which it is used, the *generic* gender classification in column 2 contains that gender code, otherwise it contains "**x**" to indicate that the name is *language dependent*. Column 2 is also used to classify foreign names not used in any of the 6 languages.

Columns 3 *n* contain the specific gender classification (**F**emale, **M**ale, **B**oth, **N**ot used) for the given language (Italian, French, English, German, Sweden, Spanish). Specific gender codes are usually written in uppercase. Lowercase codes indicate that the name has not yet be checked by at least two different mother tongue persons.

name	general	GB	FR	DE	IT	ES	SE
ANDRE	M	M	M	M	N	N	N
ANDREA	x	B	B	F	M	F	N
ANDREAS	M	M	M	M	N	N	M
ANDREE	x	N	F	B	N	N	N
ANDREES	M	M	N	N	N	N	N
ANDREI	M	M	M	M	M	N	N
ANDREINA	F	F	F	N	N	F	N
ANDREJ	M	M	N	M	N	N	N

Fig.2.1. – Example of FNDB ver.1 structure

II.2. Size of the Database

Presently FNDB ver. 1 contains 8.291 records.

The following figures show the distribution by gender and country. FNDB includes 717 (8%) classified as **N**ot used by all mother tongue people. Even if they do not belong to any of the 6 countries, these names have not been discarded since they come from acceptable quality sources. and demonstrated to be particularly useful in gender assignment of inventors and authors of not European nationality.

Gender	*n. of different names*
Female	3634
Male	4115
Both and Language dependent	542

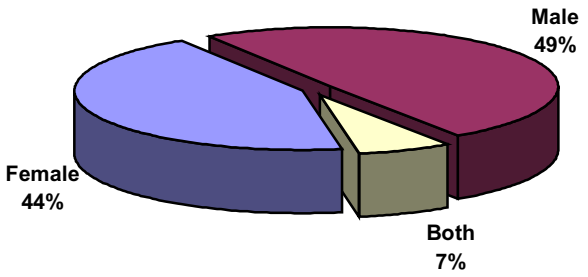
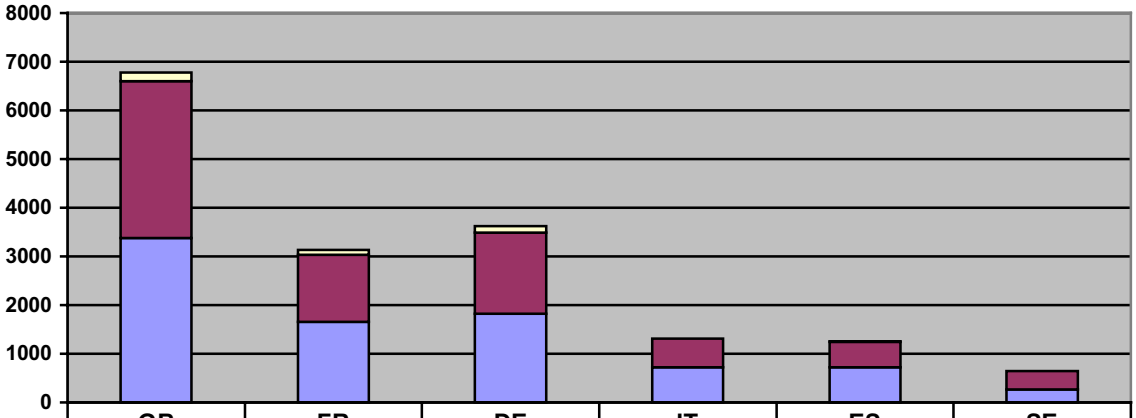


Fig.2.2. – Number of names by gender



	GB	FR	DE	IT	ES	SE
Both	168	106	127	4	11	0
Male	3222	1370	1666	570	508	378
Female	3384	1658	1822	729	725	266

Fig.2.3. – Number of names by gender and country

The sum of the names by country exceeds the total number of names in the database since many names belong to more than one country.

II.3. Examples of Current Coverage

The degree of coverage of FNDB ver.1 has been tested on the more that 100.000 names of inventors of EPO '98 and on about 30.000 names of authors of scientific papers published in 1995 on ISI journals (see Part 3). Only the inventors/authors with working address in one of the 6 countries have been taken in consideration.

Fig.2.4. – Coverage of FNDB ver. 1 for EPO and 1995 Authors

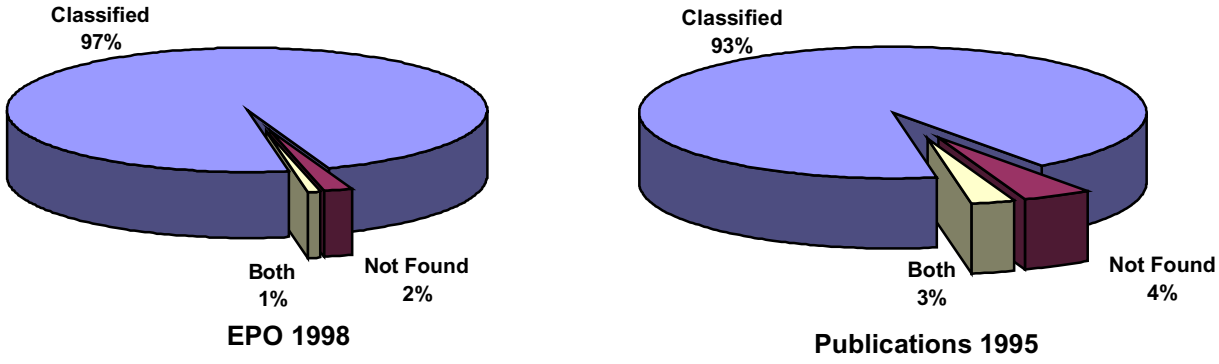


Figure 2.4. shows that the adopted methodology is successful in more than 90% of cases. Coverage of Patents is strongly influenced by German inventors who represent more than 50% of the total number of the names. The sample of authors of scientific publications is better distributed among the 6 Countries but contains a larger number of "foreign" people (mainly form Arabic and Far Eastern countries) who are working in the 6 countries and whose names are not included in FNDB.

Table 2.5. shows the coverage of inventors and authors by country.

	Inventors					Authors				
Country	total	Not found	%	Both	%	total	Not found	%	Both	%
DE	55195	842	1.5	89	0.2	6865	257	3,7	51	0,7
ES	1383	44	3.2	12	0.9	2766	166	6,0	62	2,2
FR	16973	239	1.4	524	3.1	6030	191	3,2	228	3,8
GB	15979	420	2.6	197	1.2	7468	487	6,5	237	3,2
IT	6745	106	1.6	12	0.2	5202	104	2,0	18	0,3
SE	6718	296	4.4	56	0.8	1528	114	7,5	25	1,6
Total	102993	1947	1.9	890	0.9	29859	1319	4,4	621	2,1

Fig.2.5. – Coverage of inventors and authors by country

Inventors		**DE**	**ES**	**FR**	**GB**	**IT**	**SE**	**Total**
N. of different names		3226	461	1817	5519	887	1218	13128
Not Found	total	488	29	144	293	78	156	1188
	%	15,1	6,3	7,9	5,3	8,8	12,8	9,0
Authors		**DE**	**ES**	**FR**	**GB**	**IT**	**SE**	**Total**
N. of different names		1333	642	1216	1562	863	564	6180
Not Found	total	228	136	184	425	90	106	1169
	%	17,1	21,2	15,1	27,2	10,4	18,8	18,9

Fig.2.6. – Coverage of different names by country

The number of different names includes the multiple names and though it is higher than the total number of names in the data base.

Fig. 2.5 and 2.6 can be compared with fig. 1.4. and 1.5. to evaluate the improvement in data quality from ver.0 to ver.1 due to the intervention of mother tongue people.

The following tables show the distribution of missing names by number of occurrences. The actual coverage seems to be nearly optimal since the 73.1% (inventors) and the 90.2% (authors) of the missing names appear only once in the database. These names can be considered mostly spelling errors and rare or foreign names.

	occurrences	1	2	3	4	5	6	7	8	9	>=10	Tot
Names	total	842	172	61	25	22	11	6	4	4	5	1152
	%	73.1	14.9	5.3	2.2	1.9	1.0	0.5	0.3	0.3	0.4	100.0
Inventors	total	842	344	183	100	110	66	42	32	36	73	1828
	%	46.1	18.8	10.0	5.5	6.0	3.6	2.3	1.8	2.0	4.0	100.0

Fig.2.7. – Distribution by number of occurrences of missing inventors' names

	occurrences	1	2	3	4	5	6	7	8	9	>=10	Tot
Names	total	1036	79	22	5	1	2	2	1	0	0	1148
	%	90.2	6.9	1.9	0.4	0.1	0.2	0.2	0.1	0.0	0.0	100.0
Authors	total	1036	158	66	20	5	12	14	8	0	0	1319
	%	78.5	12.0	5.0	1.5	0.4	0.9	1.1	0.6	0.0	0.0	100.0

Fig.2.8. – Distribution by number of occurrences of missing authors' names

The table above excludes 119 inventors whose first name does not appear in the EPO database.

The relevance of the language dependent approach is shown in the following table where the results obtained with FNDB ver. 1 are compared with those that would be obtained classifying as "Both" all the language-dependent names. With language-dependent classification the both cases dropped from 3.9% to 0.9% for inventors and from 6.6% to 2.1% for authors.

Inventors				Authors			
FNDB v1	%	Both if language dependent	%	FNDB v1	%	Both if language dependent	%
890	0.9	4022	3.9	814	2.1	1977	6.6

Fig.2.9. – Reduction of "Both" cases with language dependent classification

PART 2 Developing and testing a methodology for the sex-disaggregation of patent data

I. DATA SOURCE

This section describes the patent database used for the statistical analysis, the methodology developed and the adjustments applied to produce genderized patent indicators according to various technological and industrial fields.

The data used refer to the patents published in the year 1998 by the European Patent Office (EPO). The EPO '98 database contains 132.845 patents produced by 313.463 inventors. Gender assignmane is performed on all the patents produced by inventors whose working address is in one of the following EU countries: France, Germany, Italy, Spain, Sweden and Great Britain.

I.1. Identification and Characteristics of the Source

Data was extracted from the *First '98* Data Base, produced by a co-operation between the World Intellectual Property Organisation and the European Patent Office (EPO).
This database contains the bibliographic data of all the European Patent Applications and the PCT International Applications published by EPO in 1998 and is distributed on 5 CD rom.
An *ad hoc* Information Retrieval System (Mimosa) is distributed with the data. Download is allowed by the software. Data is also available as single files in SGML format + Gif images.

The format of the patent document is described in details in the WIPO ST.32 standard "*Recommendation for the Mark-up of Patent Documents Using SGML (Standard Generalised Mark-up Language)*" available at the World Intellectual Property Organisation (WIPO) web site (http://www.wipo.int).

The structure of the fields used for the analysis is:

Patent ID:	Format: *[EP|WO] + number + [A1|A2]*. The first two characters allow to distinguish between European Patent (EP) and PCT Applications (WO)
Country Codes:	ISO 3166 standard is applied
Inventor's name:	The preferred format is *family name , first name(s) [titles]*. See the next paragraph for details.
Classification	One or more codes (max 5) are assigned to each patent according the International Patent Classification (IPC) Schema (cfr. http://www.wipo.int/eng/general/ipc/index.htm)
Diacritics	Special characters (> Hex 7F) are coded in extended ANSI character set (EP) or using standard SGML symbolic names (WO). (see App. A1)

I.2. Methodological Notes on Data Processing

Selected data

The following fields from the EPO First 98 database were downloaded for each patent containing at least one inventor working in one of the 6 countries selected for this study:

- Patent ID
- Filing and publication dates
- Full name of the inventor(s)
- Working address of the inventor(s), including country code
- Country code of the applicant(s)
- IPC classification code(s)

First names

The preferred format for the inventors names (*family name, comma , first name(s), comma, optional titles*) may have several exceptions: initials may appear together/instead of first name; the second name, if present, may be separated by comma or space; double names may be separated by spaces or hyphenated; address and/or notes may appear after the name at new line.
A program has been written to extract first names from the inventor field and to clean automatically the data using the conversion table shown in appendix A2. After automatic cleaning the names without correspondence in FNDB were checked and, in case of evident error, corrected manually.

Nationality of the Inventors

While the working/residence address of the inventors is available for both European and PCT applications, the inventors' nationality is only included in the PCT applications.
Nationality was download and used to identify the gender when the inventor's name was classified in FNDB as "*country/language dependent*".
Statistics are always based on the working/residence addresses of the inventors, therefore "*national production*" always refers to the country where the inventor was working and not to her/his real nationality.

Classification by Industrial Sectors

Patents are classified according to the International Patent Classification (IPC) Schema. The distribution of number of patents by IPC code (3rd level) is reported in App. D.
The concordance table between IPC and ISIC rev. 2 developed by Verspagen, van Moergastel and Slabbers (MERIT Res.Memorandum 2/94-004, http://meritbbs.unimaas.nl/rmpds/rmlist94.htm) has been used to classify patents by Industry Sectors
To group and classify patents by fields of technology. the table reported in App. E has been used.

I.3. Structure of the Implemented Data Base

The Patent DB was created with the data downloaded from the EPO First 98 Data Base as a working tool to facilitate data processing and production of statistical tables. Patent DB is implemented in Microsoft Access© and is organised in the following tables:

BasicData Table

contains a record for each patent of the EPO database with at least one inventor working in one of the 6 countries.

ITEMID	Patent Identification Code	Text – 11 chars Key, Indexed, Mandatory
CY	Contains the first two characters of the Patent Id and allows to distinguish between European Patent (EP) and PCT Applications (WO).	Text – 2 chars Not indexed, Mandatory
FILINGDATE	Data of filing: Format: yyyymmdd	Text – 8 char Mandatory
PUBBLDATE	Data of publication: Format: yyyymmdd	Text – 8 char Mandatory
NAPPSTATES	Number of designated contracting states.	Integer, Mandatory
CDID	Identification of the CD from where the patent has been extracted.	Text – 4 char Indexed, Mandatory

Inventors Table

contains a record for each inventor extracted from the patents included in the BASICDATA Table

ITEMID	Patent Identification Code	Text – 11 chars Indexed, Mandatory
INVNUM	Sequential number of the inventor	Integer - Not Indexed
FULLNAME	Original Inventor's name as it appear in the EPO database	Text – 255 chars Not indexed
FIRSTNAMEUC	Inventor's first name (upper case) after automatic cleaning	Text – 255 chars Indexed, Mandatory
FIRSTNAMEMODIF	Inventor's first name after manual correction	Text – 255 chars Indexed, Mandatory
TOWN	Inventor's working address	Text – 255 chars Not Indexed, Optional
ZIP	Zip code extracted from the working address. For future use only.	Text – 10 chars Not Indexed, Optional
COUNTRY0	Inventor's country code extracted from the working address TOWN field. This field is used for geographic aggregations	Text – 2 chars Indexed, Optional
COUNTRY1	PCT only. Inventor's country code. If not empty the field is equal to COUNTRY0	Text – 2 chars Not Indexed, Optional
COUNTRY2	PCT only. Inventor's nationality. This field may be used from the gender identification program.	Text – 2 chars Not Indexed, Optional

IPC Table

contains the IPC classifications of each patent. Up to 5 codes may be associated to the same patent.

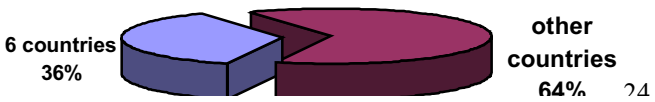
ITEMID	Patent Identification Code	Text – 11 chars Indexed, Mandatory
IPC_CODE	IPC Code Long form. Only the first 4 characters are used in this study	Text – 20 chars Not indexed, Mandatory
IPC_CODET	IPC edition For future use only.	Text – 1 char Not Indexed, Optional

I.4. Size and Contents

The following table shows the main figures on the EPO '98 database with reference to the 6 countries involved in this analysis.

Total number of patents:		**132.845**
EPO		73.323
PCT		59.522
Total number of inventors		**313.463**
Patents with at least one inventor from the 6 countries:		
Number of patents		**47.820**
Number of inventors	total	**114.157**
	from the 6 countries	**102.993**
Number of inventors without first name	total	**142**
	from the 6 countries	**119**

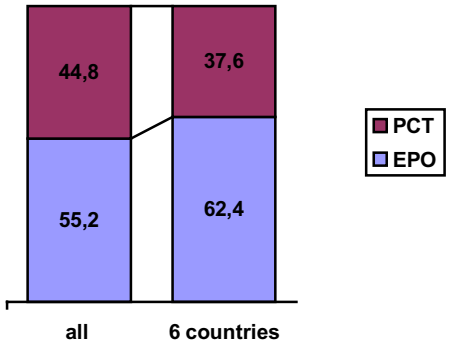
Fig. 1.1. Size of the Patent DB



The number of patents produced by the 6 countries and the number of inventors

represents the 36% of the whole '98 EPO database. The mean number of inventor per patent is 2.4.

Fig. 1.1. Share of patents produced by the 6 countries



In the whole database PCT applications represent the 45% of the total number of patents. The share of PCT applications is smaller for the 6 countries with a percentage of 38%.

Fig.1.2. Number of EPO and PCT applications

The following figure shows the distribution of the patents by country. It must be taken in account that the patents produced by inventors of different countries increase of one unit the total of each co-operating country.

German inventors are almost one half (48%) of the total and are involved in 44% of the patents. Germany is followed by France and Great Britain (both with 15% of inventors), Italy and Sweden (6% of inventors). About 10% of the patents are produced in co-operation with inventors working outside the 6 countries.

Country	*patents*	*inventors*
Germany	23203	55195
Spain	762	1383
France	8347	16973
Italy	3754	6745
Sweden	3557	6718
GB	8120	15979
Other	4840	11164

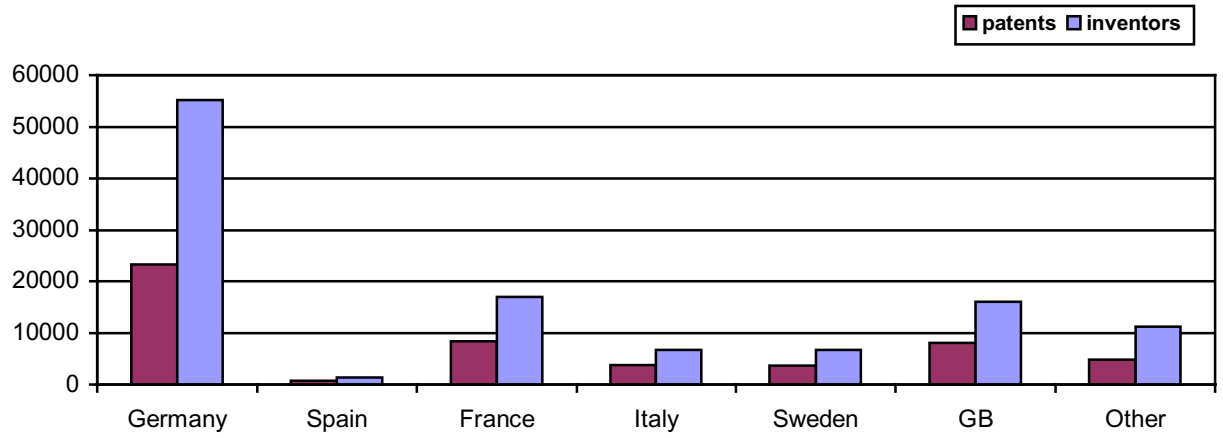


Fig. 1.3. Number of patents and inventors by country

The following figure shows the distribution of the patents by IPC code for the whole database and for the 6 countries according to the data reported in App. D. There are no sensible differences between the two distributions.

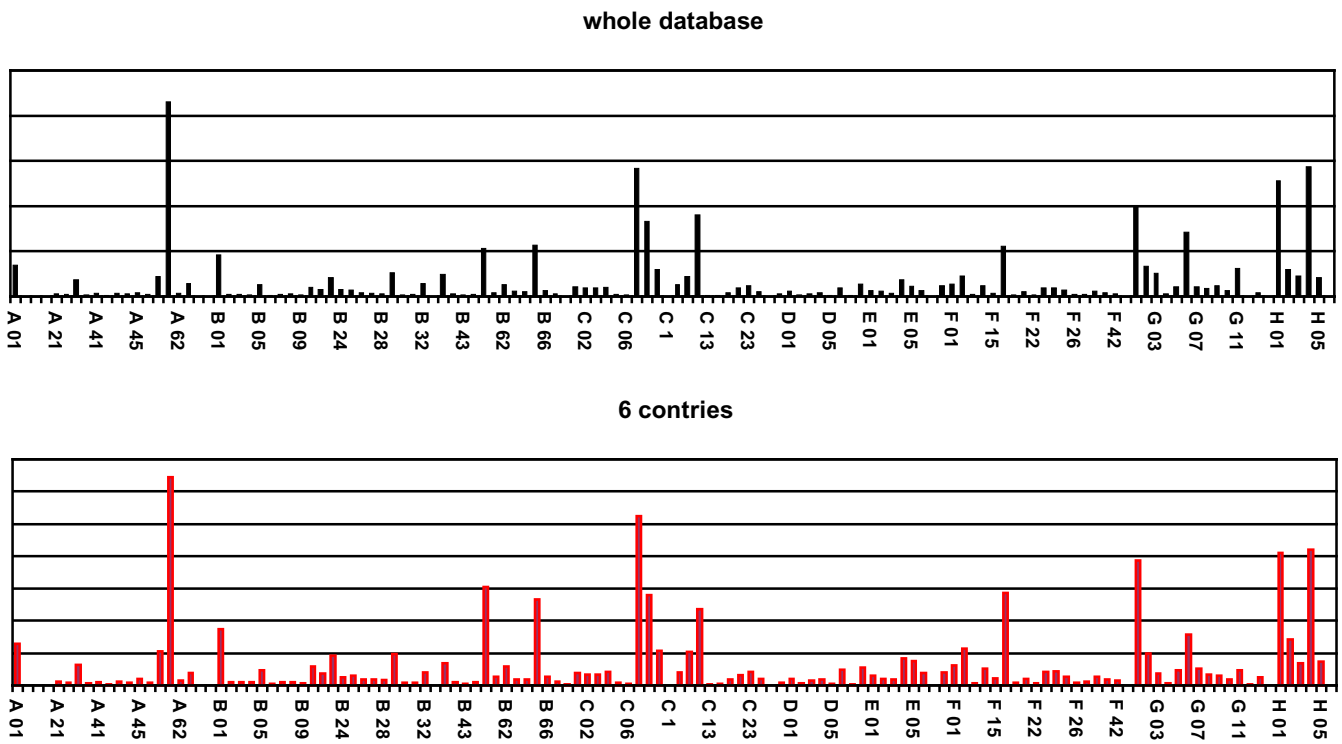


Fig. 1.4. Number of patents by IPC code

II. DATA ANALYSIS

II.1. Methodology

Three indicators were introduced and used throughout this report in order to process in a correct way patents produced by co-operation among inventors of different countries and gender

Participation counts the number of patents with at least one inventor of a given gender/country.

Contribution measures the involvement of each gender/country to the production of a patent assuming that each inventor concurred with the same effort. *Contribution* can be called also *"patents-equivalent*" since it sums the single shares of each patent attributed to a given gender/country. For example if two inventors produce three patents, each of them contributes to the half of each patent and therefore produces 1.5 patents-equivalent.
For a patent with ***n*** inventors the contribution of each gender/country is equal to the number of inventors of the respective gender/country divided by ***n***. The sum of the contributions of all the genders/countries involved in a patent is always equal to 1.

Total count Total number of inventors of a given gender/country for each patent.

The following tables exemplifies how to calculate the three indicators.

				Women Participation	Women Contribution	Women Total Count
F	M	M	M	1	1/4	1
F	F	M	M	1	2/4	2
F	F	F	M	1	3/4	3
F	F	F	F	1	4/4	4

For example in a patent produced by 9 inventors from 4 countries: one French female and one male, two German males, one Spanish female, one British female and three males, the three indicators are calculated as follows:

	France		Germany		Spain		UK		tot
	F	M	F	M	F	M	F	M	
Participation	1	1	0	1	1	0	1	1	6
Contribution	1/9	1/9	0	2/9	1/9	0	1/9	3/9	1
Total count	1	1	0	2	1	0	1	3	9

It must be noted that the sum of the percentages of *participation* by gender or by country usually exceeds 100% since several patents are produced by inventors of different gender and/or country.

The difference in the values of *participation* and *contribution* of the same subset of inventors is an indicator of the level of co-operation between different gender and/or countries while differences between *total count* and *participation* or *contribution* are measures of the level of co-operation inside the same gender/country.

II.2. Synthesis of the Results

A detailed analysis with statistics by country and technology/industry field is provided separately in the annexed document " Gender Analysis on 1998 EPO Patents for 6 EU Countries". The main indicators extracted from the above cited document are reported in the following tables.

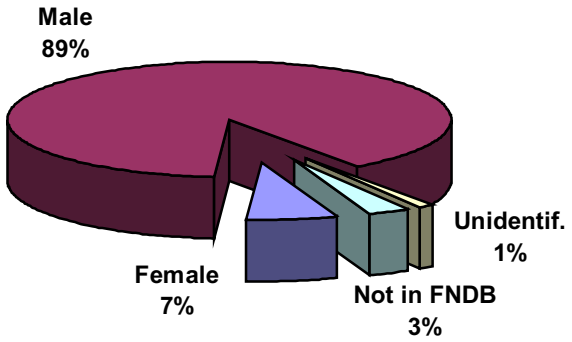


Fig. 2.1. Distribution of the gender classification of the inventors of the 6 countries

As already documented in section 1 a satisfactory coverage in gender assignment has been achieved: 96% of the 114.157 inventors have been classified as "Female" or "Male". 1% of the inventors has the first name classified as "Both" and about 3% of the names have not been classified because not found in FNDB.

Patents by gender

Table 2.2 provides the total count of the indicators for the 6 countries.

	Female	Male	Unident.	Not in FNDB	Total
Participation	5990	46530	1282	2818	56620
Contribution	2491,3	43622,4	515,7	1191,6	47821
Number of inventors	7640	101763	1354	3400	114157
Unidentif. = classified in FNDB as Both *Not in FNDB includes 143 names of inventors whose first name was not available*					

Fig. 2.2. Gender indicators for the 6 countries

In figure 2.3. only the items classified as "Male" or "Female" are considered. 12,5% of the patents have at least one female inventor and 97,3% of the patents have at least one male inventor. As a consequence 87,5% of the patents have been produced only by men and 2.7% only by women. On the other hand female inventors are 7% of the total number and contribute to the overall production of patents with 5%.of equivalent-patents.

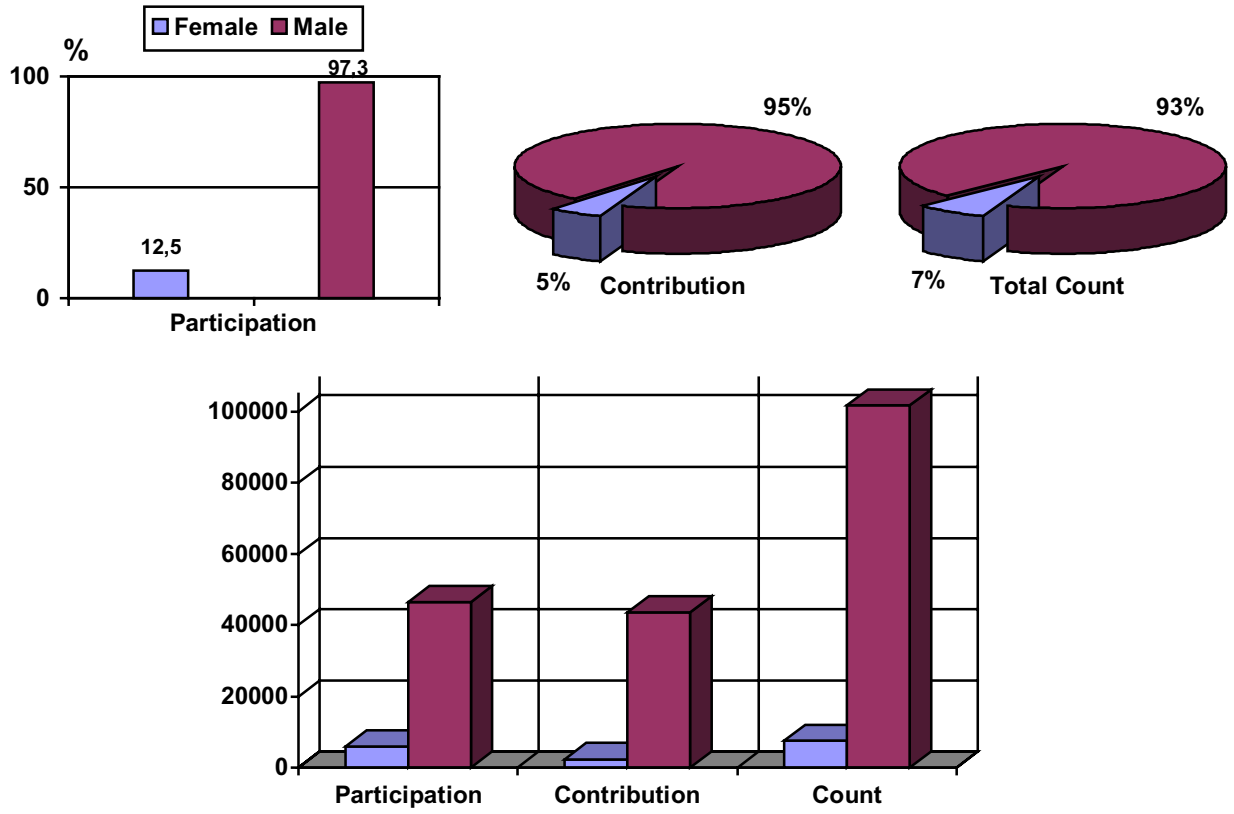


Fig. 2.3. Gender indicators for the 6 countries

Patents by Gender and Country

Figure 2.4. shows the distribution of the inventors by gender and country.
The country with the highest percentage of female inventors is Spain followed by France and Italy. Germany has the lowest percentage of female inventors (4,6% vs 15,8% of Spain). Since Germany produces about 50% of the patents the low German percentage of female inventors influences significantly the global statistics.

	Participation		Contribution		N. of Inventors	
	Female	Male	**Female**	Male	Female	Male
Germany	2046	22806	759,2	21053,5	2476	51788
Spain	148	706	71,6	587,9	210	1117
France	1401	7889	651,8	6744,6	1803	14407
Italy	455	3627	205,1	3279,8	586	6041
Sweden	313	3374	145,9	3032,3	399	5967
GB	995	7769	424,0	6696,3	1164	14198
Other	790	4256	233,7	2227,9	1002	8245

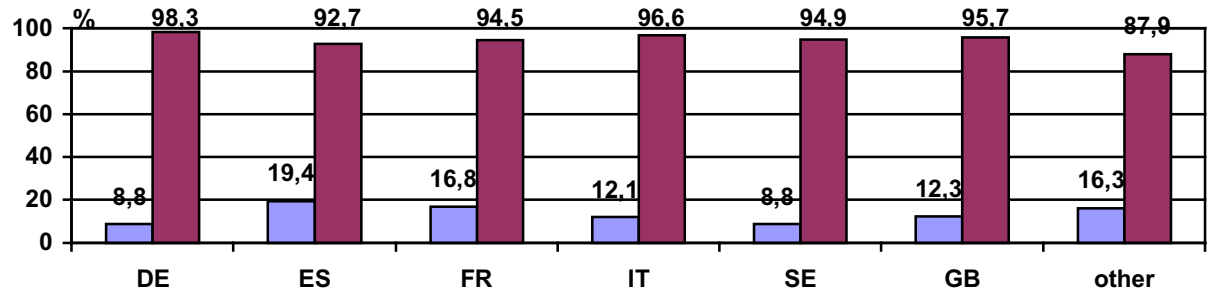


Fig. 2.4.1. - Participation by gender and country

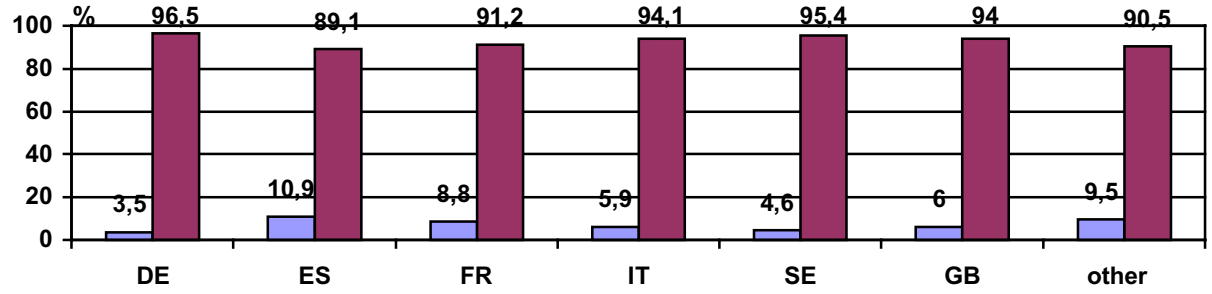


Fig. 2.4.2. - Contribution by gender and country

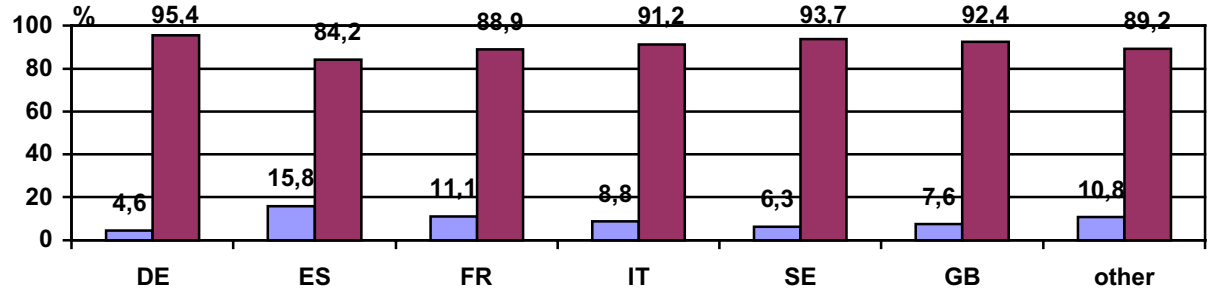


Fig. 2.4.3. - Number of inventors by gender and country

PART 3 Developing and testing a methodology for the sex-disaggregation of data on scientific publications

The objective of the work described in this section was to produce gender indicators of authorship of scientific publications in the various disciplines and for a sample of 6 EU Member States, with the aim of assessing the feasibility of extending the analysis to all the EU Member States for a period of 5 years. The indicators were calculated by processing roughly 35,000 authors of 10,000 scientific publications selected from the Science Citation Index database for the year 1995. Authors' gender was assigned by using their first names (see Part A of this report for details of the first name database).

The study was developed in the following stages:

- Definition of a possible methodology for preparing the sample and for processing the data
- Acquisition of the authors first name from the selected publications
- Gender classification of the authors according to their first names using a First Name Data Base (FNDB) – see Part 1 of this report
- Production of indicators by gender, country and disciplines
- Statistical evaluation of the results obtained and of the methodology applied

Results confirm the feasibility of the approach of using the first name to identify the gender of the authors and the satisfactory coverage provided by FNDB ver.1: 91% of the authors whose first names were available (36,239) were classified as "Female" or "Male", 3% as "Both" (names used for both genders), and about 6% were not found in FNDB.

What follows is organised in 3 sections:

Section 3.1 describes the methodological aspects related to the identification and selection of the journals, the procedures for collecting the first names and the structure of the sample data set. An overview of the general results is provided .

Section 3.2 reports the main results of the analysis. Detailed results are presented in Volume II of this report which contains figures and charts on gender indicators by country, disciplines and collaborations.

Section 3.3 shows the gender distribution arranged by journal for each disciplinary sector. These data demonstrate that gender distribution may depend on the specific discipline within the disciplinary sector and perhaps also on the journal.

I. DATA COLLECTION AND PROCESSING

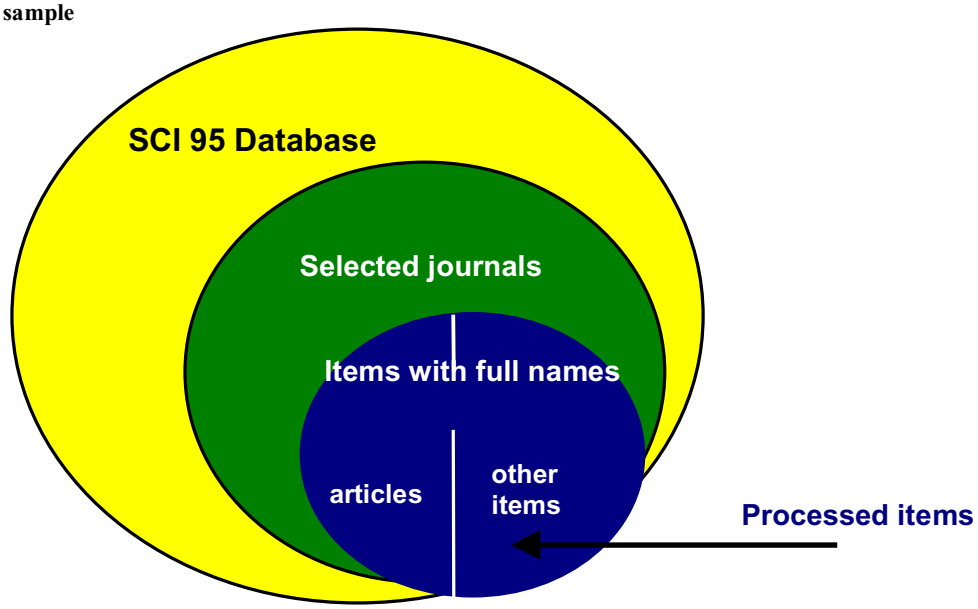
This study is based on a data sample of 10,000 items published during the year 1995 in scientific journals of international relevance and written by about 35,000 authors from 6 European countries: Britain, France, Germany, Italy, Spain and Sweden. The gender of the authors was identified through their first name. More than 30,000 publications have been analysed in order to collect the sample since in many cases the first name was not available on the original paper.

I.1. Identification and Characteristics of the Source

All the relevant international bibliographic databases contain only the initials of the names of the authors. Therefore, to perform gender analyses of scientists based on the first names, the authors' names have to be collected from the original publication in the library or on Internet.

The Science Citation Index (SCI) 1995 database produced by the Institute for Scientific Information (ISI) was chosen to select the journals and the publications to be processed.
The use of SCI greatly helped in planning the work to be done since SCI is the most complete bibliographic database, covering almost all scientific disciplines, and associates relevance indicators to each journal and publication. On the other hand, it is important to note that SCI can lead to misleading results if data are not correctly normalised since the disciplinary and geographical coverage of SCI is not uniform (i.e. the disciplinary and geographical distribution of the journals included in SCI database does not correspond to the distribution of the relevant scientific journals published all over the world), having a larger number of publications in the sectors of bio-sciences and medicine and a higher number of journals produced by US publishers.

Fig. 1.1. Selection of the data sample



I.2. Methodological Notes

Terminology

Some specific terms are used throughout this report with the following meaning:

items	all the scientific publications of any type (Article, Meeting-abstract, Note, Letter, Editorial, Review, etc.)
articles	all the items classified as "Article" in the SCI database
selected journals	the subset of SCI 95 journals from which the items of the data sample have been extracted.
processed items	the items used for gender analysis, i.e. all the items of the selected journals with (1) authors' first name available and (2) at least one author belonging to one of the 6 countries.

Selection procedure

The relevant number of processed items and the necessity of performing a feasibility study led to basing the sampling procedure on an "a priori" selection of the journals rather than on a random selection of the items.

Journals have been selected on the following basis:

§ high availability of authors' first names
§ high frequency of items written by authors of one of the 6 countries
§ high scientific relevance
§ balance of the geographical and disciplinary coverage

Some journals with a low relevance level and several journals of different fields of the same disciplinary sector (Medicine) have been added to the sample in order to identify whether the relevance or the subject matter may interfere significantly with the gender distribution.

The first selection was made from the journals with a high number of authors from Spain and Sweden, the less represented in SCI among the six countries, in order to reach a good coverage for all countries. Moreover, since it is impossible to predict in advance the amount of first names actually available in the chosen journals, the selection of the sample was built in a dynamic way, carrying out adjustments in real time during data collection.

The sampling technique adopted in this study could introduce a bias in the statistics when the variables are aggregated by country or discipline.

For the indicators by country the bias introduced by the deterministic selection of the journals was significantly reduced by processing the journals thoroughly, thus obtaining a geographical distribution very close to SCI (fig.1.9.)4.

The indicators by disciplines, on the other hand, need to be normalised since the selection was not balanced and even SCI is not universally accepted as representative of the disciplinary distribution of the papers published throughout the world in international journals.

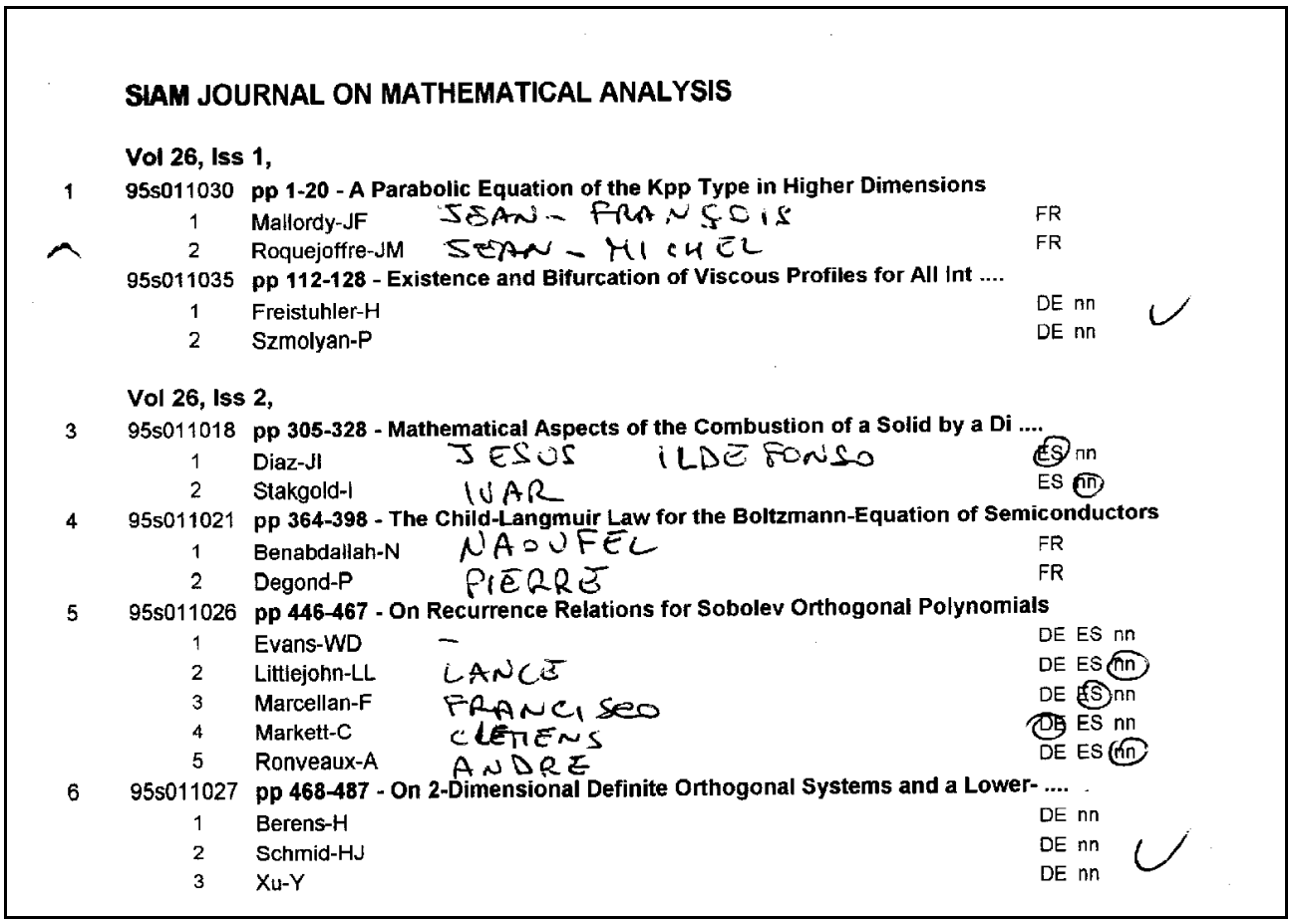
A generally accepted normalisation factor does not exist and cannot be applied. However, data results from the analysis by country and discipline do not show any lack of homogeneity and suggest that the disciplinary bias, if it exists, may not be particularly relevant. In any case, readers should evaluate the figures carefully when statistics are aggregated by discipline (e.g. the overall gender distribution in a country, without disciplinary desegregation).

Data collection

Data collection of authors' names and nationalities was performed manually in the library. An online attempt to visit the web sites of the main publishers was initially made to verify the availability of the first names. The result was frustrating because 1995 editions are rarely available on the Internet, as the online offer only started in recent years. In any case most of the journals available on Internet publish only the contents of their issues and this is not sufficient for our purposes since first names and working addresses are usually printed only on the first page of the paper.

A precompiled form for data collection (*see* fig. 1.2.) was produced for each journal selected. The forms include only the items written by authors from the six countries, sorted by issue and page number. For each item the following data are printed:
- the bibliographic information needed to identify the item,
- the surnames with initials of all the authors
- the country code of authors' working addresses. ISO codes were used for the 6 countries while all the other countries were coded as "nn". For the items written by authors of different countries, all the codes of the countries involved were listed since SCI do not provide links between authors and addresses.

[4] Even if the presence of US authors in the SCI database could be overestimated with respect to the European authors, the validity of the SCI geographical distribution inside and among the European countries is universally accepted.



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1 95s011030 **pp 1-20 - A Parabolic Equation of the Kpp Type in Higher Dimensions**
1 Mallordy-JF JEAN - FRANÇOIS FR
2 Roquejoffre-JM JEAN - MICHEL FR
95s011035 **pp 112-128 - Existence and Bifurcation of Viscous Profiles for All Int ....**
1 Freistuhler-H DE nn
2 Szmolyan-P DE nn

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3 95s011018 **pp 305-328 - Mathematical Aspects of the Combustion of a Solid by a Di ....**
1 Diaz-JI JESUS ILDE FONSO ES nn
2 Stakgold-I IVAR ES nn
4 95s011021 **pp 364-398 - The Child-Langmuir Law for the Boltzmann-Equation of Semiconductors**
1 Benabdallah-N NAOUFEL FR
2 Degond-P PIERRE FR
5 95s011026 **pp 446-467 - On Recurrence Relations for Sobolev Orthogonal Polynomials**
1 Evans-WD — DE ES nn
2 Littlejohn-LL LANCE DE ES nn
3 Marcellan-F FRANCISCO DE ES nn
4 Markett-C CLEMENS DE ES nn
5 Ronveaux-A ANDRE DE ES nn
6 95s011027 **pp 468-487 - On 2-Dimensional Definite Orthogonal Systems and a Lower- ....**
1 Berens-H DE nn
2 Schmid-HJ DE nn
3 Xu-Y DE nn

Fig. 1.2. Example of the form used for data collection

The forms were filled in manually. The first names, when available, were written in beside the surname. The country code was checked only for the items with authors of different countries.
In a few cases items were found containing the first name for some authors and only the initials for the others. These cases (called "Mixed items" in this report) were processed as well and were included in the data sample.
If the first issues of a journal contained only items mixed or without first names, the journal was unselected.

As mentioned before, only the first issues of the journals with a high number of articles were processed to avoid an excess of items of the same discipline. Multidisciplinary journals were always processed in their entirety.

Certain difficulties encountered during data collection and processing deserve to be mentioned here because they make data collection more difficult and increase processing time. These are the following:

- The structure of the articles, the information available and the typographical formats change drastically from one publisher to another and may also vary from one journal to another.
- Within the same issue the authors' first names may be given, without any consistency, either as initials only or as full names. Sometimes both are used even in the same item. Surnames may follow first names or vice versa.
- The indication of the working addresses may or may not be linked to the authors names. The way of associating addresses to names varies greatly item by item.

Scientific relevance of the publications

The Impact Factor (IF) of the journals has been used as a measure of the scientific relevance of all its publications.
Since the absolute values of IF strongly depend on the disciplinary sector and even on the discipline within the sector, normalisation is needed in order to allow comparison between disciplines. The normalisation method used for this report has already been experimented in previous analyses[5] and consists of ranking by IF the journals of each discipline and dividing the journals into 10 groups of the same number (percentiles). Each item is assumed to have a level (from 1 to 10) of scientific relevance equal to the percentile of the journal. The journals classified in more than one discipline of the same sector are assigned to the highest percentile.
Most selected journals belong to the highest IF levels. A few journals with a low IF level were processed to evaluate possible discrepancies. The distribution of the selected journals by IF level is reported in paragraph 1.3.

Nationality of the authors

Journals usually report the name, address and country of the institutes where the authors work but they never report the authors' nationality. Therefore statistics on national productivity refer to the countries where the authors were working rather than to their actual nationality.
464 cases of publications written by authors of different countries do not report the authors' working addresses. In the statistics desegregated by country these items are classified as "*Unknown*"

Year of publication

The year of publication must be taken into account in selecting data from SCI. For instance 10% of the items contained in the SCI 95 database were published in previous years. While building the sample, it was necessary to discard the items published in previous years and to collect the missing 1995 items from the SCI 96 database.

Type of publication

Scientific journals generally include several types of publication apart from the articles: editorials, letters, notes, etc. Originally it was agreed to process only the articles, which are considered to be the most representative publications. During the study it was decided to extend the analysis to the other types of items in order to detect whether the gender distribution varies according to the type of publication.
Nevertheless *Meeting abstracts* were not selected and included in the sample, although they represent about 13% of the SCI 95 database, because this type of publication is found only in very few journals and only in specific disciplines. Besides, scientific journals do not seem to be the best medium for collecting information on contributions to conferences and congresses.

Disciplinary Classification

[5] F. Penotti, F. Naldi, I. Vannini Parenti "Un'analisi della produzione scientifica italiana nel contesto internazionale", CNR 1992
F. Naldi, B. Carulli, L. Rossi Bernardi "Analisi della produzione scientifica italiana nel periodo 1983-1996", CNR 1998

The ISI '95 classification schema based on 183 disciplines has been used. ISI disciplines have been grouped into the 9 disciplinary sectors listed below and used to build the sample. A discipline may be associated with one or more sectors. Each journal is associated with one or more disciplines and with one or more sectors.

1. Biology
2. Biomedicine
3. Chemistry
4. Clinical Medicine
5. Earth and Space Sciences
6. Engineering
7. Mathematics
8. Physics
9. Multidisciplinary

Items are classified according to the disciplinary sector(s) of the journal.
The correspondence table between ISI classification and disciplinary sectors is shown on the following page.

Biology
Anthropology, Biology, Biology-Miscellaneous, Biomethods, Cell Biology, Cytology & Histology, Developmental Biology, Ecology, Entomology, Genetics & Heredity, Material Science-Biomaterials, Microbiology, Mycology, Ornithology, Paleontology, Parasitology, Veterinary Sciences, Zoology

Biomedicine
Biochemistry & Molecular Biology, Biophysics, Biotechnology & Applied Microbiology, Cell Biology, Biomedical Engineering, Genetics & Heredity

Chemistry
Chemistry (Analytical, Applied, Clinical & Medicinal, Inorganic & Nuclear, Organic, Physical), Crystallography, Electrochemistry, Engineering-Chemical, Pharmacology & Pharmacy, Polymer Science, Spectroscopy

Clinical Medicine
Allergy, Anatomy & Morphology, Andrology, Anesthesiology, Cardiovascular System, Chemistry-Clinical & Medicinal, Clinical Neurology, Critical Care, Dentistry/Oral Surgery & Medicine, Dermatology & Venereal Diseases, Endocrinology & Metabolism, Gastroenterology and Hepatology, Geriatrics & Gerontology, Hematology, Immunology, Infectious Diseases, Medical Laboratory Technology, Medicine, General & Internal, Medicine Legal, Medicine Miscellaneous, Medicine Research & Experimental, Neurosciences, Nutrition & Dietetics, Obstetrics & Gynecology, Oncology, Ophthalmology, Orthopedics, Otorhinolaryngology, Parasitology, Pathology, Pediatrics, Pharmacology & Pharmacy, Physiology, Psychiatry, Psychology (Developmental, Biological, Clinical, Educational, Experimental, Mathematical, Psychoanalysis), Radiology & Nuclear Medicine, Rehabilitation, Reproductive Systems, Respiratory System, Rheumatology, Sport Sciences, Substance Abuse, Surgery, Toxicology, Transplantation, Tropical Medicine, Urology & Nephrology, Vascular Diseases, Virology

Earth and Space Sciences
Aerospace Engin. & Technology, Agricultural Economics & Policy, Agriculture-(Dairy & Animal Science, Soil Science), Astronomy & Astrophysics, Engineering-Marine, Environmental Sciences, Environmental Studies, Fisheries, Food Science & Technology, Forestry, Geochemistry & Geophysics, Geography, Geology, Geosciences, Horticulture, Limnology, Marine & Freshwater Biology, Meteorology & Atmospheric Sciences, Mineralogy, Oceanography, Paleontology, Plant Sciences, Remote Sensing, Water Resources

Engineering
Computer Applications & Cybernetics, Computer Science (Artificial Intelligence, Cybernetics, Hardware & Architecture, Information Systems, Interdisciplinary Applic., Software, Graphics Progr., Theory & Methods), Construction & Building Technology, Energy & Fuels, Engineering (Biomedical, Chemical, Civil, Electrical & Electronic, Environmental, Industrial, Manufacturing, Marine, Mechanical, Petroleum), Ergonomics, Information Science & Library Science, Instruments & Instrumentation, Management, Materials Science (Biomaterials, Ceramics, Characterisation & Testing, Coatings & Films, Composites, Paper & Wood, Textiles), Mechanics, Medical Laboratory Technology, Metallurgy & Metallurgical Engineering, Metallurgy & Mining, Mining & Mineral Processing, Nuclear Science & Technology, Operations Research & Management Science, Photographic Technology, Planning & Development, Robotics & Automatic Control, Telecommunications, Thermodynamics, Transportation, Urban Studies

Mathematics
Computer Science, Artificial Intelligence, Computer Science-Cybernetics, Mathematics-(Applied, Miscellaneous, Physics), Mathematical Social Sciences, Mathematical Methods, Statistics & Probability

Physics
Acoustics, Biophysics, Microscopy, Nuclear Science & Technology, Optics, Photographic Technology, Physics (Applied, Atomic, Molecular & Chemical, Condensed Matter, Fluids & Plasmas, Mathematical, Nuclear, Particles & Fields), Radiology & Nuclear Medicine, Spectroscopy, Thermodynamics

Multidisciplinary
Multidisciplinary Sciences

Fig. 1.3. Correspondence table between the SCI disciplines and the 9 disciplinary sectors

I.3. Record Structure of the Data Sample

Data collected for statistical analysis are provided in the form of a tab-delimited sequential file that can be immediately processed by the most frequently used data analysis packages (e.g. SPSS®) and easily imported into any database management system. This format was also preferred to the original Microsoft Access® file because it is easier to distribute and does not require commercial software.

The data format of the file is reported in the following page:

Two auxiliary files are provided. These are not needed to process the current data set but could be useful in the event of possible future expansions.

Disciplines Table

contains the correspondence table between the 183 ISI disciplines and the disciplinary sectors used in this study. Records are duplicated when the same discipline is assigned to more than one disciplinary sector.
Structure:

SECTORCODE	Disciplinary Sector Code. Possible values: BIO, BMD,CHE, ENG, ESS, MAT, PHY, MUL, xxx (discipline not covered by this study)	Text – 3 chars
N_JOURNALS	Number of journals assigned by ISI to the respective discipline	Integer
DISCCODE	Code of the ISI discipline. It is a number univocally assigned to the discipline. Only for internal processing purposes	Integer
DISCNAME	ISI discipline name	Text – 255 chars

If95rank Table

Defines the ISI disciplinary classification and the SCI 95 ranking of the journals from which data have been collected. Records are duplicated when the same journal is assigned to more than one discipline.
Structure:

GROUPCODE	Disciplinary Sector Code Possible values: *see* DISCIPLINE table	Text – 3 chars Indexed, Mandatory
JOURABBRIF	Journal name	Text – max 50 chars
RANKG	Ranking of the journal inside the discipline If the journal is classified under more disciplines of the same sector the best rank is used	Integer

I.4. Size and Contents of the Data Sample

The main figures on the data sample are shown in the following chart.

Number of selected journals	**157**
Total number of items in the selected journals:	**101,021**
Number of items with at least one author from the 6 countries and:	
First names available for all authors (*complete*)	9,344
First names partially available (*mixed*)	344
First names not available for all authors	6,849
Not processed [(1)]	7,806
Total	**24,343**
Number of authors of the 24,343 items	
total	**114,683**
in *complete* and *mixed* items	36,928
in *mixed* items with first name not available	689
processed for the gender analysis	**36,239**

[(1)] *Journals with a high number of articles have been processed only partially to obtain a better disciplinary distribution of the sample.*

Fig. 1.4. Size of the data sample

The classification of the selected journals according to discipline is enclosed in Appendix E where the following data are reported for each journal:

the total number of articles written by authors of the 6 countries
the number of articles processed
the number of articles where authors' first names are available.

In Appendix E1 the list is sorted by journal name, in E2 the same list is sorted by disciplinary sector.

Fig. 1.5. shows the number of items and authors, arranged by disciplinary sectors, extracted from the 157 selected journals. Totals do not correspond to the figures of the previous table since the items/authors extracted from the journals classified in two or more disciplinary sectors are counted more than once.

Sector	Journals	Items				Authors	
		Total	Processed	Initial only	Not proc.	Total	Processed
Biology	14	1761	583	669	509	9145	2416
Biomedical Research	24	3804	1516	832	1456	18382	6590
Chemistry	36	5644	2676	2033	935	21584	9950
Clinical Medicine	48	8636	3059	2007	3570	43168	13153
Earth and Space	11	1249	489	433	327	5087	1778
Engineering	18	909	411	329	169	3027	1203
Mathematics	15	610	402	208	0	1101	669
Physics	20	4281	959	977	2345	27062	3503
Multidisciplinary	5	1782	929	853	0	6463	2635

	Name	*Content*	*Format*
1	**ITEMID**	Item Identification Code	Text – 9 chars
2	**JOURNAME**	Journal name (short name as in ISI Impact Factor ranking lists)	Text – max 50 chars
3	**ISSUEID**	Issue Sequential Number	Integer
3	**ITEMID**	Item Sequential Number	Integer
4	**NAUT**	Number of authors	Integer,
5	**ALPHORDER**	alphabetical order. Possible values: "S" authors' names are in alphabetical order "N" authors' names are not in alphabetical order	Text – 1 char
6	**ITEMCOMPL**	Availability of authors' first names (completeness). Possible values: "I" only Initials, "C" (Complete) first names available for all the authors, "M" (Mixed) first names available only for some authors "N" record not processed	Text – 1 char
7	**NCOUNT**	Number of countries	Integer
8	**FLAG_GB**	"1" if GB is involved in the item, " " otherwise	Text – 1 char
9	**FLAG_FR**	"2" if FR is involved in the item, " " otherwise	Text – 1 char
10	**FLAG_DE**	"3" if DE is involved in the item, " " otherwise	Text – 1 char
11	**FLAG_IT**	"4" if IT is involved in the item, " " otherwise	Text – 1 char
12	**FLAG_ES**	"5" if ES is involved in the item, " " otherwise	Text – 1 char
13	**FLAG_SE**	"6" if SE is involved in the item, " " otherwise	Text – 1 char
14	**FLAG_NN**	"7" if other countries are involved in the item, " " otherwise	Text – 1 char
15	**NDISC**	Number of ISI disciplines (max 5)	Integer
16	**DISC1**	Code of discipline 1	Integer
17	**DISC2**	Code of discipline 2 ("0" if NDISC=1)	Integer
18	**DISC3**	Code of discipline 3 ("0" if NDISC<3)	Integer
19	**DISC4**	Code of discipline 4 ("0" if NDISC<4)	Integer
20	**DISC5**	Code of discipline 5 ("0" if NDISC<5)	Integer
21	**RANKD1**	Ranking in discipline 1	Integer
22	**RANKD 2**	Ranking in discipline 2 ("0" if NDISC=1)	Integer
23	**RANKD 3**	Ranking in discipline 3 ("0" if NDISC<3)	Integer
24	**RANKD 4**	Ranking in discipline 4 ("0" if NDISC<4)	Integer
25	**RANKD 5**	Ranking in discipline 5 ("0" if NDISC<5)	Integer
15	**NSECT**	Number of disciplinary sectors (max 5)	Integer
16	**SECT1**	Code of disciplinary sector 1	Text – 3 char
17	**SECT 2**	Code of disciplinary sector 2 (" x" if NDISC=1)	Text – 3 char
18	**SECT 3**	Code of disciplinary sector 3 (" x" if NDISC<3)	Text – 3 char
19	**SECT 4**	Code of disciplinary sector 4 (" x" if NDISC<4)	Text – 3 char
20	**SECT 5**	Code of disciplinary sector 5 (" x" if NDISC<5)	Text – 3 char
21	**RANKS1**	Ranking in disciplinary sector 1	Integer
22	**RANKS 2**	Ranking in disciplinary sector 2 (" x" if NDISC=1)	Integer
23	**RANKS 3**	Ranking in disciplinary sector 3 (" x" if NDISC<3)	Integer
24	**RANKS 4**	Ranking in disciplinary sector 4 (" x" if NDISC<4)	Integer
25	**RANKS 5**	Ranking in disciplinary sector 5 (" x" if NDISC<5)	Integer
26	**AUTHN**	Position of the author in the authors' list	Integer
27	**AUTHCOMPL**	Availability of the first names. Possible values "I" only Initials, "C" first name available (Complete)	Text – 1 char
28	**AUTHNAME**	Author's first name(s). "-" if the name is not available	Text – max 50 chars
29	**AUTHCNTRY**	Author's country code. Possible values: ISO country code "nn" if the author belongs to other countries "??" country unknown	Text – 2 chars
30	**AUTHGENDER**	Author's gender: . Possible values "F" Female, "M" Male, "B" name used for both genders "N" name not in FNDB	Text – 1 char

Fig. 1.5. Record format of sample dataset

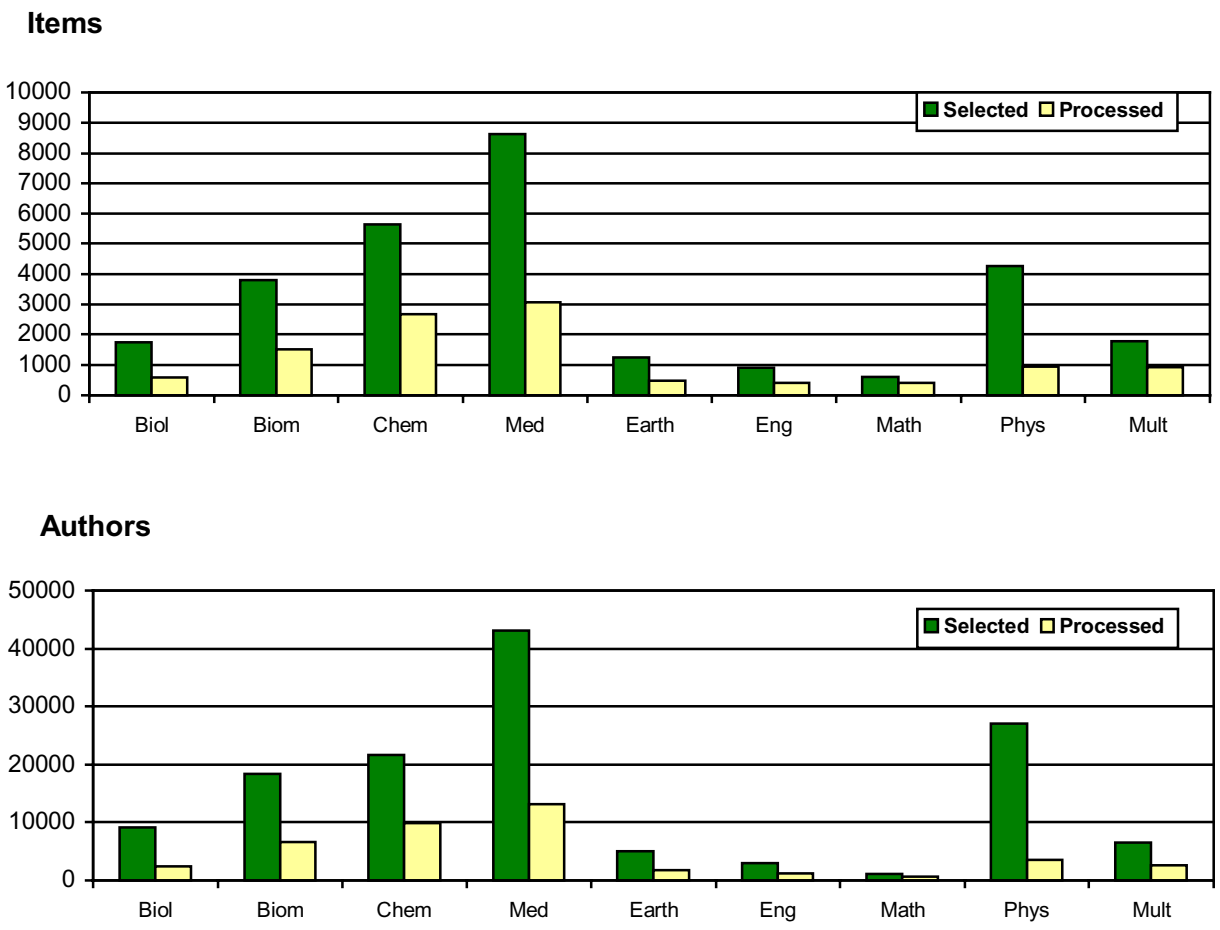


Fig. 1.6. Number of items and authors in the sample arranged by discipline

Fig. 1.6. shows the number of selected items arranged by disciplinary sector and country.
Column 3 (All countries) contains the total number of items published in the selected journals, column 4 (Total) contains the total number of items published in the selected journals with at least one author belonging to one of the 6 countries and columns 5 to 10 contain the number of items with at least one author belonging to the respective country. The sum of columns 5 to 10 is greater than the value in column 4 because the items produced in co-operation by two or more countries are counted more than once.

Sector	Journals	All countries	6 countries						
			Total	DE	ES	FR	IT	SW	GB
Biology	14	13329	1761	441	111	387	214	115	669
Biomedical Research	24	20949	3804	1043	253	872	525	281	1170
Chemistry	36	14657	5644	1808	753	1059	839	203	1353
Clinical Medicine	48	36965	8636	1983	479	1549	1384	574	3037
Earth and Space	11	4646	1249	377	117	310	135	44	368
Engineering	18	3036	909	296	69	233	112	43	206
Mathematics	15	2108	610	179	67	166	97	20	109
Physics	20	17606	5656	2041	434	1241	881	399	1234
Multidisciplinary	5	16981	1782	406	54	246	133	90	975

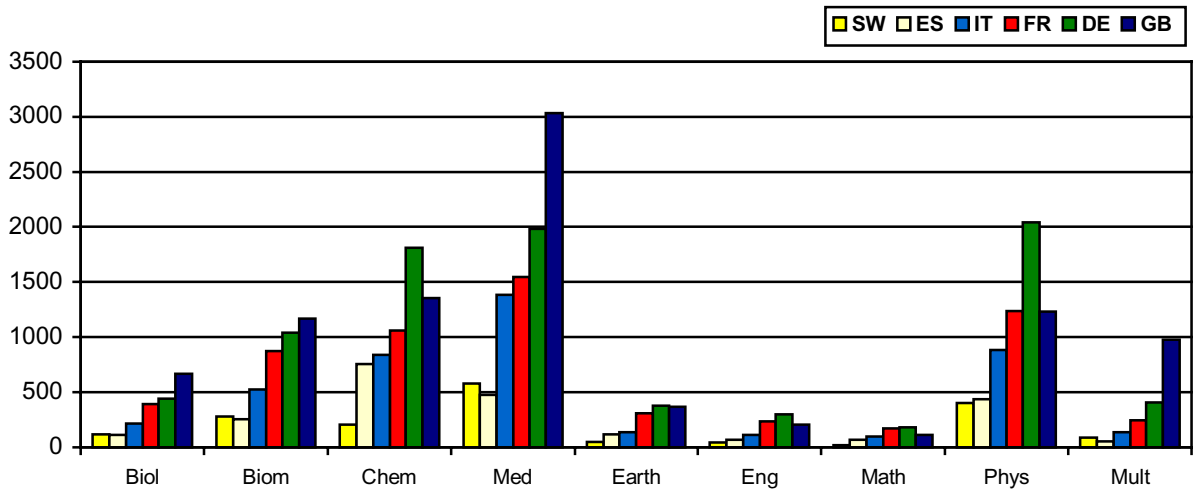


Fig. 1.7. Number of selected items arranged by discipline and country

Impact Factor

The following table shows the distribution of the selected journals by classes of Impact Factor according the methodology illustrated in paragraph 3.1.

Class of Impact Factor	No. of journals	%	% cumulative
1	65	41.4	41.4
2	26	16.6	58.0
3	22	14.0	72.0
4	16	10.2	82.2
5	7	4.5	86.6
6	5	3.2	89.8
7	7	4.5	94.3
8	1	0.6	94.9
9	2	1.3	96.2
10	2	1.3	97.5
Unranked	4	2.5	100.0

Fig. 1.8. Number of selected journals by impact factor

I.5. Comparison with the SCI Data Base

The following charts compare the contents of the data sample and of the SCI database. The inclusion of this paragraph in the final report aims only to provide a better description of the data sample and does not imply that the authors recommend considering the SCI database as a correct sample of the relevant international scientific production published worldwide.

Number of items by country

	Germany	Spain	France	Italy	Sweden	Britain
SCI Database	51292	15515	40655	25201	12792	55010
Sample	2464	815	1789	1392	579	3132

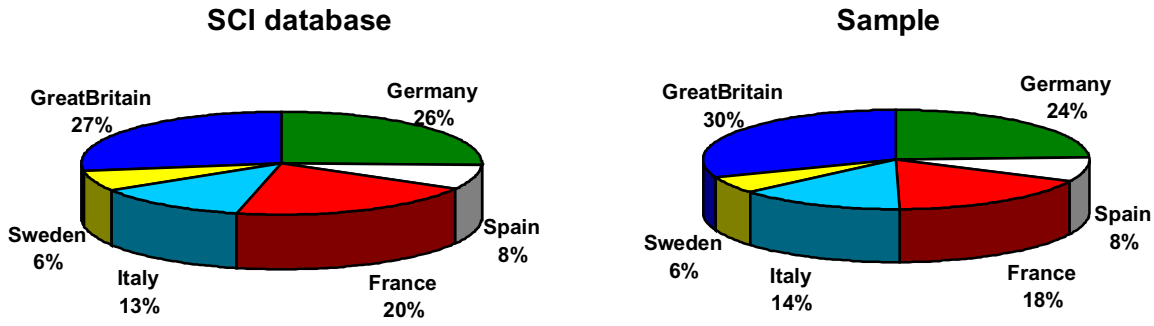


Fig. 1.9. Distribution by country in SCI and in the data sample

Type of publication

The distribution of the various types of publication in SCI 95 is greatly in favour of articles. All types of publications except *Meeting abstracts* (see paragraph 1.1.) have been selected and included in the sample.

	Article	Meeting abstr.	Note	Letter	Editorial	Review	Other
SCI	473305	90855	52515	35449	26058	17800	11701
Sample	7095	10	590	1257	350	217	169

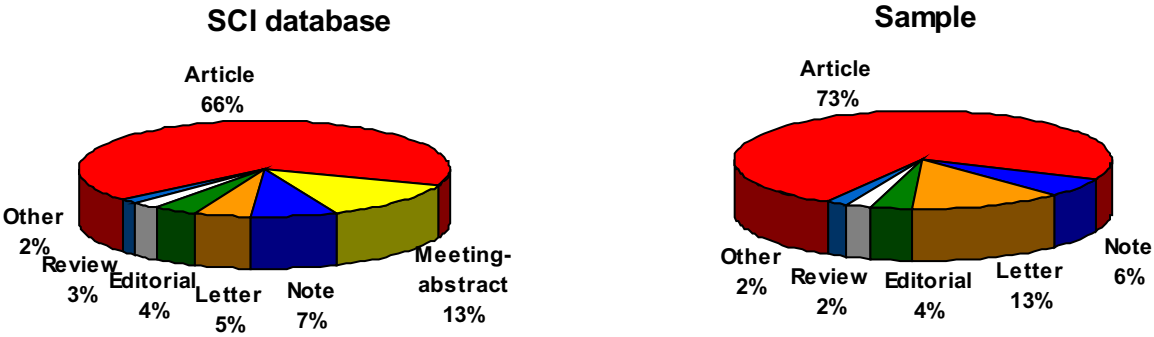


Fig. 1.10. distribution by type of publication in SCI and in the data sample

Distribution by disciplinary sector

Fig. 1.8. shows the disciplinary distribution in SCI and in the sample. Column 4 (Items OK) contains the number of items with at least one author from the 6 counties, column 5 (Auth.OK) the total number of authors in the items of column 4. Note that, as always in this chapter, data related to the sample refer to the selected items and not to the processed ones.

	SCI				Sample		
	Journals	Total	Items OK	Auth. OK	Journals	Items	Authors
Biology	609	94775	25148	103297	14	1761	9145
Biomedical Research	272	70462	19510	84383	24	3804	18382
Chemistry	337	97587	27535	103755	36	5644	21584
Clinical Medicine	1298	300142	86800	389651	48	8636	43168
Earth and Space	557	70633	19023	64515	11	1249	5087
Engineering	525	80740	19433	69119	18	909	3027
Mathematics	132	11778	3866	7065	15	610	1101
Physics	321	99536	31918	179212	20	4281	27062
Other(including multidisciplinary)	201	48216	8615	32043	5	1782	6463

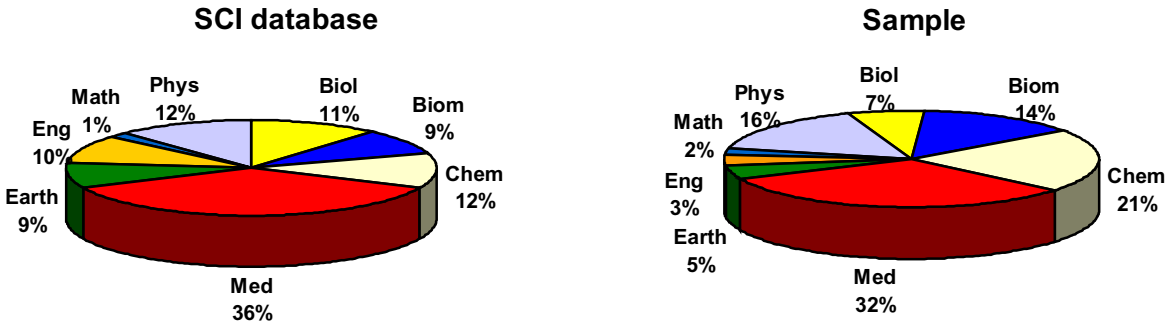


Fig. 1.11. Number of items by discipline in the ISI SCI Database

Language

Most of the items contained in SCI database are written in English as shown in the following chart. A few items in other languages are included in SCI if at least the titles and abstracts are provided in English. For our analysis only items in the English language have been selected.

Language	*n. items*	*%*
English	680413	96,1
Russian	10590	1,5
German	7341	1,0
French	5981	0,8
Japanese	1484	0,2
Spanish	1080	0,2
Other	794	0,1

Fig. 1.12. Language distribution of items in SCI 95 database

II. DATA ANALYSIS

II.1. Methodology

Three indicators were introduced and used throughout this report in order to process publications produced by co-operation among authors of different countries and gender in a consistent manner.

Participation counts the number of publications with at least one author of a given gender/country.

Contribution measures the involvement of each gender/country in the production of a publication assuming that each author contributed the same amount . *Contribution* may also be called *"publication-equivalents*" since it sums up the single shares of each publication attributed to a given gender/country. For example: if two scientists co-operate and produce three publications, each scientist contributes with one half of each publication and therefore produces 1.5 publication-equivalents. More in general, for a publication with ***n*** authors the contribution of each gender/country is equal to the number of authors of the respective gender/country divided by ***n***. The sum of the contributions of all the genders/countries involved in a publication is always equal to 1.

Number of authors Total count of the authors of a given gender/country in each publication.

The following chart exemplifies the calculation of the three indicators in the case of a publication produced by 4 authors.

Authors' gender				Female Participation	Female Contribution	Female Total Count
F	M	M	M	1	1/4	1
F	F	M	M	1	2/4	2
F	F	F	M	1	3/4	3
F	F	F	F	1	4/4	4

For example in a publication produced by 9 authors from 4 countries: one French female and one male, two German males, one Spanish female, one British female and three males, the three indicators are calculated as follows:

	France		Germany		Spain		Britain		Total
	F	M	F	M	F	M	F	M	
Participation	1	1	0	1	1	0	1	1	6
Contribution	1/9	1/9	0	2/9	1/9	0	1/9	3/9	1
Total count	1	1	0	2	1	0	1	3	9

It must be noted that the sum of the percentages of *participation* by gender or by country usually exceeds 100% since publications are generally produced by authors of different gender and/or country.

The difference between the values of *participation* and *contribution* of the same subset of authors is an indicator of the level of co-operation between different gender and/or countries while differences between *total count* and *participation* or *contribution* are measures of the level of co-operation within the same gender/country.

II.2. Summary of the Results

A detailed analysis with statistics by country and discipline is provided separately in Volume II of this report.

Publications by gender

The gender classification of the authors was obtained using First Names Data Base (FNDB) ver.1 (see Part A) that associates gender and language to more than 8000 first names used in the 6 countries subject of this analysis.
Results confirm the feasibility of the approach using the first name to identify the gender of the authors and the satisfactory coverage of FNDB ver.1: 91% of the authors whose first name was available (36,239) were classified as "Female" or "Male", 3% as "Both" (names used for both genders) and therefore unidentifiable, and about 6% were not classified because not found in FNDB.

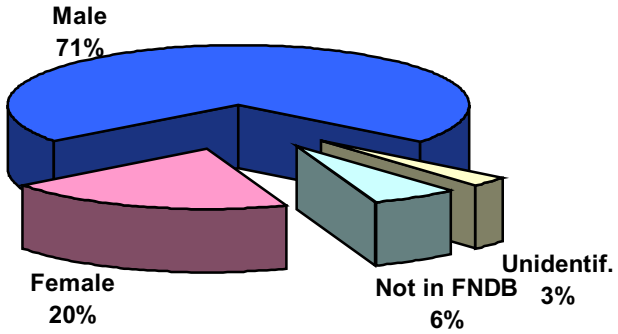


Fig. 2.1. Distribution of the gender classification of the authors in the data sample

The following chart shows the values of the three indicators referred to the whole sample and to the subset that includes only the items classified as "article". Column 5 ("*Unidentif.*") refers to the names classified as "Both" in the First Name Data Base, column 7 ("*Missing*") refers to the authors whose first name was not available in the original paper. Totals for participation are not relevant for the statistical analysis and have been removed from the table.

		Female	Male	Unidentif.	Not in FNDB	Missing	Total
Participation	all items	4434	9171	893	1687	344	-
	articles only	3566	6829	691	1391	265	-
Contribution	all items	1713.1	7050.9	255.0	531.6	137.4	9688
	articles only	1321.1	5093.1	169.4	409.6	101.9	7095
Number of authors	all items	7326	25679	991	2243	689	36928
	articles only	6026	20524	767	1889	563	29769

In the following diagram *Participation* is represented as the percentage of items with at least one "Female" or "Male" relative to the total number of items in the sample. *Contribution* and *Number of authors* are shown as percentages of the total number of authors classified as "Male" or "Female" (excluding the cases of "Both", "Not in FNDB" and missing names).

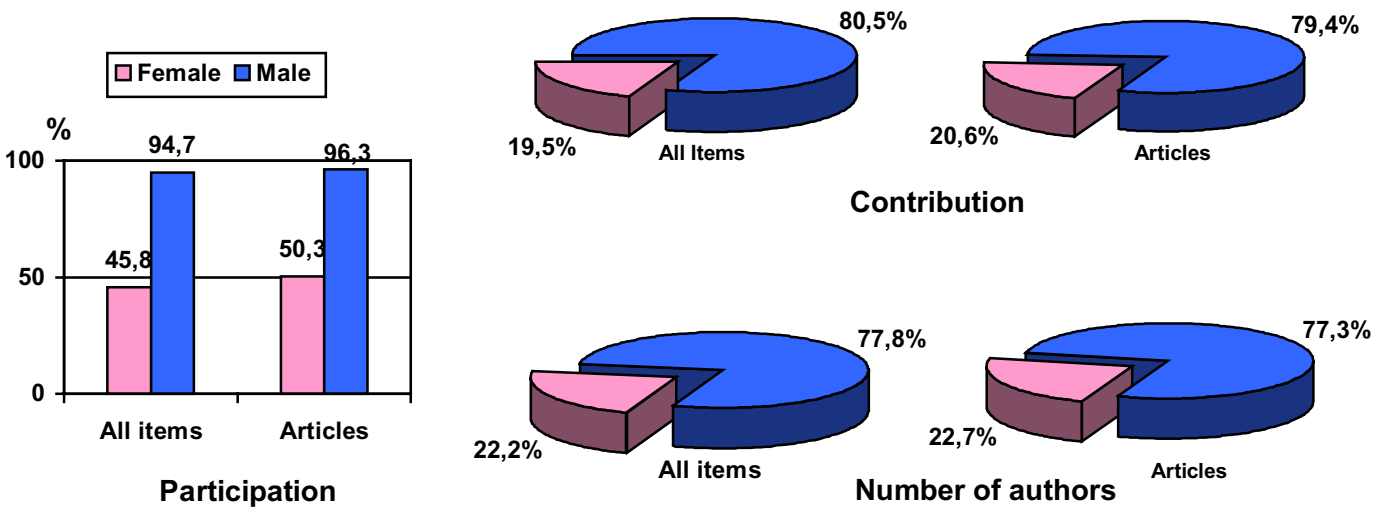


Fig. 2.2. Gender indicators for all countries and disciplines

Publications by Gender and Discipline

In the following table the gender indicators by discipline are shown for the whole sample. Only the authors classified as "Female" or "Male" and their respective items have been taken into consideration.

	PARTICIPATION		Contribution		No. of Authors	
	Female	MALE	Female	MALE	Female	Male
Biology	332	545	128.9	368.9	633	1514
Biomedical Research	927	1454	357.3	994.3	1684	4172
Chemistry	1253	2605	460.7	2007.7	1834	7360
Clinical Medicine	1516	2865	561.9	2191.1	2661	9366
Earth and Space	268	461	114.0	320.9	473	1137
Engineering	134	371	63.5	307.3	185	913
Mathematics	70	360	44.8	318.4	74	523
Physics	440	913	171.8	676.3	745	2379
Multidisciplinary	269	856	116.8	742.8	449	1923

Chi-square test for N. of Authors: χ^2= 335,991, df=8, p<0.001

Fig. 2.3. Indicators by gender and discipline - All items

Publications by Gender and Country

The following table shows the distribution of the authors by gender and country. Only the authors classified as "Female" or "Male" and their respective items have been taken into consideration.

	Participation		Contribution		No. of Authors	
	Female	Male	Female	Male	Female	Male
Germany	797	2343	254.9	1630.7	999	5522
Spain	459	764	167.0	464.4	723	1813
France	959	1653	337.6	998.1	1543	4064
Italy	812	1328	294.9	826.8	1426	3649
Sweden	220	531	71.5	321.3	275	1108
Great Britain	996	2802	391.9	1995.9	1260	5472
Others	701	1685	125.1	520.0	734	2676
Total	**-**	**-**	**1642.9**	**6757.2**	**6960**	**24304**
Unknown	*225*	*437*	*70.2*	*293.9*	*366*	*1375*

Chi-square test for N. of Authors: χ^2= 482.721, df=6, p<0.001

Fig. 2.4. - Indicators by gender and country - All items

III. Gender Distribution by Journal

In this section the gender distribution within the journals of the same discipline has been analysed in detail. This study has been purposely conducted to find out whether and how the selection of journals may influence gender indicators.

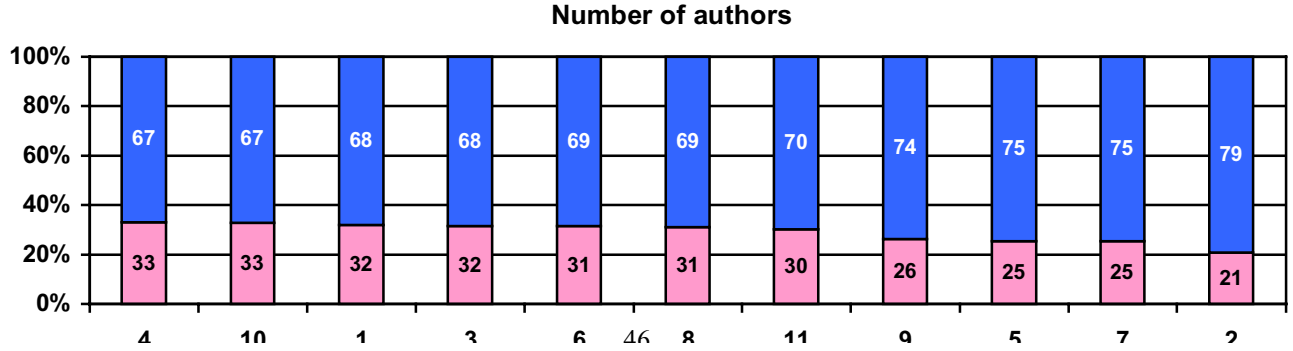
A specific disciplinary sector, Clinical Medicine, has been studied in depth with more journals included in the data sample in order to verify and evaluate to what extent a specific discipline may be gender oriented, for example Orthopedics for males or molecular genetics for females.

In the figures journals containing less than 10 articles have been discarded from the diagrams.

III.1. Biology

Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
				F	M	F	M	F	M
1 MOL CELL BIOL	1	108	108	78	106	29.8	68.5	148	318
2 TRENDS GENET	1	66	12	20	59	9.8	49.3	27	103
3 GENETICS	2	65	61	35	60	16.7	42.0	67	145
4 ARCH MICROBIOL	4	64	57	32	55	12.2	28.3	50	101
5 PHIL TRANS ROY SOC LONDON B	2	63	57	23	59	9.7	45.4	43	126
6 AMER J HUM GENET	1	48	42	39	48	10.8	28.0	117	256
7 ACTA CRYSTALLOGR D-BIOL CRYS	1	46	31	31	43	11.0	29.3	51	151
8 GENE DEVELOP	1	41	37	26	41	10.0	26.6	52	116
9 VET MICROBIOL	1	31	28	22	30	7.3	19.5	33	94
10 FASEB J	1	24	10	11	21	5.8	15.5	21	43
11 VET IMMUNOL IMMUNOPATHOL	1	18	17	12	16	4.5	11.9	20	46
12 MYCORRHIZA	4	6	6	3	4	1.3	1.9	4	7
13 ANNU REV MICROBIOL	1	3	0	0	3	0.0	2.8	0	8

Fig. 2.5.. Gender distribution by Journal – Biology



III.2. Biomedical Research

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	BIOCHEM BIOPHYS RES COMMUN	2	219	219	154	208	60.5	131.6	285	599
2	FEBS LETT	2	187	184	126	182	51.9	119.0	238	490
3	BIOCHEMISTRY-USA	2	184	184	109	182	39.2	125.0	195	572
4	NUCL ACID RES	3	133	113	88	129	33.8	84.9	141	334
5	ANAL BIOCHEM	5	119	92	72	114	24.5	83.1	108	358
6	MOL CELL BIOL	1	108	108	78	106	29.8	68.5	148	318
7	ARCH BIOCHEM BIOPHYS	3	79	78	47	78	16.5	55.0	76	229
8	TRENDS GENET	1	66	12	20	59	9.8	49.3	27	103
9	GENETICS	2	65	61	35	60	16.7	42.0	67	145
10	TRENDS BIOCHEM SCI	1	56	20	15	51	6.1	43.2	16	92
11	AMER J HUM GENET	1	48	42	39	48	10.8	28.0	117	256
12	ACTA CRYSTALLOGR D-BIOL CRYST	3	46	31	31	43	11.0	29.3	51	151
13	PROTEIN-STRUCT FUNCT GENET	2	42	38	15	41	5.4	30.7	22	120
14	GENE DEVELOP	1	41	37	26	41	10.0	26.6	52	116
15	PLANT CELL	1	39	36	28	36	11.0	21.9	59	103
16	GLYCOCONJUGATE J	5	28	25	19	26	8.1	17.1	39	75
17	FASEB J	1	24	10	11	21	5.8	15.5	21	43
18	PROCESS BIOCHEM	9	11	11	4	11	1.2	8.7	4	28
19	APPL BIOCHEM BIOTECH	7	7	7	5	7	1.6	4.9	11	21
20	ANNU REV PLANT PHYSIOL	1	6	0	2	4	2.0	4.0	3	6
21	PROG BIOPHYS MOL BIOL	1	4	0	3	3	1.8	2.3	4	5
22	ANNU REV BIOCHEM	1	3	0	0	3	0.0	2.8	0	7
23	ADVAN PROT CHEM	1	1	0	0	1	0.0	1.0	0	1

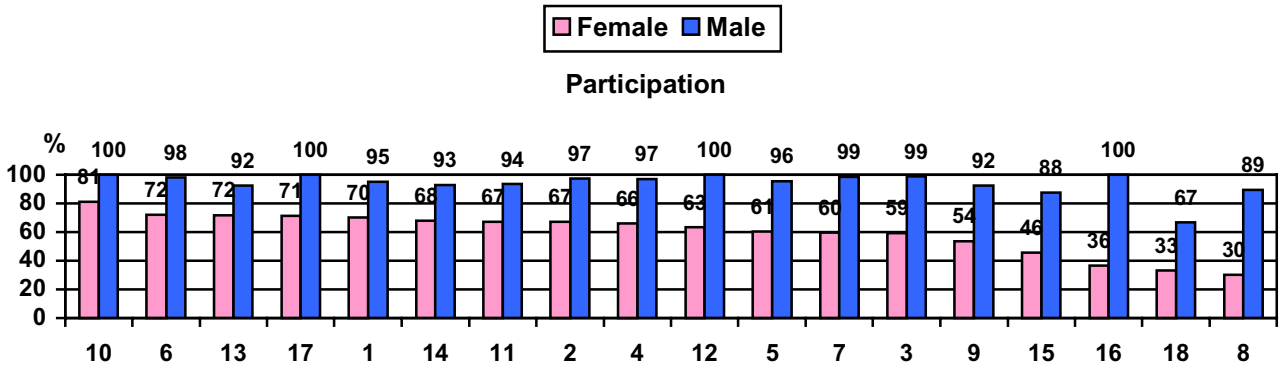
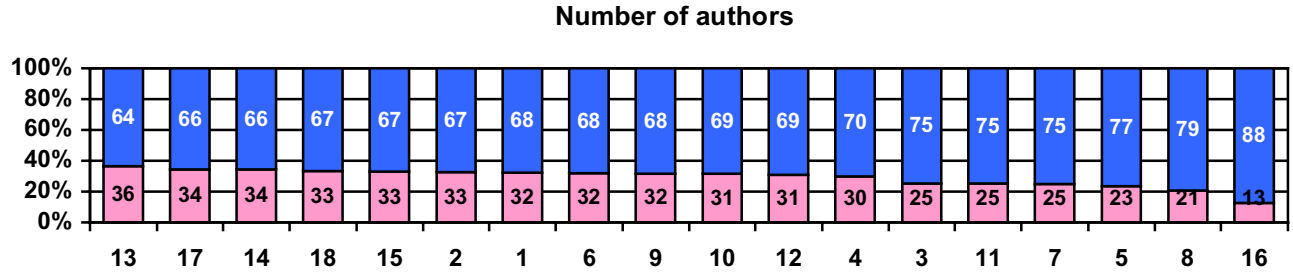
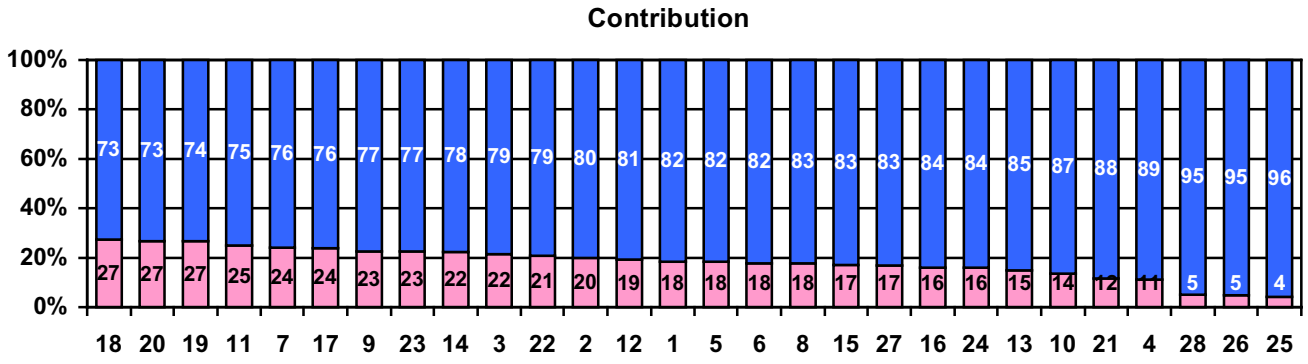


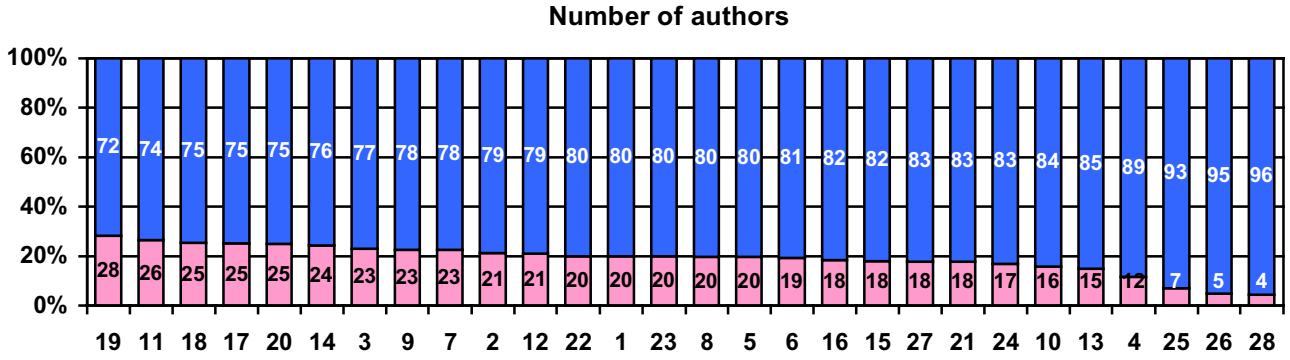
Fig.2.6. Gender distribution by Journal – Biomedical Research



III.3. Chemistry

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	TETRAHEDRON LETT	2	357	357	161	350	61.3	274.1	236	952
2	ACTA CRYSTALLOGR C-CRYST STR	6	307	306	143	297	54.5	219.8	215	803
3	TETRAHEDRON	3	270	265	144	262	54.3	198.8	241	806
4	ANGEW CHEM INT ED	1	219	200	75	217	23.4	184.7	91	697
5	J CHEM SOC DALTON TRANS	3	209	188	113	208	35.0	156.7	171	702
6	MACROMOL CHEM PHYSICS	2	174	174	75	167	28.5	133.1	111	473
7	ANAL CHEM	1	101	92	57	95	22.3	70.1	82	283
8	THEOCHEM-J MOL STRUCT	7	90	85	35	87	14.6	68.9	48	196
9	POLYMER	3	89	80	49	87	17.9	61.0	60	207
10	FRESENIUS J ANAL CHEM	6	87	71	30	85	10.7	68.8	36	194
11	GAZZ CHIM ITAL	5	85	73	53	84	20.5	62.4	83	232
12	ORGANOMETALLICS	1	79	58	50	79	14.1	60.1	76	288
13	MAGN RESON CHEM	4	65	56	23	63	8.4	49.0	28	163
14	ANAL CHIM ACTA	2	62	59	29	58	11.5	40.0	41	128
15	ANGEW MAKROMOL CHEM	7	53	53	21	52	8.8	42.3	30	138
16	HELV CHIM ACTA	2	53	51	26	53	7.8	41.1	42	187
17	MACROMOL RAPID COMMUN	1	50	50	32	50	11.4	36.4	43	128
18	ACTA CRYSTALLOGR D-BIOL CRYST	1	46	31	31	43	11.0	29.3	51	151
19	HRC-J HIGH RES CHROMATOGR	2	46	35	27	44	10.8	30.1	39	99
20	APPL SPECTROSC	5	35	33	20	33	8.8	24.1	32	97
21	PURE APPL CHEM	3	33	32	8	32	3.8	28.6	14	66
22	MACROMOLECULES	1	30	27	14	28	5.8	22.4	19	76
23	ACTA CRYSTALLOGR B-STRUCT SCI	4	26	26	12	25	5.4	18.6	17	69
24	THEOR CHIM ACTA	5	26	25	9	26	3.7	19.6	12	59
25	CHEM SOC REV	1	20	0	2	19	0.8	17.1	2	26
26	FARADAY DISCUSS	3	20	20	3	20	0.9	18.6	3	63
27	ACTA CRYSTALLOGR A	3	17	14	7	17	2.5	12.3	7	33
28	ACCOUNT CHEM RES	1	12	0	1	12	0.5	9.5	1	22
29	ANNU REV PHYS CHEM	1	4	0	1	4	0.5	3.5	1	6
30	PROG NUCL MAGN RESON SPECT	1	4	0	1	3	1.0	2.8	1	6
31	MASS SPECTROM REV	3	3	0	0	1	0.0	1.0	0	2
32	ANNU REV PHARMACOL TOXICOL	1	2	0	1	2	0.2	1.8	1	5
33	MOL CRYST LIQ CRYST SCI TEC A	10	1	1	0	1	0.0	0.2	0	1
34	POLYM J	4	1	1	0	1	0.0	1.0	0	2





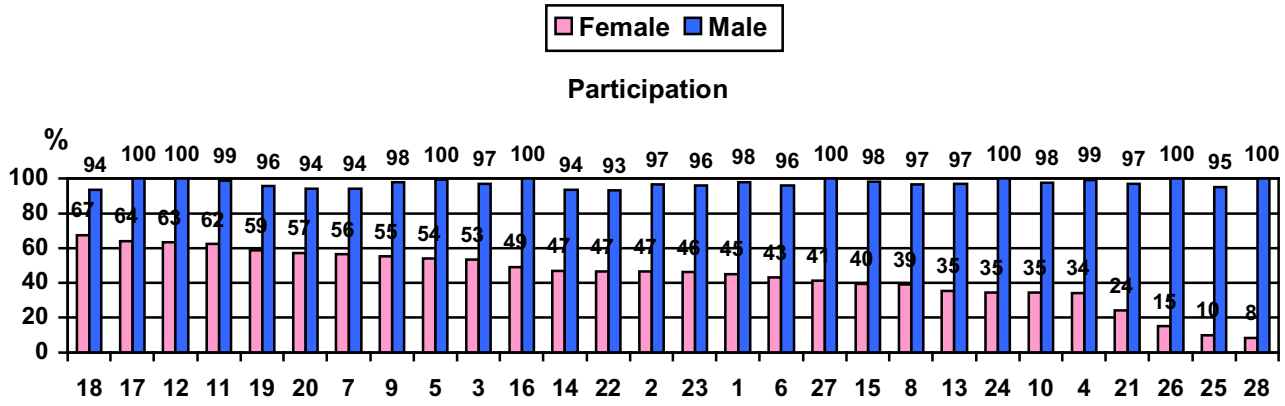


Fig. 2.7.. Gender distribution by Journal – Chemistry

III.4. Clinical Medicine

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	LANCET	1	859	87	353	746	165.6	602.5	553	1843
2	CIRCULATION	1	174	115	100	170	28.4	128.3	162	752
3	CANCER	2	137	110	85	136	24.3	103.5	164	615
4	AMER J CARDIOL	2	129	91	69	126	16.3	102.1	102	581
5	THROMB HAEMOST	1	127	94	89	121	38.3	74.8	197	359
6	ANESTH ANALG	1	94	58	36	94	10.7	76.5	54	302
7	J UROL	1	83	52	26	82	7.9	68.2	35	298
8	AMER J PATHOL	1	81	62	67	81	19.9	52.5	143	346
9	J THORAC CARDIOVASC SURG	1	78	39	29	76	6.6	61.2	40	299
10	AMER J OBSTET GYNECOL	1	74	50	37	66	15.7	46.0	66	198
11	GASTROENTEROLOGY	1	72	56	42	71	12.9	52.4	88	286
12	NEUROSCI LETT	4	72	72	43	69	17.0	47.1	72	175
13	AMER HEART J	4	71	53	35	69	8.9	55.1	65	358
14	ARCH DERMATOL	1	70	35	51	68	19.1	46.6	117	268
15	BEHAV BRAIN SCI	1	69	34	9	63	5.5	58.3	9	86
16	BEHAV BRAIN RES	6	68	58	28	64	13.1	52.3	59	146
17	ANESTHESIOLOGY	1	59	33	21	56	7.0	44.5	33	193
18	J PEDIAT	1	59	34	40	57	17.4	36.4	96	180
19	PAIN	1	55	36	30	48	14.6	36.4	42	118
20	AMER J HEMATOL	5	49	12	43	49	16.6	28.6	98	158
21	AMER J ROENTGENOL	2	47	28	20	44	5.0	34.5	25	161
22	ANN NEUROL	1	41	26	31	40	9.7	27.8	66	187
23	CLIN ORTHOP RELATED RES	2	39	37	11	35	4.9	30.0	17	111
24	OBSTET GYNECOL	1	37	32	22	36	7.3	25.7	42	116
25	SURGERY	1	32	25	19	31	5.4	23.6	38	147
26	AMER J SURG	1	29	24	12	29	3.1	22.7	15	98
27	OPHTHALMOLOGY	1	28	28	15	28	5.8	20.3	27	80
28	ARCH TOXICOL	4	27	23	18	26	5.9	16.5	24	64
29	PHYS MED BIOL	4	27	26	4	27	1.6	23.3	8	82
30	ACTA NEUROPATHOL	2	26	21	16	24	5.8	12.9	28	59
31	AMER J SURG PATHOL	1	26	12	12	26	3.7	21.7	20	87
32	AMER J OPHTHALMOL	2	25	10	11	23	4.5	17.8	18	74
33	AVIAT SPACE ENVIRON MED	3	23	15	6	23	2.7	19.8	8	55
34	BRIT DENT J	9	23	13	11	19	6.2	14.1	11	22
35	EUR J HAEMATOL	3	21	12	15	20	4.5	14.0	22	75
36	ARCH PATHOL LAB MED	3	20	13	14	19	5.2	12.3	21	60
37	ARCH SURG	1	18	14	5	18	0.9	14.1	5	60
38	VET IMMUNOL IMMUNOPATHOL	7	18	17	12	16	4.5	11.9	20	46
39	MED PHYS	2	17	14	3	15	1.0	13.4	7	35
40	BRIT J OBSTET GYNAECOL	1	16	9	11	15	4.9	10.0	19	33
41	ANN SURG	1	12	11	6	12	1.4	10.2	12	72
42	NEUROLOGY	1	11	10	1	11	0.2	9.0	1	23
43	LIVER	3	10	10	6	10	1.6	7.8	10	48
44	ANNU REV IMMUNOL	1	3	0	0	3	0.0	2.0	0	3
45	ANNU REV PHARMACOL TOXICOL	1	2	0	1	2	0.2	1.8	1	5
46	ANNU REV MED	2	1	0	1	1	0.3	0.7	1	2

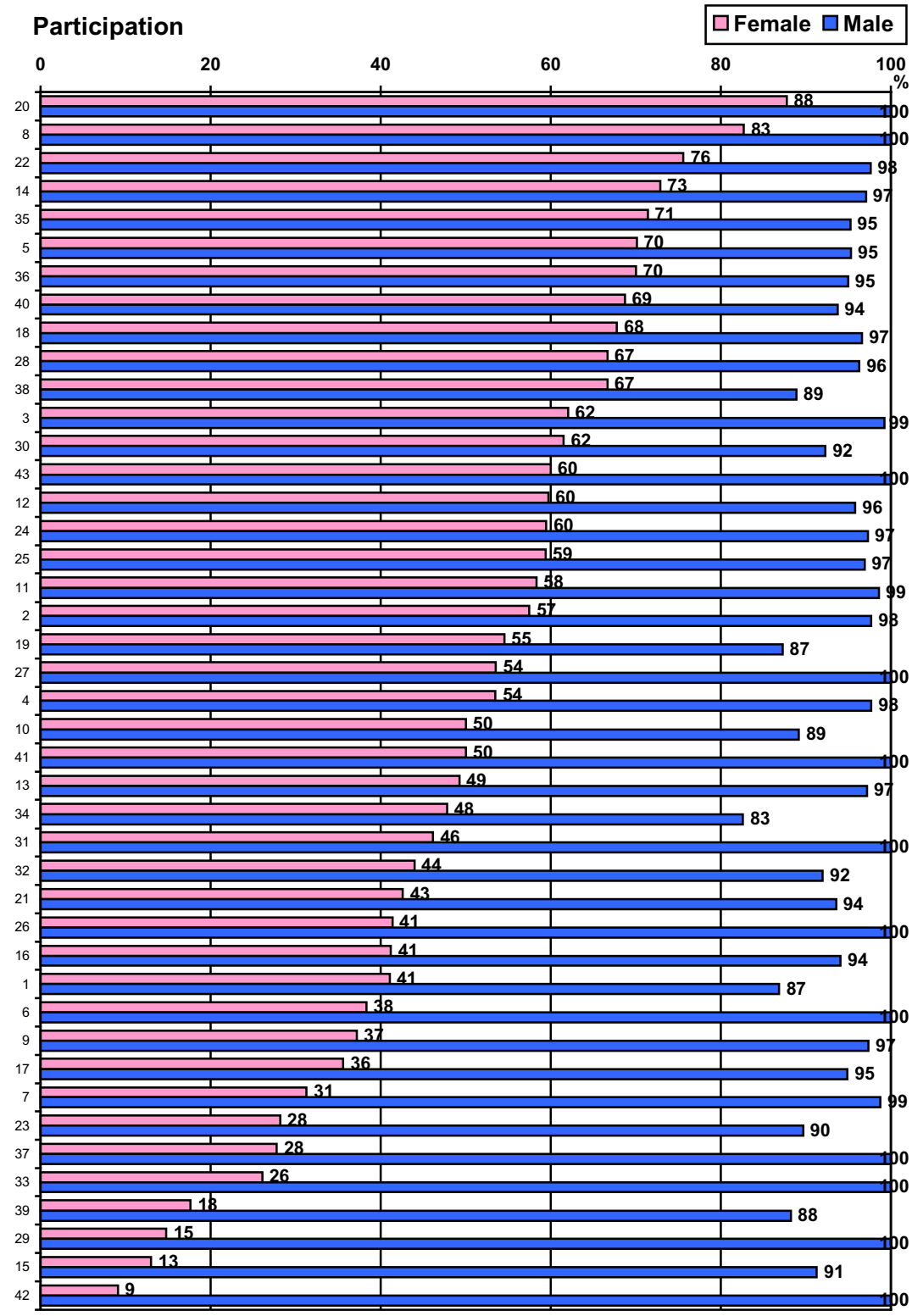


Fig. 2.8.1. Gender distribution by Journal – Clinical Medicine

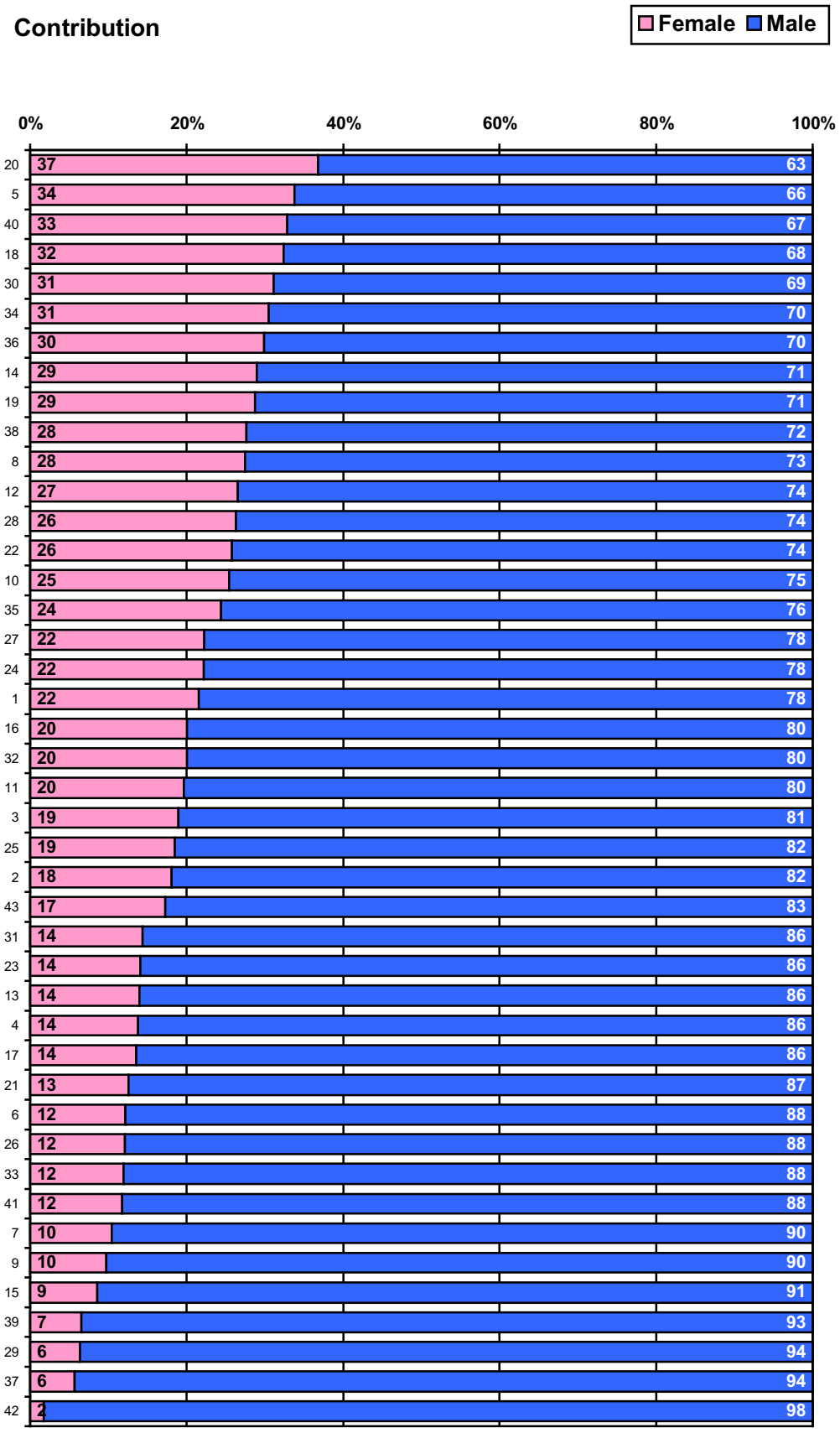


Fig. 2.8.2. Gender distribution by Journal – Clinical Medicine

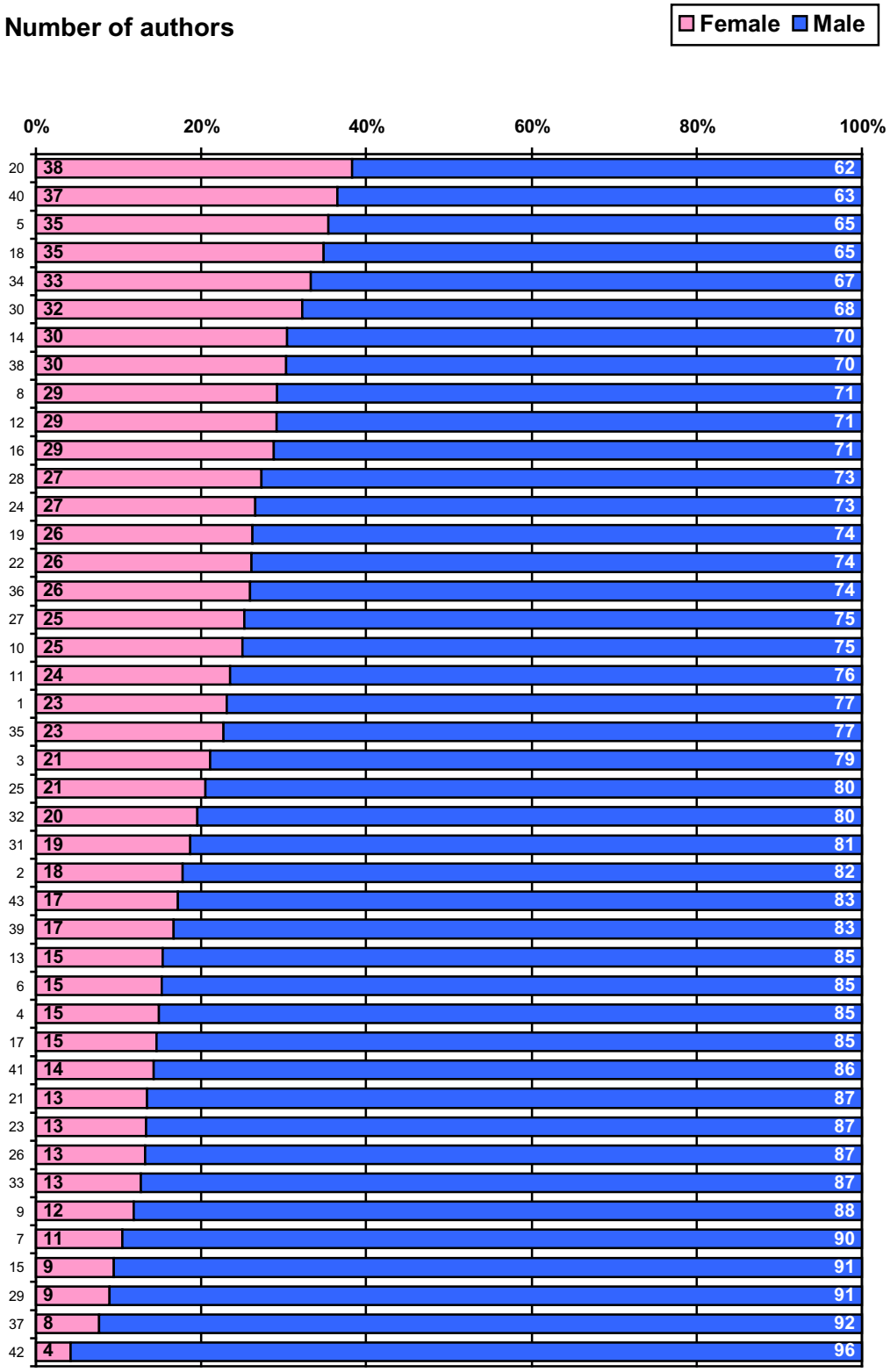


Fig. 2.8.3. Gender distribution by Journal – Clinical Medicine

III.5. Earth and Space Sciences

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	PLANT PHYSIOL	1	142	130	78	136	33.8	95.6	145	370
2	PHYTOCHEMISTRY	3	99	95	68	95	27.6	60.7	127	239
3	GEOPHYS RES LETT	1	89	88	25	87	8.8	68.2	26	196
4	PLANT SCI	3	61	57	48	56	23.4	33.2	91	121
5	PLANT CELL	1	39	36	28	36	11.0	21.9	59	103
6	PHYS EARTH PLANET INTERIORS	3	35	32	12	32	4.7	27.5	14	70
7	AGRON J	2	10	9	3	10	0.9	7.7	3	24
8	ANNU REV PLANT PHYSIOL	1	6	0	2	4	2.0	4.0	3	6
9	MYCORRHIZA	5	6	6	3	4	1.3	1.9	4	7
10	PLANT CELL ENVIRON	1	2	2	1	1	0.5	0.3	1	1

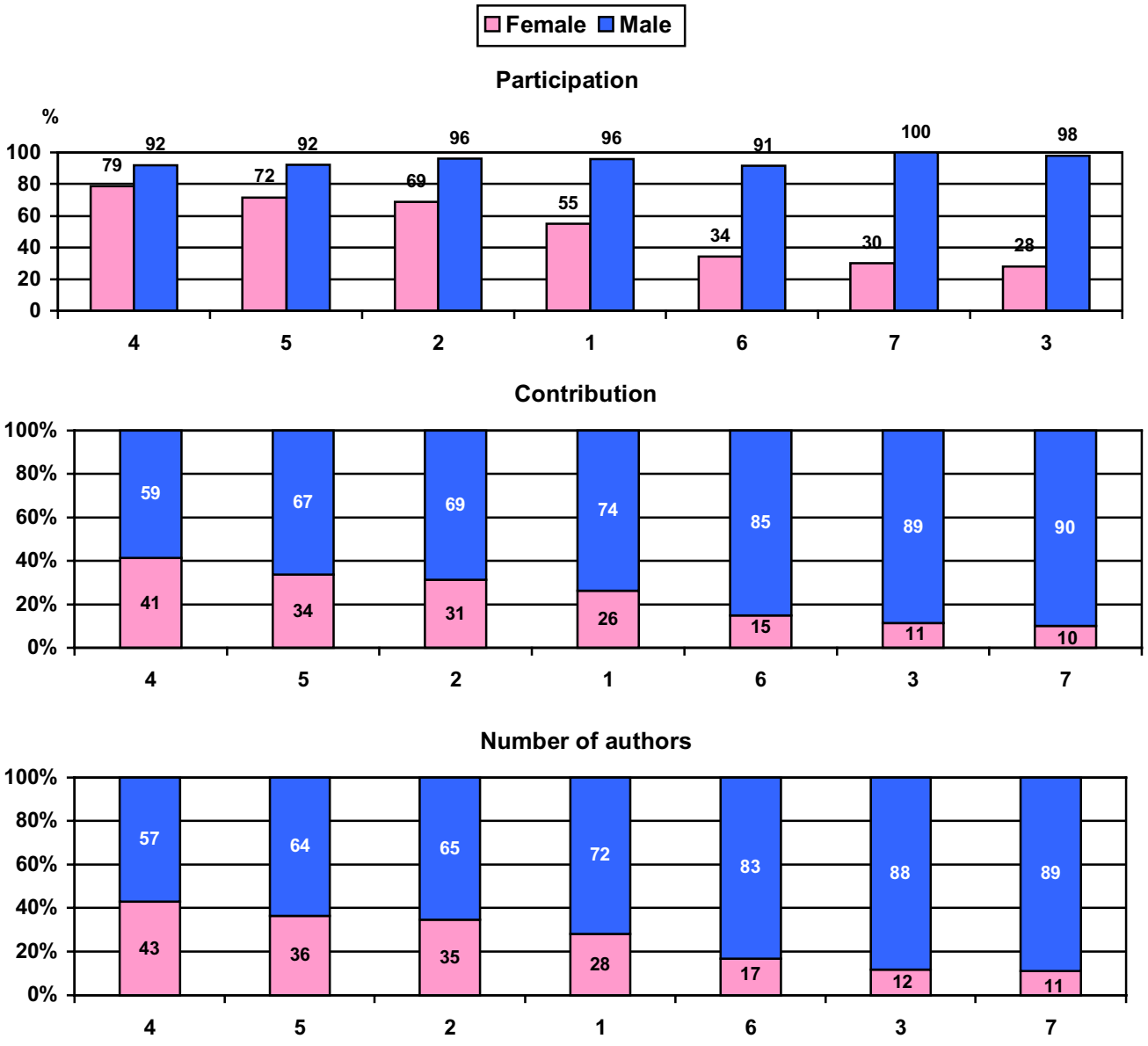


Fig. 2.9. Gender distribution by Journal – Earth and Space Sciences

III.6. Engineering

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	ADVAN MATER	1	117	67	42	114	14.0	97.2	61	369
2	THEOR COMPUT SCI	6	103	82	22	92	14.3	79.5	28	166
3	APPL SPECTROSC	1	35	33	20	33	8.8	24.1	32	97
4	PATT RECOG	4	24	23	7	20	3.7	16.0	8	28
5	ARCH PATHOL LAB MED	3	20	13	14	19	5.2	12.3	21	60
6	MEAS SCI TECHNOL	3	20	17	3	19	1.7	16.2	3	46
7	ARTIF INTELL	1	18	12	3	15	1.7	12.9	3	28
8	COMMUN ACM	1	14	12	6	11	4.1	9.7	8	23
9	ACM COMPUT SURV	1	11	11	5	8	4.0	7.0	5	13
10	MECH RES COMMUN	8	11	11	1	9	0.5	7.0	1	14
11	THIN SOLID FILMS	3	9	9	1	8	0.2	7.0	1	27
12	ACTA INFORM	7	7	7	2	4	1.5	3.5	4	5
13	GRAPH MODEL IMAGE PROCESSING	10	7	6	1	6	0.3	5.2	1	12
14	ACM TRANS PROGRAM LANG SYST	2	5	4	3	4	1.4	2.6	5	7
15	PROG NUCL MAGN RESON SPECTR	1	4	0	1	3	1.0	2.8	1	6
16	ACI MATER J	1	3	3	2	3	0.8	1.7	2	4
17	ACM TRANS INFORM SYST	1	2	2	1	2	0.3	1.7	1	5
18	ACM TRANS COMPUT SYST	2	1	1	0	1	0.0	1.0	0	3

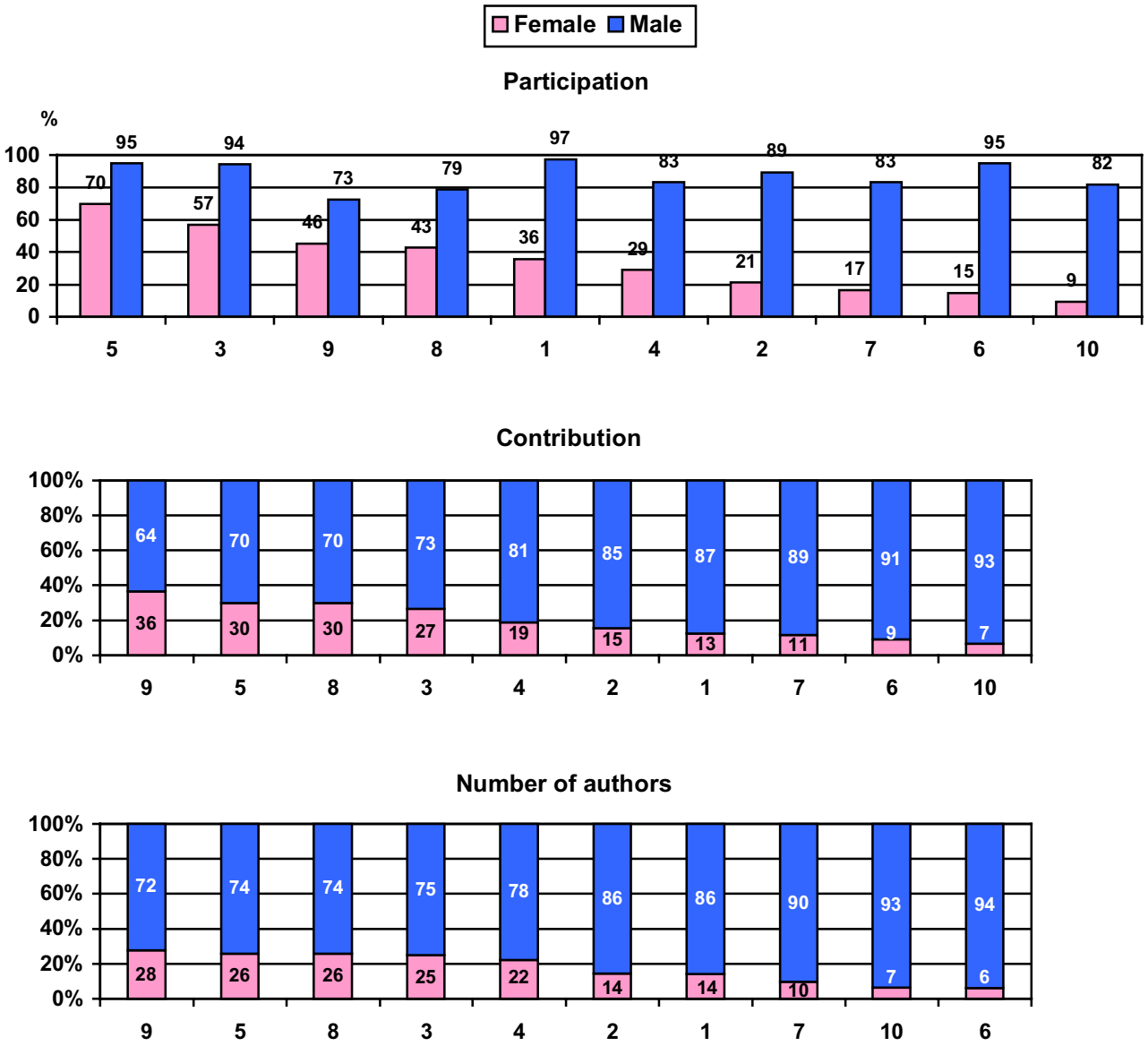


Fig. 2.10.. Gender distribution by Journal – Engineering

III.7. Mathematics

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	J MATH ANAL APPL	7	60	60	12	50	8.8	44.1	14	67
2	MATH Z	4	46	46	6	41	4.5	37.5	6	54
3	LINEAR ALGEBRA APPL	6	44	44	9	40	4.2	34.2	9	57
4	MATH ANN	2	37	37	5	34	3.8	31.5	5	50
5	TRANS AMER MATH SOC	3	36	36	5	33	3.0	29.3	5	50
6	J LONDON MATH SOC-SECOND SER	4	29	29	6	28	3.5	24.2	6	33
7	PATT RECOG	5	24	23	7	20	3.7	16.0	8	28
8	SIAM J MATH ANAL	3	24	24	4	22	3.0	19.6	4	35
9	APPL NUMER MATH	4	21	19	3	19	2.3	16.7	3	31
10	PROBAB THEORY RELAT FIELD	4	19	19	3	18	1.7	15.5	3	22
11	ARTIF INTELL	2	18	12	3	15	1.7	12.9	3	28
12	ADVAN MATH	2	17	17	0	17	0.0	16.8	0	28
13	SIAM J NUMER ANAL	1	13	13	5	12	2.7	9.8	6	21
14	AMER J MATH	2	9	9	0	8	0.0	8.0	0	15
15	ACM TRANS MATH SOFTWARE	7	5	5	2	3	2.0	2.3	2	4

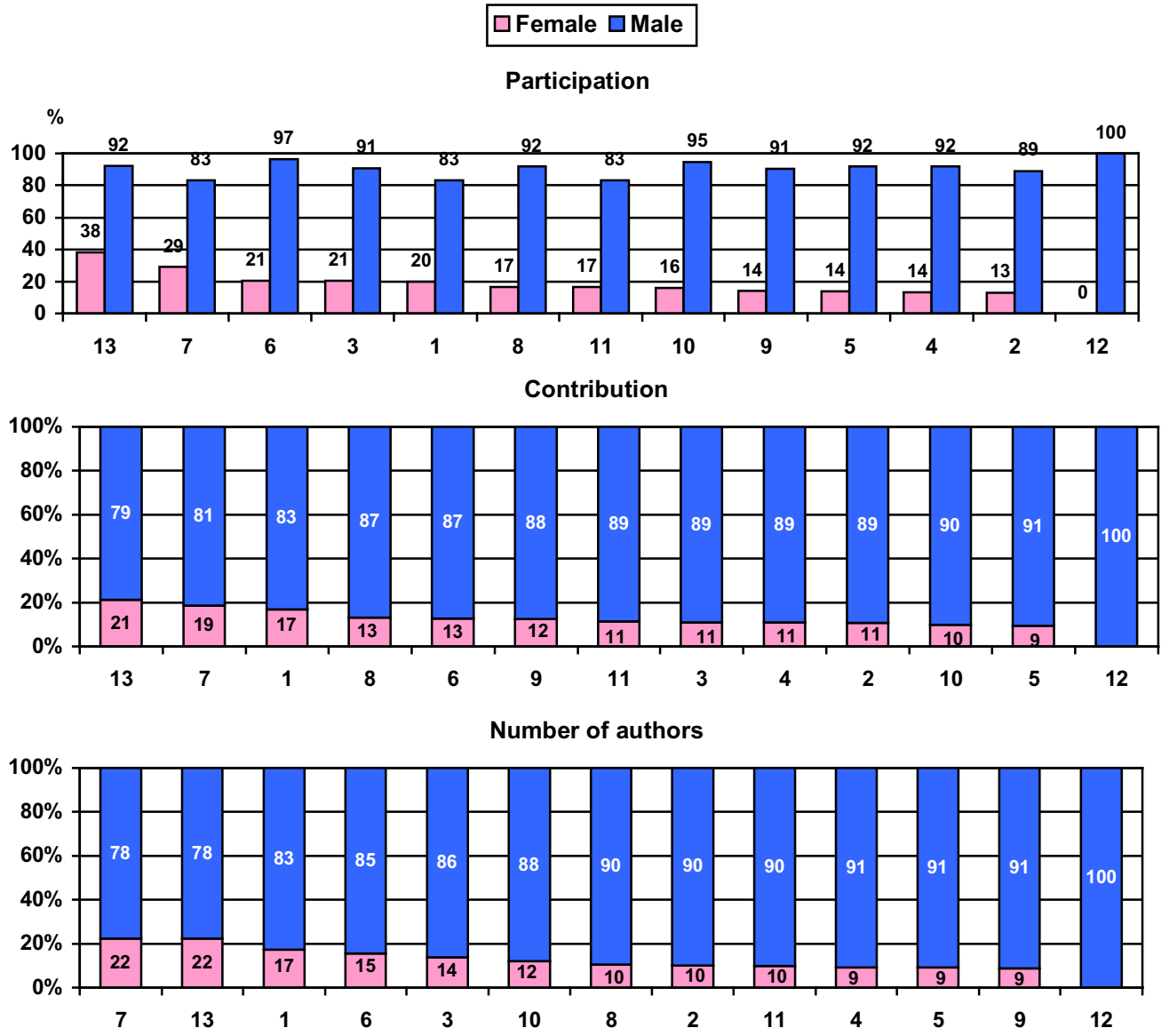


Fig. 2.11. Gender distribution by Journal – Mathematics

III.8. Physics

	Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
					F	M	F	M	F	M
1	BIOCHEM BIOPHYS RES COMMUN	2	219	219	154	208	60.5	131.6	285	599
2	FEBS LETT	2	187	184	126	182	51.9	119.0	238	490
3	ARCH BIOCHEM BIOPHYS	5	79	78	47	78	16.5	55.0	76	229
4	CLASS QUANTUM GRAVITY	3	70	57	4	62	1.5	57.4	4	101
5	MOL PHYS	5	67	63	20	66	7.1	54.5	21	155
6	MAGN RESON CHEM	6	65	56	23	63	8.4	49.0	28	163
7	AMER J ROENTGENOL	2	47	28	20	44	5.0	34.5	25	161
8	PHYS LETT A	4	42	41	6	41	3.2	34.5	6	72
9	APPL SPECTROSC	5	35	33	20	33	8.8	24.1	32	97
10	PHYS REV A	2	29	28	3	28	0.8	22.0	3	52
11	PHYS MED BIOL	4	27	26	4	27	1.6	23.3	8	82
12	PHYS REV B-CONDENSED MATTER	1	24	17	2	22	0.8	18.0	2	43
13	MED PHYS	2	17	14	3	15	1.0	13.4	7	35
14	PHYS REV LETT	1	13	10	2	12	0.8	10.8	2	30
15	PHYS TODAY	1	11	0	1	10	1.0	9.3	2	16
16	THIN SOLID FILMS	3	9	9	1	8	0.2	7.0	1	27
17	OPT LASER ENG	7	7	5	0	7	0.0	6.7	0	14
18	PROG BIOPHYS MOL BIOL	1	4	0	3	3	1.8	2.3	4	5
19	PROG NUCL MAGN RESON SPECTR	1	4	0	1	3	1.0	2.8	1	6
20	MASS SPECTROM REV	3	3	0	0	1	0.0	1.0	0	2

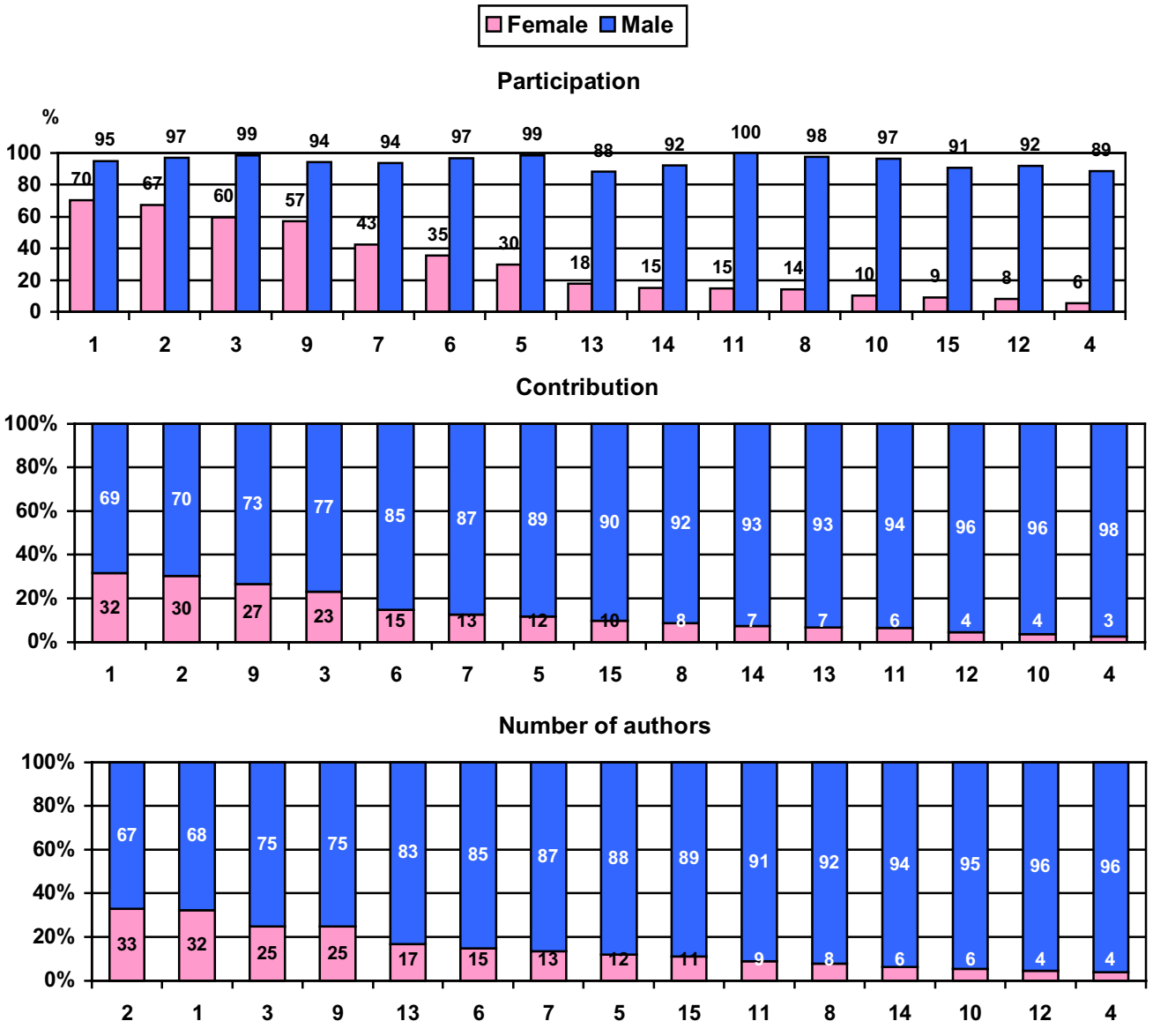


Fig. 2.12. Gender distribution by Journal – Physics-

III.9. Multidisciplinary

Journal	Rank	Items	Articles	Participation		Contribution		Number of authors	
				F	M	F	M	F	M
1 NATURE	1	549	166	154	512	65.7	445.7	252	1137
2 SCIENCE	1	176	129	76	171	21.9	134.6	148	572
3 NEW SCI	4	152	20	23	126	21.5	123.2	23	134
4 NATURWISSENSCHAFTEN	3	28	22	5	26	1.9	23.8	5	37
5 FASEB J	1	24	10	11	21	5.8	15.5	21	43

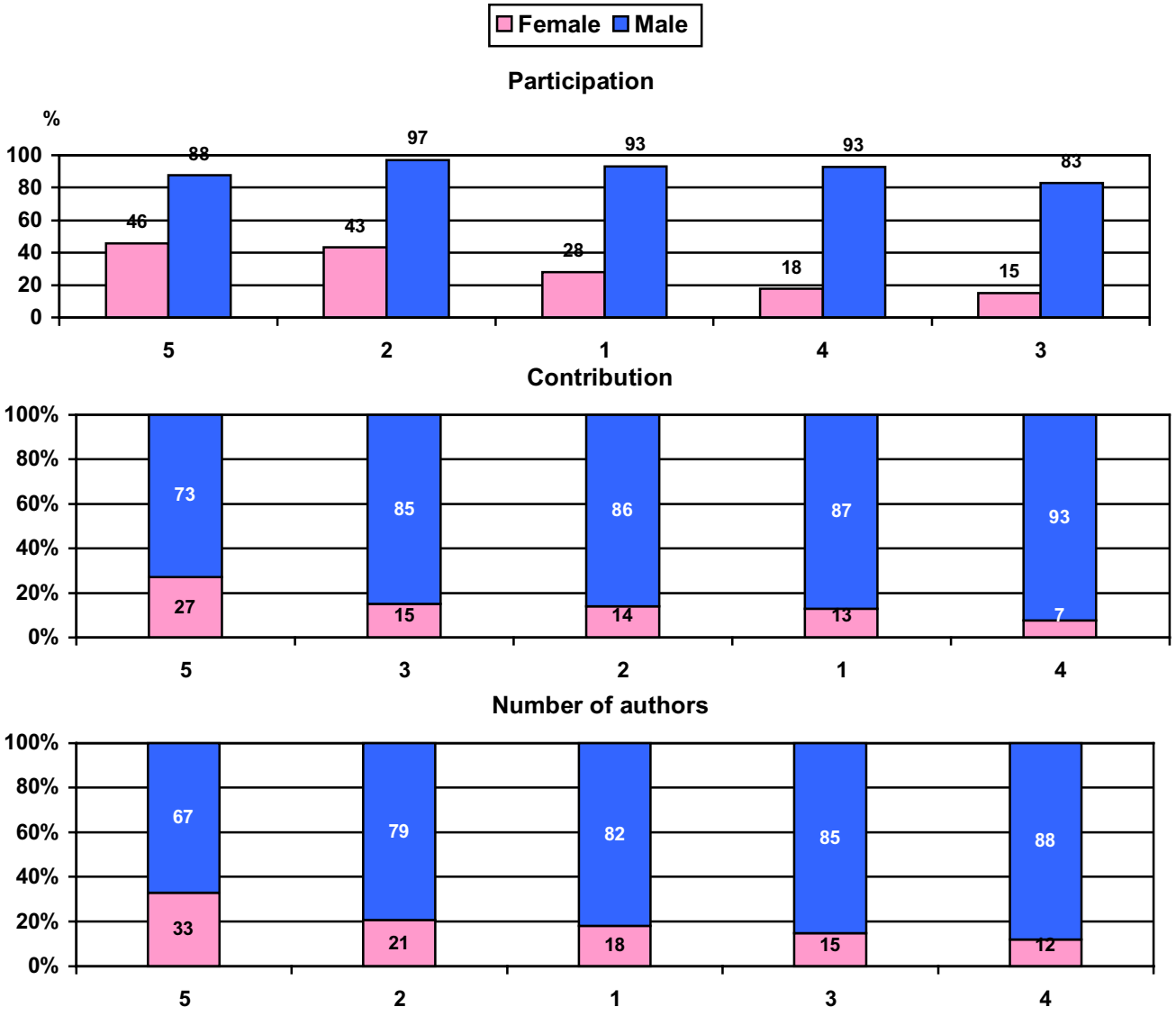


Fig. 2.13. Gender distribution by Journal – Multidisciplinary

APPENDICES

Appendix A – Translation Tables

A.1 - SGML Symbolic Names of Diacritics

	-	ç	ç	ì	ì	Ö	Ö
Á	Á	É	É	Ï	Ï	ö	ö
á	á	é	é	ï	ï	Ú	Ú
â	â	Ê	Ê	Ñ	Ñ	ú	ú
Æ	Æ	ê	ê	ñ	ñ	Û	Û
æ	æ	È	È	Ó	Ó	û	û
À	À	è	è	ó	ó	Ù	Ù
à	à	Ð	Ð	Ô	Ô	ù	ù
Å	Å	Ë	Ë	ô	ô	Ü	Ü
å	å	ë	ë	Ò	Ò	ü	ü
Ã	Ã	Í	Í	ò	ò	Ý	Ý
ã	ã	í	í	Ø	Ø	ý	ý
&Auml	Ä	Î	Î	ø	ø	ÿ	ÿ
ä	ä	î	î	Õ	Õ		
Ç	Ç	Ì	Ì	õ	õ		

A.2 - Conversion Rules for the Inventors Names

1	,	#
2	A.	#
3	B.	#
4	C.	#
5	D.	#
6	E.	#
7	F.	#
8	G.	#
9	H.	#
10	I.	#
11	J.	#
12	K.	#
13	L.	#
14	M.	#
15	N.	#
16	O.	#
17	P.	#
18	Q.	#
19	R.	#
20	S.	#
21	T.	#
22	U.	#
23	V.	#
24	W.	#
25	X.	#

26	Y.	#
27	Z.	†
28	#II#	#
29	#III#	#
30	#IV#	#
31	#Jr.	†
32	(FH)	†
33	(TH)	†
34	 *	†
35	c/o#*	†
36	.	†
37	Dipl-Ing	#
38	Dipl-Chem	#
39	Dipl-Phys	#
40	#Dipl#	†
41	#Ing#	#
42	-Ing#	#
43	#Dr#	#
44	#Mr#	†
45	#Prof#	#
46	-#	†
47	()	†
48	(#)	†

Note: # means *space*, † means *nothing*, * means *any string.*
Rules must be applied in the indicated order

A.3 - Conversion Table from Original Spelling to Compact Format

032			032
033	!	!	033
034	"	"	034
035	#	#	035
036	$	$	036
037	%	%	037
038	&	&	038
039	'	'	039
040	(	(	040
041	)	)	041
042	*	*	042
043	+	+	043
044	,	,	044
045	-	-	045
046	.	.	046
047	/	/	047
048	0	0	048
049	1	1	049
050	2	2	050
051	3	3	051
052	4	4	052
053	5	5	053
054	6	6	054
055	7	7	055
056	8	8	056
057	9	9	057
058	:	:	058
059	;	;	059
060	<	<	060
061	=	=	061
062	>	>	062
063	?	?	063
064	@	@	064
065	A	A	065
066	B	B	066
067	C	C	067
068	D	D	068
069	E	E	069
070	F	F	070
071	G	G	071
072	H	H	072
073	I	I	073
074	J	J	074
075	K	K	075
076	L	L	076
077	M	M	077
078	N	N	078
079	O	O	079
080	P	P	080
081	Q	Q	081
082	R	R	082
083	S	S	083
084	T	T	084
085	U	U	085
086	V	V	086
087	W	W	087
088	X	X	088
089	Y	Y	089
090	Z	Z	090

091	[	[	091
092	\	\	092
093	]	]	093
094	^	^	094
095	_	_	095
096	`	`	096
097	a	A	065
098	b	B	066
099	c	C	067
100	d	D	068
101	e	E	069
102	f	F	070
103	g	G	071
104	h	H	072
105	i	I	073
106	j	J	074
107	k	K	075
108	l	L	076
109	m	M	077
110	n	N	078
111	o	O	079
112	p	P	080
113	q	Q	081
114	r	R	082
115	s	S	083
116	t	T	084
117	u	U	085
118	v	V	086
119	w	W	087
120	x	X	088
121	y	Y	089
122	z	Z	090
123	{	{	123
124	|	|	124
125	}	}	125
126	~	~	126
127	□	□	127
128	□	□	128
129	□	□	129
130	‚	‚	130
131	*ƒ*	□	131
132	„	„	132
133	…	…	133
134	†	†	134
135	‡	‡	135
136	ˆ	ˆ	136
137	‰	‰	137
138	Š	Š	138
139	‹	‹	139
140	Œ	Œ	140
141	□	□	141
142	□	□	142
143	□	□	143
144	□	□	144
145	‘	‘	145
146	’	’	146
147	“	“	147
148	”	”	148
149	•	•	149

150	–	–	150
151	—	—	151
152	˜	˜	152
153	™	™	153
154	š	Š	154
155	›	›	155
156	œ	Œ	156
157	□	□	157
158	□	□	158
159	Ÿ	Ÿ	159
160			160
161	¡	¡	161
162	¢	¢	162
163	£	£	163
164	¤	¤	164
165	¥	¥	165
166	¦	¦	166
167	§	§	167
168	¨	¨	168
169	©	©	169
170	ª	ª	170
171	«	«	171
172	¬	¬	172
173	-	-	173
174	®	®	174
175	¯	¯	175
176	°	°	176
177	±	±	177
178	²	²	178
179	³	³	179
180	´	´	180
181	µ	µ	181
182	¶	¶	182
183	·	·	183
184	¸	¸	184
185	¹	¹	185
186	º	º	186
187	»	»	187
188	¼	¼	188
189	½	½	189
190	¾	¾	190
191	¿	¿	191
192	À	A	065
193	Á	A	065
194	Â	A	065
195	Ã	A	065
196	Ä	A	065
197	Å	A	065
198	Æ	Æ	198
199	Ç	C	067
200	È	E	069
201	É	E	069
202	Ê	E	069
203	Ë	E	069
204	Ì	I	073
205	Í	I	073
206	Î	I	073
207	Ï	I	073
208	Ð	D	068

209	Ñ	N	078
210	Ò	O	079
211	Ó	O	079
212	Ô	O	079
213	Õ	O	079
214	Ö	O	079
215	×	×	215
216	Ø	Ø	216
217	Ù	U	085
218	Ú	U	085
219	Û	U	085
220	Ü	U	085
221	Ý	Y	089
222	Þ	Þ	222
223	ß	ß	223
224	à	A	065
225	á	A	065
226	â	A	065
227	ã	A	065
228	ä	A	065
229	å	A	065
230	æ	Æ	230
231	ç	C	067
232	è	E	069
233	é	E	069
234	ê	E	069
235	ë	E	069
236	ì	I	073
237	í	I	073
238	î	I	073
239	ï	I	073
240	ð	O	079
241	ñ	N	078
242	ò	O	079
243	ó	O	079
244	ô	O	079
245	õ	O	079
246	ö	O	079
247	÷	÷	247
248	ø	Ø	248
249	ù	U	085
250	ú	U	085
251	û	U	085
252	ü	U	085
253	ý	Y	089
254	þ	Þ	254
255	ÿ	Y	089

Appendix B – Sources considered for the implementation of FNDB

Web sites

1. www.prenoms.com
2. www.grantam.com
3. www.gens.labo.net
4. www.mamis.net
5. www.first-name.com - top100.html
6. www.behindthename.com
7. www.zoope.com
8. www.kanalen.org
9. www.vornamen.com/namen
10. www.babyzone.com
11. vornamen2000.de
12. home2.swipnet.se/~w-21878/fornamn.html
13. home1.swipnet.se/~w-17785/namn.htm
14. www.newbabynameindex.com
15. www.ssa.gov (1990-1990)
16. www.ssa.gov (1996-1997)
17. www.zelo.com/firstnames
18. www.dufa.de
19. www.babynameindex.com
20. www.edu.nykoping.se/tessin/lankar/SVLANK/SVENSKA.HTM
21. www.svenskaakademien.se/almanacka/AAetymologi.html
22. www.britannica.com
23. www.pantheon.org/mythica
24. www.babynames.com
25. www.panix.com/~mittle/names
26. www.eponym.org
27. www.bnf.parentsoup.com/babyname
28. www.parentime.com/ParentTime/Babyname
29. www.babynamen.com
30. www.stork.site.com/library/names
31. www.parentzone.com/parenting/boyname.html
32. www.first-name.com/namesa-z.html
33. www.crosswinds.net/~babynames1/index.html
34. www.electricalsoket.com/BabyNames/about.html
35. www.geocities.com/Heartland/Pointe/6983index
36. www.babyworld.com/NFNaming.html
37. www.silvermoon.net/catala/names/names.html
38. www.eroes.com/saintpat/ss/cal-ss.html
39. www.celebnames.8m.com
40. www.babycenter.com/live/babynameform.html
41. www.momsonline.com/pregnant/babynamer
42. www.zspot.com/baby
43. www.jellinek.net/baby
44. www.webabc.com/baby.html

Searchable Name Databases

1. www.namechooser.com/baby/database.html *Dogwood Compendium of Names v1.2 - 29,000 names desktop database designed for fiction writers.*
2. www.net-cities.com/nomenia/

Other Sources

1. Selene - Dizionario dei Nomi - Armenia Editore 1990 Pittano
2. Dizionario dei nomi propri - Sonzogno 1990 Burgio
3. Dizionario dei nomi propri di persona - Ceschina 1970
4. Baby Names for the New Century/a Comprehensive, Multicultural Guide to Finding the Perfect Name for Your Baby; Pamela Samuelson, et al; Mass Market Paperback
5. The Last Word on First Names : The Definitive A-Z Guide to the Best and Worst in Baby Names by America's Leading Experts; Linda Rosenkrantz, Pamela Redmond Satran; Mass Market Paperback
6. The New American Dictionary of Baby Names; Leslie Dunkling, William Gosling; Mass Market Paperback
7. The Greatest Baby Name Book Ever; Carol McD Wallace; Mass Market Paperback
8. 20,001 Names for Baby; Carol McD. Wallace; Mass Market Paperback
9. The Melting Pot Book of Baby Names by Connie Lockhart Ellefson
10. A World of Baby Names; Teresa Norman
11. The Everything Baby Names Book; Everything you need to know to pick the perfect name for your baby; Lisa Rogak, Lisa Angowski Rogak Shaw
12. Baby Names Around the World; Bruce Lansky
13. Dunkling, Leslie : The Guinness Book of Names © 1974 Guinness Superlatives
14. Dunkling, Leslie and William Gosling : The Facts on File Dictionary of First Names © 1983 Facts on File Publications
15. Flanagan, Laurence : Favourite Irish Names for Children © 1993 Laurence Flanagan
16. Hanks, Patrick and Flavia Hodges : A Dictionary of First Names © 1990 Oxford University Press
17. Hook, J. N. : All Those Wonderful Names © 1991 J. N. Hook
18. Kolatch, Alfred J. : The Name Dictionary © 1967 Alfred J Kolatch
19. Kolatch, Alfred J. : Dictionary of First Names © 1980 Alfred J Kolatch
20. Loughead, Flora Haines : Dictionary of Given Names © 1933 The Arthur H. Clark Company
21. Norman, Teresa : A World of Baby Names © 1996 Teresa Norman
22. Rule, Lareina : Name Your Baby © 1986 Bantam Books
23. Schwegel, Janet : The Baby Name Countdown © 1988 Janet Schwegel
24. Smith, William : The Wordsworth Classical Dictionary © 1996 Wordsworth Editions Ltd
25. Turner, Barbara Kay : The Very Best Book of Baby Names © 1994 Barbara Kay Turner
26. Withycombe, E. G. : The Oxford Dictionary of English Christian Names © 1977 Oxford University Press
27. Websters Dictionary : 1994 Merriam-Webster
28. Wordsworth Dictionary of Phrase and Fable : © 1970 Cassell & Co. Ltd
29. Enciclopedia de los nombres proprios
30. El libro Guinnes de nombres

Appendix C – Number of 1998 EPO patents by IPC code (3rd level)

	all		6 countries	
	n.	%	n.	%
A 01	3482	1,7	1288	1,7
A 05	1	0,0	0	0,0
A 06	1	0,0	1	0,0
A 16	1	0,0	0	0,0
A 21	293	0,1	112	0,1
A 22	196	0,1	70	0,1
A 23	1862	0,9	640	0,9
A 24	166	0,1	68	0,1
A 41	324	0,2	104	0,1
A 42	89	0,0	29	0,0
A 43	348	0,2	122	0,2
A 44	257	0,1	70	0,1
A 45	426	0,2	190	0,3
A 46	217	0,1	89	0,1
A 47	2204	1,1	1044	1,4
A 61	21523	10,4	6448	8,6
A 62	357	0,2	135	0,2
A 63	1432	0,7	376	0,5
A 65	1	0,0	1	0,0
A 67	1	0,0	0	0,0
B 01	4574	2,2	1752	2,3
B 02	233	0,1	96	0,1
B 03	224	0,1	104	0,1
B 04	176	0,1	93	0,1
B 05	1291	0,6	456	0,6
B 06	60	0,0	31	0,0
B 07	227	0,1	94	0,1
B 08	282	0,1	104	0,1
B 09	163	0,1	61	0,1
B 21	1011	0,5	567	0,8
B 22	774	0,4	353	0,5
B 23	2024	1,0	913	1,2
B 24	745	0,4	241	0,3
B 25	701	0,3	291	0,4
B 26	438	0,2	169	0,2
B 27	374	0,2	188	0,3
B 28	304	0,1	157	0,2
B 29	2598	1,3	981	1,3
B 30	175	0,1	86	0,1
B 31	214	0,1	81	0,1
B 32	1384	0,7	388	0,5
B 39	1	0,0	0	0,0
B 41	2409	1,2	675	0,9
B 42	309	0,1	100	0,1
B 43	117	0,1	46	0,1
B 44	221	0,1	93	0,1
B 60	5291	2,6	3059	4,1

	all		6 countries	
	n.	%	n.	%
B 61	423	0,2	266	0,4
B 62	1280	0,6	570	0,8
B 63	548	0,3	185	0,2
B 64	484	0,2	178	0,2
B 65	5691	2,8	2659	3,6
B 66	610	0,3	266	0,4
B 67	313	0,2	121	0,2
B 68	32	0,0	11	0,0
C 01	1040	0,5	369	0,5
C 02	925	0,4	332	0,4
C 03	909	0,4	344	0,5
C 04	1025	0,5	418	0,6
C 05	203	0,1	80	0,1
C 06	133	0,1	43	0,1
C 07	14163	6,9	5243	7,0
C 08	8296	4,0	2789	3,7
C 09	2999	1,5	1076	1,4
C 1	1	0,0	0	0,0
C 10	1294	0,6	401	0,5
C 11	2177	1,1	1029	1,4
C 12	9021	4,4	2369	3,2
C 13	36	0,0	10	0,0
C 14	48	0,0	31	0,0
C 21	459	0,2	187	0,3
C 22	924	0,4	316	0,4
C 23	1193	0,6	418	0,6
C 25	508	0,2	190	0,3
C 29	1	0,0	1	0,0
C 30	277	0,1	74	0,1
D 01	564	0,3	202	0,3
D 02	132	0,1	56	0,1
D 03	278	0,1	145	0,2
D 04	451	0,2	173	0,2
D 05	99	0,0	48	0,1
D 06	944	0,5	480	0,6
D 07	38	0,0	19	0,0
D 21	1334	0,6	556	0,7
E 01	634	0,3	306	0,4
E 02	560	0,3	194	0,3
E 03	375	0,2	179	0,2
E 04	1835	0,9	841	1,1
E 05	1133	0,5	749	1,0
E 06	642	0,3	372	0,5
E 09	1	0,0	0	0,0

	all		6 countries	
	n.	%	n.	%
E 21	1192	0,6	405	0,5
F 01	1363	0,7	609	0,8
F 02	2276	1,1	1135	1,5
F 03	196	0,1	62	0,1
F 04	1208	0,6	523	0,7
F 15	353	0,2	210	0,3
F 16	5524	2,7	2861	3,8
F 17	167	0,1	81	0,1
F 21	501	0,2	203	0,3
F 22	122	0,1	60	0,1
F 23	917	0,4	421	0,6
F 24	888	0,4	430	0,6
F 25	736	0,4	259	0,3
F 26	211	0,1	87	0,1
F 27	242	0,1	120	0,2
F 28	588	0,3	258	0,3
F 41	390	0,2	170	0,2
F 42	259	0,1	133	0,2
F 61	1	0,0	0	0,0
G 01	9991	4,8	3857	5,2
G 02	3297	1,6	991	1,3
G 03	2561	1,2	355	0,5
G 04	287	0,1	61	0,1
G 05	1067	0,5	451	0,6
G 06	7051	3,4	1561	2,1
G 07	1040	0,5	522	0,7
G 08	876	0,4	337	0,5
G 09	1199	0,6	292	0,4
G 10	670	0,3	180	0,2
G 11	3150	1,5	464	0,6
G 12	16	0,0	13	0,0
G 21	402	0,2	235	0,3
G 60	1	0,0	0	0,0
H 01	12826	6,2	4097	5,5
H 02	2980	1,4	1435	1,9
H 03	2250	1,1	684	0,9
H 04	14382	7,0	4199	5,6
H 05	2032	1,0	729	1,0
H 09	1	0,0	0	0,0

code	n. of patents
A 01	1288
A 06	1
A 21	112
A 22	70
A 23	640
A 24	68
A 41	104
A 42	29
A 43	122
A 44	70
A 45	190
A 46	89
A 47	1044
A 61	6448
A 62	135
A 63	376
A 65	1
B 01	1752
B 02	96
B 03	104
B 04	93
B 05	456
B 06	31
B 07	94
B 08	104
B 09	61
B 21	567
B 22	353
B 23	913
B 24	241
B 25	291
B 26	169
B 27	188
B 28	157
B 29	981
B 30	86
B 31	81
B 32	388
B 41	675
B 42	100
B 43	46
B 44	93
B 60	3059
B 61	266
B 62	570
B 63	185
B 64	178
B 65	2659
B 66	266
B 67	121
B 68	11
C 01	369

code	n. of patents
C 02	332
C 03	344
C 04	418
C 05	80
C 06	43
C 07	5243
C 08	2789
C 09	1076
C 10	401
C 11	1029
C 12	2369
C 13	10
C 14	31
C 21	187
C 22	316
C 23	418
C 25	190
C 29	1
C 30	74
D 01	202
D 02	56
D 03	145
D 04	173
D 05	48
D 06	480
D 07	19
D 21	556
E 01	306
E 02	194
E 03	179
E 04	841
E 05	749
E 06	372
E 21	405
F 01	609
F 02	1135
F 03	62
F 04	523
F 15	210
F 16	2861
F 17	81
F 21	203
F 22	60
F 23	421
F 24	430
F 25	259
F 26	87
F 27	120
F 28	258
F 41	170
F 42	133
G 01	3857

code	n. of patents
G 02	991
G 03	355
G 04	61
G 05	451
G 06	1561
G 07	522
G 08	337
G 09	292
G 10	180
G 11	464
G 12	13
G 21	235
H 01	4097
H 02	1435
H 03	684
H 04	4199
H 05	729

code n. of patents

Appendix D – IPC Classification of 29 Fields of Technology

	Field of Technology	*IPC-codes (4-digit, sub-class level)*
1.	**Environmental technology**	A62D, B09, C02, F01N, F23G, F23J
2.	**Organic fine chemistry**	C07C, C07D, C07F, C07H, C07J, C07K
3.	**Macromolecular chemistry, polymers**	C08B, C08F, C08G, C08H, C08K, C08L, C09D, C09J
4.	**Pharmaceutics, cosmetics**	A61K
5.	**Biotechnology**	C07G, C12M, C12N, C12P, C12Q, C12S
6.	**Agricultural and food processing machinery and apparatus**	A01B, A01C, A01D, A01F, A01G, A01J, A01K, A01L, A01M, A21B, A21C, A22, A23N, A23P, B02B, C12L, C13C, C13G, C13H
7.	**Agriculture, food chemistry**	A01H, A21D, A23B, A23C, A23D, A23F, A23G, A23J, A23K, A23L, C12C, C12F, C12G, C12H, C12J, C13D, C13F, C13J, C13K
8.	**Optics**	G02, G03B, G03C, G03D, G03F, G03G, G03H, H01S
9.	**Analysis, measurement, control technology**	G01B, G01C, G01D, G01F, G01G, G01H, G01J, G01K, G01L, G01M, G01N, G01P, G01R, G01S, G01V, G01W, G04, G05B, G05D, G07, G08B, G09B, G09C, G09D, G12, G08G
10.	**Medical technology**	A61B, A61C, A61D, A61F, A61G, A61H, A61J, A61L, A61M, A61N
11.	**Chemical engineering**	B01, B02C, B03, B04, B05B, B06, B07, B08, F25J, F26
12.	**Chemical industry and petrol industry, basic materials chemistry**	A01N, C05, C07B, C08C, C09B, C09C, C09F, C09G, C09H, C09K, C10B, C10C, C10F, C10G, C10H, C10J, C10K, C10L, C10M, C11B, C11C, C11D
13.	**Materials processing, textiles, paper**	A41H, A43D, A46D, B28, B29, B31, C03B, C08J, C14, D01, D02, D03, D04B, D04C, D04G, D04H, D06B, D06C, D06G, D06H, D06J, D06L, D06M, D06P, D06Q, D21
14.	**Machine tools**	B21, B23, B24, B26D, B26F, B27, B30
15.	**Mechanical elements**	F15, F16, F17, G05G
16.	**Handling, printing**	B25J, B41, B65B, B65C, B65D, B65F, B65G, B65H, B66, B67
17.	**Engines, pumps, turbines**	F01 (without F01N), F02, F03, F04, F23R
18.	**Nuclear engineering**	G21, H05G, H05H, G01T
19.	**Materials, metallurgy**	C01, C03C, C04, C21, C22, B22
20.	**Surface technology, coating**	B05C, B05D, B32, C23, C25, C30
21.	**Thermal processes and apparatus**	F22, F23B, F23C, F23D, F23H, F23K, F23L, F23M, F23N, F23Q, F24, F25B, F25C, F27, F28
22.	**Transport**	B60, B61, B62, B63B, B63C, B63H, B63J, B64B, B64C, B64D, B64F
23.	**Space technology, weapons**	B64G, F41, B63G, C06, F42
24.	**Electrical devices, electrical engineering, electrical energy**	F21, G05F, H01B, H01C, H01F, H01G, H01H, H01J, H01K, H01M, H01R, H01T, H02, H05B, H05C, H05F, H05K
25.	**Semiconductors**	H01L
26.	**Information technology**	G06, G11C, G10L
27.	**Telecommunications**	G08C, H01P, H01Q, H03B, H03C, H03D, H03H, H03K, H03L, H03M, H04B, H04H, H04J, H04K, H04L, H04M, H04Q
28.	**Audio-visual technology**	G09F, G09G, G11B, H03F, H03G, H03J, H04N, H04R, H04S
29.	**Consumer goods and equipment**	A24, A41B, A41C, A41D, A41F, A41G, A42, A43B, A43C, A44, A45, A46B, A47, A62B, A62C, A63, B25B, B25C, B25D, B25F, B25G, B25H, B26B, B42, B43, B44, B68, D04D, D06F, D06N, D07, F25D, G10B, G10C, G10D, G10F, G10G, G10H, G10K, E01, E02, E03, E04, E05, E06, E21

Appendix E

List of processed journals and number of items.

Two tables sorted by name (A1) and discipline (A2) are reported.

Contents:
Column 1: Disciplinary sector(s) assigned to the Journal
Column 2: Official name of the Journal
Column 3: Total number of items published in 1995
Column 4: Number of items where the first name is available for all the authors
Column 5: Number of items where the first name of the authors is not reported
Column 6: Number of items where the first name is available only for some of the authors
Column 7: Number of items not used for this analysis

E1: Processed journals and number of items (alphabetical order)

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Chemistry	ACCOUNTS OF CHEMICAL RESEARCH	13	12	1	0	0
Engineering	ACI MATERIALS JOURNAL	4	2	1	1	0
Engineering	ACM COMPUTING SURVEYS	13	11	2	0	0
Engineering	ACM TRANSACTIONS ON COMPUTER SYSTEMS	1	1	0	0	0
Engineering	ACM TRANSACTIONS ON INFORMATION SYSTEMS	2	2	0	0	0
Mathematics	ACM TRANSACTIONS ON MATHEMATICAL SOFTWARE	10	4	5	1	0
Engineering	ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS	6	5	1	0	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION A	52	16	35	1	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION B-STRUCTURAL SCIENCE	53	25	27	1	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION C-CRYSTAL STRUCTURE COMMUNICATIONS	423	296	116	11	0
Biology Biomedical Res. Chemistry	ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY	60	43	14	3	0
Engineering	ACTA INFORMATICA	12	7	5	0	0
Clin. Med.	ACTA NEUROPATHOLOGICA	56	9	30	17	0
Engineering	ADVANCED MATERIALS	121	117	4	0	0
Mathematics	ADVANCES IN MATHEMATICS	20	17	3	0	0
Chemistry	ADVANCES IN POLYMER SCIENCE	6	0	6	0	0
Biomedical Res.	ADVANCES IN PROTEIN CHEMISTRY	1	1	0	0	0
Earth & Space	AGRONOMY JOURNAL	11	9	1	1	0
Clin. Med.	AMERICAN HEART JOURNAL	72	68	1	3	0
Clin. Med.	AMERICAN JOURNAL OF CARDIOLOGY	177	127	48	2	0
Clin. Med.	AMERICAN JOURNAL OF HEMATOLOGY	82	46	33	3	0
Biology Biomedical Res.	AMERICAN JOURNAL OF HUMAN GENETICS	496	43	38	5	410
Mathematics	AMERICAN JOURNAL OF MATHEMATICS	14	9	5	0	0
Clin. Med.	AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY	87	72	13	2	0
Clin. Med.	AMERICAN JOURNAL OF OPHTHALMOLOGY	25	24	0	1	0
Clin. Med.	AMERICAN JOURNAL OF PATHOLOGY	88	79	7	2	0
Clin. Med. Physics	AMERICAN JOURNAL OF ROENTGENOLOGY	63	44	16	3	0
Clin. Med.	AMERICAN JOURNAL OF SURGERY	31	29	2	0	0
Clin. Med.	AMERICAN JOURNAL OF SURGICAL PATHOLOGY	43	26	17	0	0
Chemistry	ANALYTICA CHIMICA ACTA	307	55	245	7	0
Biomedical Res.	ANALYTICAL BIOCHEMISTRY	135	118	16	1	0
Chemistry	ANALYTICAL CHEMISTRY	122	99	21	2	0
Clin. Med.	ANESTHESIA AND ANALGESIA	114	91	20	3	0
Clin. Med.	ANESTHESIOLOGY	235	56	176	3	0
Chemistry	ANGEWANDTE CHEMIE-INTERNATIONAL EDITION IN ENGLISH	413	216	2	3	192
Chemistry	ANGEWANDTE MAKROMOLEKULARE CHEMIE	75	51	22	2	0
Clin. Med.	ANNALS OF NEUROLOGY	74	41	33	0	0
Clin. Med.	ANNALS OF SURGERY	14	12	2	0	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Biomedical Res.	ANNUAL REVIEW OF BIOCHEMISTRY	4	3	1	0	0
Clin. Med.	ANNUAL REVIEW OF IMMUNOLOGY	5	2	2	1	0
Clin. Med.	ANNUAL REVIEW OF MEDICINE	3	1	2	0	0
Biology	ANNUAL REVIEW OF MICROBIOLOGY	3	3	0	0	0
Clin. Med.	ANNUAL REVIEW OF NUTRITION	1	0	1	0	0
Chemistry Clin. Med.	ANNUAL REVIEW OF PHARMACOLOGY AND TOXICOLOGY	2	2	0	0	0
Chemistry	ANNUAL REVIEW OF PHYSICAL CHEMISTRY	5	4	1	0	0
Biomedical Res.	ANNUAL REVIEW OF PLANT PHYSIOLOGY AND PLANT MOLECULAR BIOLOGY	6	6	0	0	0
Earth & Space	ANNUAL REVIEW OF PLANT PHYSIOLOGY AND PLANT MOLECULAR BIOLOGY	6	6	0	0	0
Biomedical Res.	APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY	15	7	8	0	0
Mathematics	APPLIED NUMERICAL MATHEMATICS	45	21	24	0	0
Chemistry Engineering Physics	APPLIED SPECTROSCOPY	47	35	12	0	0
Biomedical Res. Physics	ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS	92	79	13	0	0
Clin. Med.	ARCHIVES OF DERMATOLOGY	79	66	9	4	0
Biology	ARCHIVES OF MICROBIOLOGY	78	6	14	58	0
Clin. Med. Engineering	ARCHIVES OF PATHOLOGY & LABORATORY MEDICINE	23	20	3	0	0
Clin. Med.	ARCHIVES OF SURGERY	19	16	1	2	0
Clin. Med.	ARCHIVES OF TOXICOLOGY	58	12	31	15	0
Engineering Mathematics	ARTIFICIAL INTELLIGENCE	20	18	2	0	0
Clin. Med.	AVIATION SPACE AND ENVIRONMENTAL MEDICINE	30	23	7	0	0
Clin. Med.	BEHAVIORAL AND BRAIN SCIENCES	87	68	18	1	0
Clin. Med.	BEHAVIOURAL BRAIN RESEARCH	97	67	29	1	0
Biomedical Res. Physics	BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS	486	217	53	2	214
Biomedical Res.	BIOCHEMISTRY	425	181	22	3	219
Clin. Med.	BRITISH DENTAL JOURNAL	125	22	102	1	0
Clin. Med.	BRITISH JOURNAL OF OBSTETRICS AND GYNAECOLOGY	262	15	134	1	112
Clin. Med.	CANCER	139	133	2	4	0
Chemistry	CHEMICAL SOCIETY REVIEWS	32	20	12	0	0
Clin. Med.	CIRCULATION	901	168	29	6	698
Physics	CLASSICAL AND QUANTUM GRAVITY	122	64	52	6	0
Clin. Med.	CLINICAL ORTHOPAEDICS AND RELATED RESEARCH	54	37	15	2	0
Engineering	COMMUNICATIONS OF THE ACM	18	14	4	0	0
Clin. Med.	EUROPEAN JOURNAL OF HAEMATOLOGY	67	20	46	1	0
Chemistry	FARADAY DISCUSSIONS	36	19	16	1	0
Biology Biomedical Res. Multidisciplin.	FASEB JOURNAL	431	24	407	0	0
Biomedical Res. Physics	FEBS LETTERS	734	186	33	1	514
Chemistry	FRESENIUS JOURNAL OF ANALYTICAL CHEMISTRY	304	83	217	4	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Clin. Med.	GASTROENTEROLOGY	1541	69	4	3	1465
Chemistry	GAZZETTA CHIMICA ITALIANA	85	85	0	0	0
Biology Biomedical Res.	GENES & DEVELOPMENT	46	41	5	0	0
Biology Biomedical Res.	GENETICS	70	63	5	2	0
Earth & Space	GEOPHYSICAL RESEARCH LETTERS	252	80	163	9	0
Biomedical Res.	GLYCOCONJUGATE JOURNAL	33	28	5	0	0
Engineering	GRAPHICAL MODELS AND IMAGE PROCESSING	10	7	3	0	0
Chemistry	HELVETICA CHIMICA ACTA	53	52	0	1	0
Chemistry	HRC-JOURNAL OF HIGH RESOLUTION CHROMATOGRAPHY	51	45	5	1	0
Mathematics	JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS	96	59	36	1	0
Clin. Med.	JOURNAL OF PEDIATRICS	75	57	16	2	0
Chemistry	JOURNAL OF THE CHEMICAL SOCIETY-DALTON TRANSACTIONS	383	209	8	0	166
Mathematics	JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES	43	29	14	0	0
Clin. Med.	JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY	104	74	26	4	0
Clin. Med.	JOURNAL OF UROLOGY	138	81	55	2	0
Clin. Med.	LANCET	1386	835	527	24	0
Mathematics	LINEAR ALGEBRA AND ITS APPLICATIONS	67	44	23	0	0
Clin. Med.	LIVER	22	10	12	0	0
Chemistry	MACROMOLECULAR CHEMISTRY AND PHYSICS	177	167	3	7	0
Chemistry	MACROMOLECULAR RAPID COMMUNICATIONS	52	50	2	0	0
Chemistry	MACROMOLECULES	330	29	300	1	0
Chemistry Physics	MAGNETIC RESONANCE IN CHEMISTRY	91	63	26	2	0
Chemistry Physics	MASS SPECTROMETRY REVIEWS	7	3	4	0	0
Mathematics	MATHEMATISCHE ANNALEN	49	37	12	0	0
Mathematics	MATHEMATISCHE ZEITSCHRIFT	58	45	12	1	0
Engineering	MEASUREMENT SCIENCE & TECHNOLOGY	132	20	112	0	0
Engineering	MECHANICS RESEARCH COMMUNICATIONS	21	11	10	0	0
Clin. Med. Physics	MEDICAL PHYSICS	27	16	10	1	0
Biology Biomedical Res.	MOLECULAR AND CELLULAR BIOLOGY	119	107	11	1	0
Chemistry	MOLECULAR CRYSTALS AND LIQUID CRYSTALS SCIENCE AND TECHNOLOGY SECTION A-MOLECULAR CRYSTALS AND LIQUID CRYSTALS	181	0	180	1	0
Physics	MOLECULAR PHYSICS	144	63	77	4	0
Biology Earth & Space	MYCORRHIZA	18	0	12	6	0
Multidisciplin.	NATURE	749	542	200	7	0
Multidisciplin.	NATURWISSENSCHAFTEN	88	28	60	0	0
Clin. Med.	NEUROLOGY	106	10	95	1	0
Chemistry Clin. Med.	NEUROPHARMACOLOGY	91	0	91	0	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Clin. Med.	NEUROSCIENCE LETTERS	429	71	33	1	324
Multidisciplin.	NEW SCIENTIST	242	152	90	0	0
Biomedical Res.	NUCLEIC ACIDS RESEARCH	268	132	135	1	0
Clin. Med.	OBSTETRICS AND GYNECOLOGY	50	35	13	2	0
Clin. Med.	OPHTHALMOLOGY	31	28	3	0	0
Physics	OPTICS AND LASERS IN ENGINEERING	21	7	14	0	0
Chemistry	ORGANOMETALLICS	316	79	237	0	0
Clin. Med.	PAIN	81	55	26	0	0
Engineering	PATTERN RECOGNITION	38	24	14	0	0
Mathematics	PATTERN RECOGNITION	38	24	14	0	0
Biology	PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY OF LONDON SERIES B-BIOLOGICAL SCIENCES	121	62	58	1	0
Physics	PHYSICAL REVIEW A	407	27	29	2	349
Physics	PHYSICAL REVIEW B-CONDENSED MATTER	376	18	352	6	0
Physics	PHYSICAL REVIEW LETTERS	953	11	23	2	917
Clin. Med. Physics	PHYSICS IN MEDICINE AND BIOLOGY	72	27	45	0	0
Physics	PHYSICS LETTERS A	298	39	74	3	182
Earth & Space	PHYSICS OF THE EARTH AND PLANETARY INTERIORS	52	33	17	2	0
Physics	PHYSICS TODAY	12	9	1	2	0
Earth & Space	PHYTOCHEMISTRY	336	97	9	2	228
Biomedical Res. Earth & Space	PLANT CELL	44	38	5	1	0
Earth & Space	PLANT CELL AND ENVIRONMENT	80	0	78	2	0
Earth & Space	PLANT PHYSIOLOGY	242	140	100	2	0
Earth & Space	PLANT SCIENCE	80	60	19	1	0
Chemistry	POLYMER	220	85	131	4	0
Chemistry	POLYMER JOURNAL	3	1	2	0	0
Mathematics	PROBABILITY THEORY AND RELATED FIELDS	40	19	21	0	0
Biomedical Res.	PROCESS BIOCHEMISTRY	26	11	15	0	0
Biomedical Res. Physics	PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY	12	4	8	0	0
Chemistry Engineering Physics	PROGRESS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY	5	4	1	0	0
Biomedical Res.	PROTEINS-STRUCTURE FUNCTION AND GENETICS	50	40	8	2	0
Chemistry	PURE AND APPLIED CHEMISTRY	81	33	48	0	0
Multidisciplin.	SCIENCE	272	172	96	4	0
Mathematics	SIAM JOURNAL ON MATHEMATICAL ANALYSIS	29	22	5	2	0
Mathematics	SIAM JOURNAL ON NUMERICAL ANALYSIS	28	13	15	0	0
Clin. Med.	SURGERY	37	31	5	1	0
Chemistry	TETRAHEDRON	556	264	97	6	189
Chemistry	TETRAHEDRON LETTERS	799	352	54	5	388
Chemistry	THEOCHEM-JOURNAL OF MOLECULAR STRUCTURE	179	85	89	5	0
Chemistry	THEORETICA CHIMICA ACTA	34	26	8	0	0
Biology Biomedical Res. Earth & Space	THEORETICAL AND APPLIED GENETICS	128	0	29	0	99

Engineering	THEORETICAL COMPUTER SCIENCE	124	103	21	0	0
Sector	**Journal**	**Number of items**				
		Total	**Compl.**	**Initial only**	**Mixed**	**Not Proc.**
Engineering Physics	THIN SOLID FILMS	312	7	134	2	169
Clin. Med.	THROMBOSIS AND HAEMOSTASIS	1278	121	180	6	971
Mathematics	TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY	53	36	17	0	0
Biomedical Res.	TRENDS IN BIOCHEMICAL SCIENCES	56	56	0	0	0
Biology Biomedical Res.	TRENDS IN GENETICS	67	66	1	0	0
Biology	VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY	55	15	37	3	0
Clin. Med.	VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY	55	15	37	3	0
Biology	VETERINARY MICROBIOLOGY	69	30	38	1	0

E2: Processed journals and number of items (sorted by disciplinary sector)

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Biology	ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY	60	43	14	3	0
Biology	AMERICAN JOURNAL OF HUMAN GENETICS	496	43	38	5	410
Biology	ANNUAL REVIEW OF MICROBIOLOGY	3	3	0	0	0
Biology	ARCHIVES OF MICROBIOLOGY	78	6	14	58	0
Biology	FASEB JOURNAL	431	24	407	0	0
Biology	GENES & DEVELOPMENT	46	41	5	0	0
Biology	GENETICS	70	63	5	2	0
Biology	MOLECULAR AND CELLULAR BIOLOGY	119	107	11	1	0
Biology	MYCORRHIZA	18	0	12	6	0
Biology	PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY OF LONDON SERIES B-BIOLOGICAL SCIENCES	121	62	58	1	0
Biology	THEORETICAL AND APPLIED GENETICS	128	0	29	0	99
Biology	TRENDS IN GENETICS	67	66	1	0	0
Biology	VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY	55	15	37	3	0
Biology	VETERINARY MICROBIOLOGY	69	30	38	1	0
Biomedical Res.	ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY	60	43	14	3	0
Biomedical Res.	ADVANCES IN PROTEIN CHEMISTRY	1	1	0	0	0
Biomedical Res.	AMERICAN JOURNAL OF HUMAN GENETICS	496	43	38	5	410
Biomedical Res.	ANALYTICAL BIOCHEMISTRY	135	118	16	1	0
Biomedical Res.	ANNUAL REVIEW OF BIOCHEMISTRY	4	3	1	0	0
Biomedical Res.	ANNUAL REVIEW OF PLANT PHYSIOLOGY AND PLANT MOLECULAR BIOLOGY	6	6	0	0	0
Biomedical Res.	APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY	15	7	8	0	0
Biomedical Res.	ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS	92	79	13	0	0
Biomedical Res.	BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS	486	217	53	2	214
Biomedical Res.	BIOCHEMISTRY	425	181	22	3	219
Biomedical Res.	FASEB JOURNAL	431	24	407	0	0
Biomedical Res.	FEBS LETTERS	734	186	33	1	514
Biomedical Res.	GENES & DEVELOPMENT	46	41	5	0	0
Biomedical Res.	GENETICS	70	63	5	2	0
Biomedical Res.	GLYCOCONJUGATE JOURNAL	33	28	5	0	0
Biomedical Res.	MOLECULAR AND CELLULAR BIOLOGY	119	107	11	1	0
Biomedical Res.	NUCLEIC ACIDS RESEARCH	268	132	135	1	0
Biomedical Res.	PLANT CELL	44	38	5	1	0
Biomedical Res.	PROCESS BIOCHEMISTRY	26	11	15	0	0
Biomedical Res.	PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY	12	4	8	0	0
Biomedical Res.	PROTEINS-STRUCTURE FUNCTION AND GENETICS	50	40	8	2	0
Biomedical Res.	THEORETICAL AND APPLIED GENETICS	128	0	29	0	99
Biomedical Res.	TRENDS IN BIOCHEMICAL SCIENCES	56	56	0	0	0
Biomedical Res.	TRENDS IN GENETICS	67	66	1	0	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION A	52	16	35	1	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION B-STRUCTURAL SCIENCE	53	25	27	1	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION C-CRYSTAL STRUCTURE COMMUNICATIONS	423	296	116	11	0
Chemistry	ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY	60	43	14	3	0
Chemistry	ADVANCES IN POLYMER SCIENCE	6	0	6	0	0
Chemistry	ANALYTICA CHIMICA ACTA	307	55	245	7	0
Chemistry	ANALYTICAL CHEMISTRY	122	99	21	2	0
Chemistry	ANGEWANDTE CHEMIE-INTERNATIONAL EDITION IN ENGLISH	413	216	2	3	192
Chemistry	ANGEWANDTE MAKROMOLEKULARE CHEMIE	75	51	22	2	0
Chemistry	ANNUAL REVIEW OF PHARMACOLOGY AND TOXICOLOGY	2	2	0	0	0
Chemistry	ANNUAL REVIEW OF PHYSICAL CHEMISTRY	5	4	1	0	0
Chemistry	APPLIED SPECTROSCOPY	47	35	12	0	0
Chemistry	CHEMICAL SOCIETY REVIEWS	32	20	12	0	0
Chemistry	FARADAY DISCUSSIONS	36	19	16	1	0
Chemistry	FRESENIUS JOURNAL OF ANALYTICAL CHEMISTRY	304	83	217	4	0
Chemistry	GAZZETTA CHIMICA ITALIANA	85	85	0	0	0
Chemistry	HELVETICA CHIMICA ACTA	53	52	0	1	0
Chemistry	HRC-JOURNAL OF HIGH RESOLUTION CHROMATOGRAPHY	51	45	5	1	0
Chemistry	JOURNAL OF THE CHEMICAL SOCIETY-DALTON TRANSACTIONS	383	209	8	0	166
Chemistry	MACROMOLECULAR CHEMISTRY AND PHYSICS	177	167	3	7	0
Chemistry	MACROMOLECULAR RAPID COMMUNICATIONS	52	50	2	0	0
Chemistry	MACROMOLECULES	330	29	300	1	0
Chemistry	MAGNETIC RESONANCE IN CHEMISTRY	91	63	26	2	0
Chemistry	MASS SPECTROMETRY REVIEWS	7	3	4	0	0
Chemistry	MOLECULAR CRYSTALS AND LIQUID CRYSTALS SCIENCE AND TECHNOLOGY SECTION A-MOLECULAR CRYSTALS AND LIQUID CRYSTALS	181	0	180	1	0
Chemistry	NEUROPHARMACOLOGY	91	0	91	0	0
Chemistry	ORGANOMETALLICS	316	79	237	0	0
Chemistry	POLYMER	220	85	131	4	0
Chemistry	POLYMER JOURNAL	3	1	2	0	0
Chemistry	PROGRESS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY	5	4	1	0	0
Chemistry	PURE AND APPLIED CHEMISTRY	81	33	48	0	0
Chemistry	TETRAHEDRON	556	264	97	6	189
Chemistry	TETRAHEDRON LETTERS	799	352	54	5	388
Chemistry	THEOCHEM-JOURNAL OF MOLECULAR STRUCTURE	179	85	89	5	0
Chemistry	THEORETICA CHIMICA ACTA	34	26	8	0	0
Clin. Med.	ACTA NEUROPATHOLOGICA	56	9	30	17	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Clin. Med.	AMERICAN HEART JOURNAL	72	68	1	3	0
Clin. Med.	AMERICAN JOURNAL OF CARDIOLOGY	177	127	48	2	0
Clin. Med.	AMERICAN JOURNAL OF HEMATOLOGY	82	46	33	3	0
Clin. Med.	AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY	87	72	13	2	0
Clin. Med.	AMERICAN JOURNAL OF OPHTHALMOLOGY	25	24	0	1	0
Clin. Med.	AMERICAN JOURNAL OF PATHOLOGY	88	79	7	2	0
Clin. Med.	AMERICAN JOURNAL OF ROENTGENOLOGY	63	44	16	3	0
Clin. Med.	AMERICAN JOURNAL OF SURGERY	31	29	2	0	0
Clin. Med.	AMERICAN JOURNAL OF SURGICAL PATHOLOGY	43	26	17	0	0
Clin. Med.	ANESTHESIA AND ANALGESIA	114	91	20	3	0
Clin. Med.	ANESTHESIOLOGY	235	56	176	3	0
Clin. Med.	ANNALS OF NEUROLOGY	74	41	33	0	0
Clin. Med.	ANNALS OF SURGERY	14	12	2	0	0
Clin. Med.	ANNUAL REVIEW OF IMMUNOLOGY	5	2	2	1	0
Clin. Med.	ANNUAL REVIEW OF MEDICINE	3	1	2	0	0
Clin. Med.	ANNUAL REVIEW OF NUTRITION	1	0	1	0	0
Clin. Med.	ANNUAL REVIEW OF PHARMACOLOGY AND TOXICOLOGY	2	2	0	0	0
Clin. Med.	ARCHIVES OF DERMATOLOGY	79	66	9	4	0
Clin. Med.	ARCHIVES OF PATHOLOGY & LABORATORY MEDICINE	23	20	3	0	0
Clin. Med.	ARCHIVES OF SURGERY	19	16	1	2	0
Clin. Med.	ARCHIVES OF TOXICOLOGY	58	12	31	15	0
Clin. Med.	AVIATION SPACE AND ENVIRONMENTAL MEDICINE	30	23	7	0	0
Clin. Med.	BEHAVIORAL AND BRAIN SCIENCES	87	68	18	1	0
Clin. Med.	BEHAVIOURAL BRAIN RESEARCH	97	67	29	1	0
Clin. Med.	BRITISH DENTAL JOURNAL	125	22	102	1	0
Clin. Med.	BRITISH JOURNAL OF OBSTETRICS AND GYNAECOLOGY	262	15	134	1	112
Clin. Med.	CANCER	139	133	2	4	0
Clin. Med.	CIRCULATION	901	168	29	6	698
Clin. Med.	CLINICAL ORTHOPAEDICS AND RELATED RESEARCH	54	37	15	2	0
Clin. Med.	EUROPEAN JOURNAL OF HAEMATOLOGY	67	20	46	1	0
Clin. Med.	GASTROENTEROLOGY	1541	69	4	3	1465
Clin. Med.	JOURNAL OF PEDIATRICS	75	57	16	2	0
Clin. Med.	JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY	104	74	26	4	0
Clin. Med.	JOURNAL OF UROLOGY	138	81	55	2	0
Clin. Med.	LANCET	1386	835	527	24	0
Clin. Med.	LIVER	22	10	12	0	0
Clin. Med.	MEDICAL PHYSICS	27	16	10	1	0
Clin. Med.	NEUROLOGY	106	10	95	1	0
Clin. Med.	NEUROPHARMACOLOGY	91	0	91	0	0
Clin. Med.	NEUROSCIENCE LETTERS	429	71	33	1	324
Clin. Med.	OBSTETRICS AND GYNECOLOGY	50	35	13	2	0
Clin. Med.	OPHTHALMOLOGY	31	28	3	0	0
Clin. Med.	PAIN	81	55	26	0	0

Sector	Journal	Number of items				
		Total	Compl.	Initial only	Mixed	Not Proc.
Clin. Med.	PHYSICS IN MEDICINE AND BIOLOGY	72	27	45	0	0
Clin. Med.	SURGERY	37	31	5	1	0
Clin. Med.	THROMBOSIS AND HAEMOSTASIS	1278	121	180	6	971
Clin. Med.	VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY	55	15	37	3	0
Earth & Space	ANNUAL REVIEW OF PLANT PHYSIOLOGY AND PLANT MOLECULAR BIOLOGY	6	6	0	0	0
Earth & Space	GEOPHYSICAL RESEARCH LETTERS	252	80	163	9	0
Earth & Space	MYCORRHIZA	18	0	12	6	0
Earth & Space	PHYSICS OF THE EARTH AND PLANETARY INTERIORS	52	33	17	2	0
Earth & Space	PHYTOCHEMISTRY	336	97	9	2	228
Earth & Space	PLANT CELL	44	38	5	1	0
Earth & Space	PLANT CELL AND ENVIRONMENT	80	0	78	2	0
Earth & Space	PLANT PHYSIOLOGY	242	140	100	2	0
Earth & Space	PLANT SCIENCE	80	60	19	1	0
Earth & Space	THEORETICAL AND APPLIED GENETICS	128	0	29	0	99
Earth & Space	AGRONOMY JOURNAL	11	9	1	1	0
Engineering	ACI MATERIALS JOURNAL	4	2	1	1	0
Engineering	ACM COMPUTING SURVEYS	13	11	2	0	0
Engineering	ACM TRANSACTIONS ON COMPUTER SYSTEMS	1	1	0	0	0
Engineering	ACM TRANSACTIONS ON INFORMATION SYSTEMS	2	2	0	0	0
Engineering	ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS	6	5	1	0	0
Engineering	ACTA INFORMATICA	12	7	5	0	0
Engineering	ADVANCED MATERIALS	121	117	4	0	0
Engineering	APPLIED SPECTROSCOPY	47	35	12	0	0
Engineering	ARCHIVES OF PATHOLOGY & LABORATORY MEDICINE	23	20	3	0	0
Engineering	ARTIFICIAL INTELLIGENCE	20	18	2	0	0
Engineering	COMMUNICATIONS OF THE ACM	18	14	4	0	0
Engineering	GRAPHICAL MODELS AND IMAGE PROCESSING	10	7	3	0	0
Engineering	MEASUREMENT SCIENCE & TECHNOLOGY	132	20	112	0	0
Engineering	MECHANICS RESEARCH COMMUNICATIONS	21	11	10	0	0
Engineering	PATTERN RECOGNITION	38	24	14	0	0
Engineering	PROGRESS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY	5	4	1	0	0
Engineering	THEORETICAL COMPUTER SCIENCE	124	103	21	0	0
Engineering	THIN SOLID FILMS	312	7	134	2	169
Mathematics	ACM TRANSACTIONS ON MATHEMATICAL SOFTWARE	10	4	5	1	0
Mathematics	ADVANCES IN MATHEMATICS	20	17	3	0	0
Mathematics	AMERICAN JOURNAL OF MATHEMATICS	14	9	5	0	0
Mathematics	APPLIED NUMERICAL MATHEMATICS	45	21	24	0	0
Mathematics	ARTIFICIAL INTELLIGENCE	20	18	2	0	0
Mathematics	JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS	96	59	36	1	0

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		Total	Compl.	Initial only	Mixed	Not Proc.
Mathematics	JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES	43	29	14	0	0
Mathematics	LINEAR ALGEBRA AND ITS APPLICATIONS	67	44	23	0	0
Mathematics	MATHEMATISCHE ANNALEN	49	37	12	0	0
Mathematics	MATHEMATISCHE ZEITSCHRIFT	58	45	12	1	0
Mathematics	PATTERN RECOGNITION	38	24	14	0	0
Mathematics	PROBABILITY THEORY AND RELATED FIELDS	40	19	21	0	0
Mathematics	SIAM JOURNAL ON MATHEMATICAL ANALYSIS	29	22	5	2	0
Mathematics	SIAM JOURNAL ON NUMERICAL ANALYSIS	28	13	15	0	0
Mathematics	TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY	53	36	17	0	0
Multidisciplin.	FASEB JOURNAL	431	24	407	0	0
Multidisciplin.	NATURE	749	542	200	7	0
Multidisciplin.	NATURWISSENSCHAFTEN	88	28	60	0	0
Multidisciplin.	NEW SCIENTIST	242	152	90	0	0
Multidisciplin.	SCIENCE	272	172	96	4	0
Physics	AMERICAN JOURNAL OF ROENTGENOLOGY	63	44	16	3	0
Physics	APPLIED SPECTROSCOPY	47	35	12	0	0
Physics	ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS	92	79	13	0	0
Physics	BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS	486	217	53	2	214
Physics	CLASSICAL AND QUANTUM GRAVITY	122	64	52	6	0
Physics	FEBS LETTERS	734	186	33	1	514
Physics	MAGNETIC RESONANCE IN CHEMISTRY	91	63	26	2	0
Physics	MASS SPECTROMETRY REVIEWS	7	3	4	0	0
Physics	MEDICAL PHYSICS	27	16	10	1	0
Physics	MOLECULAR PHYSICS	144	63	77	4	0
Physics	OPTICS AND LASERS IN ENGINEERING	21	7	14	0	0
Physics	PHYSICAL REVIEW A	407	27	29	2	349
Physics	PHYSICAL REVIEW B-CONDENSED MATTER	376	18	352	6	0
Physics	PHYSICAL REVIEW LETTERS	953	11	23	2	917
Physics	PHYSICS IN MEDICINE AND BIOLOGY	72	27	45	0	0
Physics	PHYSICS LETTERS A	298	39	74	3	182
Physics	PHYSICS TODAY	12	9	1	2	0
Physics	PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY	12	4	8	0	0
Physics	PROGRESS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY	5	4	1	0	0
Physics	THIN SOLID FILMS	312	7	134	2	169

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