

Identifying the Best: The CHE ExcellenceRanking 2010

Sonja Berghoff
Uwe Brandenburg
Diane Carr-Boulay
Cort-Denis Hachmeister
Hannah Leichsenring
Frank Ziegele

CHE Centre for Higher Education Development gGmbH
Verler Str. 6
D-33332 Gütersloh

Telephone: ++49 (0) 5241 97 61 0

Telefax: ++49 (0) 5241 9761 40

E-Mail: info@che.de

Internet: www.che.de

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Abstract

The CHE Centre for Higher Education Development has designed an “ExcellenceRanking”, a ranking of a selected group of European Universities. The CHE applied a two-step approach for analysis. First, all European departments in the surveyed fields were compared by a few general indicators. Second, for those departments that excelled in these indicators, an in-depth analysis was run based on an institutional questionnaire and a student survey.

The first issue of the ranking, released in 2007, concentrated on the natural sciences and mathematics. The second issue, released in 2009, was dedicated to economics, political science and psychology. In 2010, the study was repeated for the natural sciences. This paper covers the results from the 2009 and 2010 issues.

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1 Genesis and Philosophy

In 2007, the CHE Centre for Higher Education Development released for the first time the “CHE ExcellenceRanking” in the fields of biology, chemistry, mathematics, and physics. A second issue of the ranking followed in 2009, adding the subjects of political science, psychology and economics¹. Now, in 2010, the survey for the natural sciences has been repeated and – together with the 2009 results - the combined results are released in this paper as well as on an interactive website².

On the basis of our longstanding experience with ranking European higher education institutions in Austria, Belgium, Germany, the Netherlands, and Switzerland, the CHE intends to contribute to the development of the European Higher Education Area while demonstrating the competitive strength of European universities.

The CHE ExcellenceRanking is one of the strategies to extend the national perspective of the CHE UniversityRanking. Instead of looking at all HEIs for a single country, the approach of the ExcellenceRanking consists of selecting a small number of excellent institutions across Europe for further investigation³.

¹ [Berghoff, Sonja](#); [Brandenburg, Uwe](#); [Carr-Boulay, Diane J](#); [Hachmeister, Cort-Denis](#); Müller-Böling, Detlef: Identifying the Best: The CHE Ranking of Excellent European Graduate Programmes in Natural Sciences, Gütersloh, 2007. Online at: http://www.che.de/downloads/CHE_AP124_ExcellenceRanking_2009.pdf

² See: <http://www.excellenceranking.org>

³ The ExcellenceRanking is also closely related to the EU Tender for the development of a world ranking that has been won by CHERPA. CHERPA, or the Consortium for Higher Education and Research Performance Assessment, is a European network of leading institutions in the field of higher education. More information is available at: <http://www.u-multirank.eu>

2 Target Groups

The CHE ExcellenceRanking targets the following groups:

1. *Undergraduates from European and non-European universities intending to earn a master's or PhD degree (or equivalent) in the surveyed fields:*

The objective of the CHE ExcellenceRanking is to fill the existing gap of information sought after by students who are in their final stage of (or just finished) their undergraduate studies and who intend to pursue a master's or PhD degree. Besides general information on the institutions in the ranking, these students will benefit by receiving more in-depth information on a highly selective group of top class Higher Education Institutions (HEIs) in the fields of biology, chemistry, mathematics, physics, economics, political science and psychology. The information is presented separately according to the different disciplines and according to the multidimensional approach of the CHE. This approach does not show a league table but rather, depending on different indicators, groups of particularly excellent HEIs. The information is divided into the different disciplines and according to the CHE-Ranking Principles:

- Neither an aggregation of individual indicators nor an overall score for an entire HEI, but rather a subject-related presentation of results.
- No weighed overall score for the research performance of a faculty, but rather a consideration of each indicator separately.
- No league table or ranks, but rather profiles of excellent HEIs.

2. *Higher Education Institutions (HEIs):*

The excellent HEIs can benefit from the CHE ExcellenceRanking in various ways. Firstly, being selected out of approximately 4.500 HEIs in the whole of Europe may be regarded as a highly useful marketing tool. Secondly, the CHE ExcellenceRanking informs prospective master's and PhD students and thus can be perceived by the included HEIs as an outstanding opportunity for student recruitment. Finally, the HEIs are able to compare their performance in a broad variety of aspects to that of other European HEIs of similar excellence. This will allow them to identify areas in which they may be able to improve upon their standards.

3. *Organisations and the society at large*

Organisations such as foundations and other funding institutions are continuously in need of information regarding excellent higher education institutions whose programmes might best serve their grantees. The CHE ExcellenceRanking will provide such information with an awareness of the limitations of certain indicators. Moreover, it will allow the public to have an inside view into the research abilities and teaching capacities in the surveyed fields of the finest higher education institutions in Europe. Thus, the ranking will help to promote the knowledge society and will also prepare the included fields for the increasing demand for life-long learning.

3 Basic Methodology

The CHE ExcellenceRanking follows the sound and internationally recognised methodological principles⁴ which have been developed by the CHE. These principles include following a discipline-oriented and multidimensional approach, abstaining from a comparison of institutions as a whole and taking the heterogeneous preferences of students into account. In doing so, we emphasize the importance of considering different perspectives from inside the university. Additionally, we highlight our preference to classify institutions in three broad quality clusters, rather than assigning individual ranks that focus on a limited number of universities per subject. Of course, the methodology is adapted to differences deriving from the heterogeneity of countries as well as to the specialities of the fields of analysis. The CHE ExcellenceRanking also adheres to the *“Berlin Principles on Ranking of Higher Education Institutions”*⁵ as launched during the meeting of the International Ranking Experts Group (IREG) in Berlin in May 2006.

The CHE ExcellenceRanking differs from the established CHE UniversityRanking⁶ in that it looks for examples of excellence throughout the whole of Europe rather than presenting each institution in the context of the entire European higher education setting. It includes the fields of biology, chemistry, mathematics, and physics (for the first time included in 2007, updated in 2010) as well as economics, political science and psychology (published in 2009). For methodological reasons, the scope of the ranking was restricted to these subject areas: Only for these fields could our method of preselecting institutions for the ranking be applied.

3.1 Preselection

In the first pre-selection step, European HEIs were identified based on five indicators for the fields published in 2009 and in eight indicators for the fields published in 2010. In order to be selected, a minimum of two stars with at least one in publications and citations or three stars altogether was required in 2009, in 2010 the universities needed either two stars in publications and citations or three stars altogether.

Achieving a star means that the respective institution belongs to the group of institutions which account for at least 50% of the total achievement, e.g. 50% of the total amount of publications counted for all institutions. The share of stars therefore depends on the shape of the distribution: in the example of publications, if there are few institutions with a large number of publications the distribution is steep and it is thus more difficult to achieve a star than for a smoother distribution.

The CHE is aware that every selection of indicators, however carefully set up, carries the risk of overlooking individual research teams or of not taking into account a specific department with a particular expertise.

The classifications are based on the following indicators:

⁴ See for example: Tavenas (2004), Van Dyke (2005), Usher/Savino (2006) and Marginson (2006).

⁵ See: http://www.che.de/downloads/Berlin_Principles_IREG_534.pdf

⁶ See: <http://www.che-ranking.de/cms/?getObject=615&getLang=en> (Information on the project) or <http://ranking.zeit.de> (results)

- **Number of publications⁷ in the web of science**

The “size” indicator

This is the number of publications found in the web of science with a query by institution and subject: biology, chemistry, mathematics, and physics, followed by political science, economics and psychology, with the publishing years from 1997 to 2007 for the natural sciences and mathematics as well as 1999-2006 for the other subjects. This indicator is meant as a “size” indicator describing the overall impact of a science department. A star is given to those institutions which have the largest publication output and belong to the group which comprises of at least 50% of all publications counted. Taken into consideration were those universities with at least 3.000 publications counted in the web of science in the years 1997 to 2007 (resp. 1999 to 2006), across all subjects.

This indicator was chosen for both the 2009 and 2010 rounds.

- **Citations (normalized to the international standard)**

The “reception” indicator

This indicator compares the average number of citations received by the papers of a research unit (CPP) with its international reference value, namely corresponding the field-based mean citation score (FCSm) by calculating the ratio. It was developed by Anthony van Raan and the CWTS as a measure for the visibility of a department compared to an international standard. Self-citations are excluded in the calculation of the ratio to prevent the ratio from being affected by divergent self-citation behaviour.

If the ratio CPP/FCSm (= crown indicator) is above (or below) 1.0, this means that the papers of the research unit are cited more (or less) frequently than an ‘average’ publication in the field(s) in which the research unit is active. FCSm constitutes a worldwide field-specific average in a specific (combination of) field(s). In this way, one may obtain an indication of the international position of a research unit in terms of its impact compared to a world average. This world average is calculated for the total population of articles published in CI journals assigned to a particular field. This indicator focuses on the “reception” impact of such a department in its scientific community. The universities with a citation index at least 1.1 received a star.

This indicator was chosen for both the 2009 and 2010 rounds.

- **Outstanding researchers**

The “lighthouse” indicator

This indicator identifies institutions with outstanding researchers. Only researchers that are still teaching at the specific institution are counted. Nobel Prize winners, winners of the Körber European Science Award⁸ and field medallists in mathematics were taken into account. A star is granted to those universities with at least one outstanding researcher working in the respective field.

This indicator was chosen for the 2010 round.

⁷ The publication and citation indicators were computed the CWTS Leiden.

⁸ See: <http://www.koerber-stiftung.de/en/science/koerber-european-science-award.html>

- **Number of projects in the Marie Curie programme⁹**

The "European dimension" indicator

This indicator measures European activity. The Sixth and Seventh Framework Programme's Human Resources and Mobility (HRM) activity is largely based on the financing of training and mobility activities for researchers. These activities, known as the Marie Curie Actions, are aimed at the development and transfer of research competencies, the consolidation and widening of researchers' career prospects, and the promotion of excellence in European research.

Data were taken from the Cordis database of the European Commission. The following activity lines were taken into account:

- **IEF** Marie Curie Action: "Intra-European Fellowships for Career Development"
- **IRG** Marie Curie Action: "International Reintegration Grants"
- **ITN** Marie Curie Action: "Networks for Initial Training"
- **ERG** Marie Curie Action: "European Reintegration Grants"
- **IAPP** Marie Curie Action: "Industry-Academia Partnerships and Pathways"
- **IOF** Marie Curie Action: "International Outgoing Fellowships for Career Development"
- **IIF** Marie Curie Action: "International Incoming Fellowships"
- **IRSES** Marie Curie Action "International Research Staff Exchange Scheme"

This indicator highlights the European dimension of the departments. The method used to identify the stars was similar to the method used for grouping the publication indicator. In biology three points, in chemistry and physics two points were sufficient for a star. In mathematics a star was awarded if there was at least one Marie Curie project.

This indicator was chosen for the 2010 round.

- **Student mobility**

The European mobility dimension

This indicator measures the mobility opportunities for postgraduate students and is at the same time a European component. A star is given to those institutions which have the largest student mobility and belong to the group which comprises of at least 80% (for sciences 50%) of all cases counted here. In economics 35 students were sufficient for a star, in political science 30 and in psychology 16 students, in biology 26, in chemistry 36, in mathematics 21 and in physics 20.

This indicator was chosen for both rounds.

- **Teaching staff mobility**

The European mobility and teaching dimension

Likewise, it was possible to analyse how many teachers were sent for compact teaching abroad periods within the ERASMUS programme. This indicator combines the European perspective with a teaching perspective. In addition, as teaching staff mobility (TS) is largely reciprocal, participating HEIs are not only proving to be internationally active but usually also receive teaching staff from abroad, adding an international component to their studies.

⁹ See: <http://cordis.europa.eu/fp6/projects.htm>, http://cordis.europa.eu/fp7/home_en.html

A star is given to those institutions which have the largest teaching staff mobility and belong to the group which comprises of at least 80% (sciences 50%) of all cases counted here, the minimum number of teaching staff mobility to achieve a star was 3 for all three subjects in 2009, 4 for those in 2010.

This indicator was chosen for both rounds.

- **Erasmus-Mundus-Master¹⁰**

The European Union offers financial support for selected master's programmes. These programmes have to pass a careful screening process and competition for these grants is strong. Programmes are usually very interdisciplinary and sometimes only one of the departments participating in an EM programme could be considered, as the others did not cover the academic fields under scrutiny. A star was allocated when a department could be identified as being a participating institution in an EM programme.

This indicator was chosen for both rounds.

- **ERC grants**

The European Research Council, founded in 2005, supports researchers on two levels (starting, advanced) with substantial funding. Starting grants comprise up to 2 Mio € while advanced grants can cover up to 3.5 Mio €, both for a maximum of 5 years. With this programme the EU is furthering high level research in various disciplines. For the current analysis the grants for 2007 and 2008 could be taken into account (the selections for 2009 were published too late for this analysis). The ERC provided us directly with the data. As it was considered to be equally prestigious to host such an elite scientist (particularly as the scientist him-/herself decides on the host institution) as it is to educate him/her or to be the original employer, both the sending and the receiving institution are granted a value.¹¹

This indicator was chosen for the 2010 round.

- **Book citations**

For the first time, an effort was made to try not only an analysis of the citation of articles, but also of books. CWTS Leiden undertook this endeavour as we were convinced that in the social science subjects analysed in 2009, books play a major role. Although it proved impossible to provide an analysis exactly comparable to article citations because of insufficiencies in the databases which are available, it was possible to identify a number of highly cited books which are considered highly relevant in the respective field. However, because of the scarceness of data, this indicator was not used as a self-reliant indicator but as a "+" indicator for the publication indicator.

This indicator was chosen for the 2009 round.

¹⁰ http://ec.europa.eu/education/programmes/mundus/projects/index_en.html

¹¹ <http://erc.europa.eu/index.cfm?fuseaction=page.display&topicID=65>

For the Excellence Group 2009 a minimum of one star of the two research-oriented indicators [publications (including highly cited books) or citations] and one additional star from one of the other three indicators (student mobility, teacher mobility, or ERASMUS MUNDUS) were required. Also in 2009, if a university managed to obtain three stars in the non-research based indicators, it became a member of the Excellence group. For 2010 two stars with on from publications or citations or three stars altogether were sufficient to become member of the Excellence Group.

3.2 In-Depth Analysis

In a second step, these institutions were analysed in-depth and presented in detail. Study conditions, programmes and other criteria were taken into consideration. The questionnaires were reviewed by the CHE and external partners at various stages of the process were consulted since 2007, omitting questions that could not be answered by most of the institutions as well as adding some new aspects.

In the next project phase, the data collected from the institutions and the information gathered from the (PhD and master's) student questionnaires were analysed and ranked, depending on the validity and completeness of the data (i.e. stars were assigned to the departments doing best in this indicator). Other data were presented without the assignment of stars.

Indicators fulfilling the following criteria were presented with assigned stars:

1. A sufficiently high percentage of institutions (at least 50%) were able to provide reliable and dependable data.
2. The data provided could be considered comparable between countries within reasonable boundaries. For example, funding proved to be impossible as an indicator because budgeting systems varied too much; the calculation of staff costs and the level of detail that could be shared by the HEIs were also too diverse.
3. Student evaluations were only taken into account if the sample group size for each indicator was at least fifteen students.

As a result, for the following indicators, stars were assigned:

- **students' judgements** on the doctoral and master's levels, such as the overall situation, aspects of training and courses, counselling and advice, the computer equipment, the laboratories and the library. For doctoral students, more research-oriented aspects were judged, e.g., the possibility to take part in the scientific community by attending conferences or workshops and by publishing papers. **the percentage of international staff** within the group of staff with a doctorate. **the percentage of international doctoral and master's students**. **the gender balance**, i.e. **the deviation from a 50/50-distribution** regarding the staff, doctoral and master's students **the number of subject-specific scientific journals** available in the library on a subscription basis (either print or as e-journal) **the number of memberships in editorial boards of major scientific journals per 10 members of the scientific staff** **the number of renowned scientific prizes won by staff members** (political science only)

- the **number of international conferences held or organised by the department** in 5 recent years (political science only)
- the average **percentage per year of scientific staff teaching in summer schools** (political science only)

A central feature of the online version is the possibility to access the departments/faculties not only via a simple list of the excellence group departments but also via the research categories, one of the most valuable informative assets of the endeavour. Each department was asked to name their research groups and to assign them to one or more research categories. This allows for the option to search for a subfield of a subject and to identify those departments working on a student's own field of interest. More than **4,500 research groups** were named by the departments. Prospective doctoral students are possibly less interested in the general performance of a faculty or department than in a specific research group. They usually have very clear ideas about the specialised topic on which they are focusing. Thus, it might be of some value for a student searching for a biology doctoral programme specialising in insects to know that the faculty at University A is excellent in its research output in this domain. However, it might be much more interesting for this individual to learn that he could delve into “ethnobotany” at the Swedish Uppsala Universitet, or, a student in astrophysics might be attracted less by the overall performance of the Physics Department at the University Liverpool than by its research group focusing on “condensed matter”. These are just two examples illustrating the particular added value of the in-depth analysis of the CHE ExcellenceRanking.

4 Results of the Preselection

In this section, the results of the preselection process (see section 3.1) are reported. At first on the level of the countries, then on the universities' level and finally for each of the seven subjects the ranking includes.

4.1 Country level

In the table below the number of departments from each country that made it into one of the Excellence Groups is shown, as well as the number of universities from each country with at least one "excellent" department. Regarding the number of departments the United Kingdom is leading the list, followed by Germany and The Netherlands.

Table 1: Number of departments and universities in the Excellence Group (aggregated for 2009 and 2010)

Country	Departments	Universities
United Kingdom	120	40
Germany	79	34
The Netherlands	41	12
France	35	18
Italy	29	13
Spain	29	13
Sweden	28	10
Switzerland	22	8
Belgium	16	6
Denmark	12	3
Austria	10	6
Finland	7	2
Poland	6	4
Czech Republic	5	2
Hungary	4	3
Ireland	4	3
Norway	3	2
Portugal	1	1
Estonia	1	1

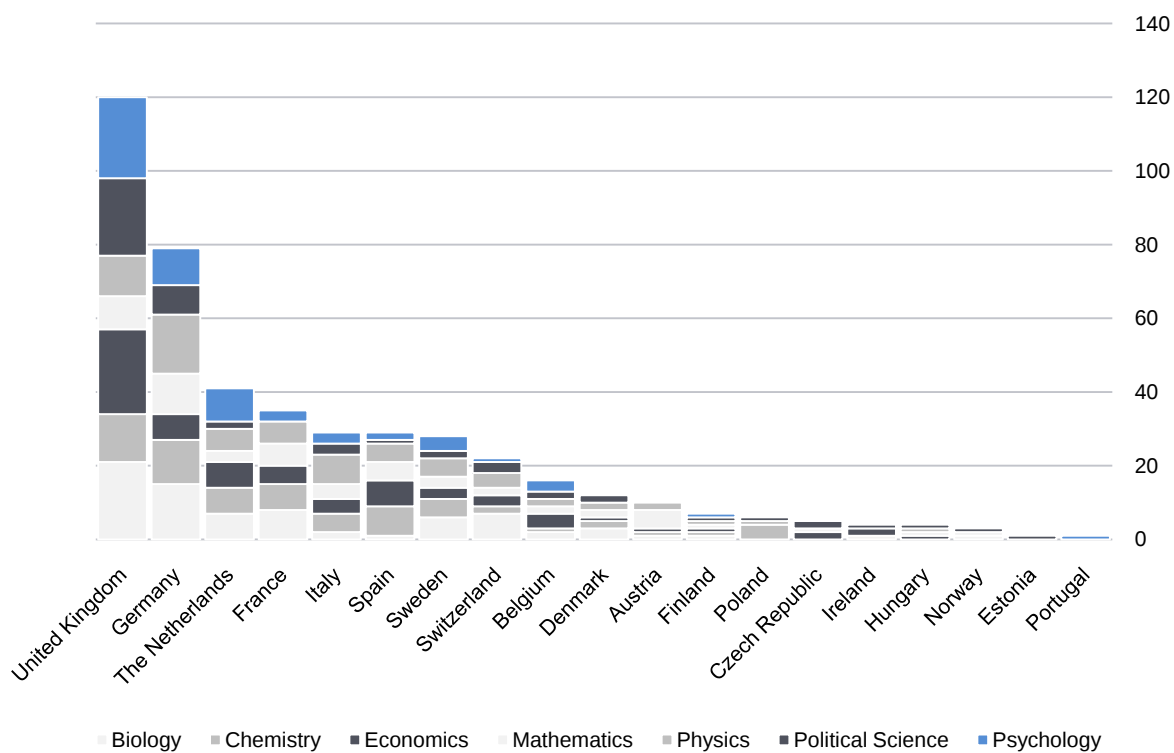
The next table shows the distribution of the Excellence Group-placements for each country according to subject areas. Again, the United Kingdom is taking the lead, except for the Mathematics and Physics, where Germany could place the most departments in the Excellence Group.

Table 2: Distribution of departments according to subjects across countries

Country	Departments total	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
United Kingdom	120	21	13	23	9	11	21	22
Germany	79	15	12	7	11	16	8	10
The Netherlands	41	7	7	7	3	6	2	9
France	35	8	7	5	6	6		3
Italy	29	2	5	4	4	8	3	3
Spain	29	1	8	7	5	5	1	2
Sweden	28	6	5	3	3	5	2	4

Country	Departments total	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
Switzerland	22	7	2	3	2	4	3	1
Belgium	16	2	1	4	2	2	2	3
Denmark	12	3	2	1	2	2	2	
Austria	10	1	1	1	5	2		
Finland	7	1	1	1	1	1	1	1
Poland	6		4			1	1	
Czech Republic	5			2	1		2	
Ireland	4	1		2			1	
Hungary	4			1	1	1	1	
Norway	3	1			1		1	
Estonia	1						1	
Portugal	1							1

Figure 1: Distribution of departments according to subjects across countries

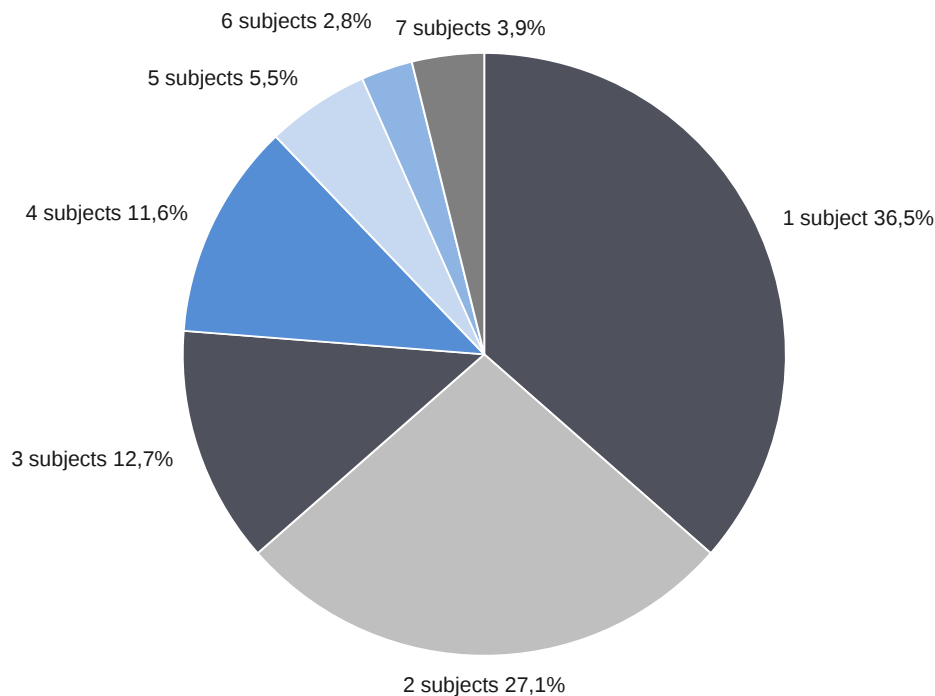


4.2 Findings on the University Level

4.2.1 Distribution of Excellence Group Placements across Universities

Figure 2 shows the percentages of universities excelling in only one subject, two subjects, and so on. Sixty-six (i.e. 37%) of the 181 universities included in the ranking excelled in only one of the surveyed subjects, another 49 (27%) of the universities excelled in two subjects. Twenty-three (13%) of the universities excelled in three subjects and another 21 (12%) of the universities in four subjects. Excellence in five fields was only reached by 10 (6%) of the universities; five (3%) achieved the status in six fields and seven (4%) universities were able to reach the Excellence Group in all seven fields: Universiteit van Amsterdam, University of Bristol, Katholieke Universiteit Leuven, University College London/University of London, University of Manchester, Ludwig-Maximilians-Universität München, University of Oxford.

Figure 2: Percentages of number of placements in the Excellence Group per university



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Table 3 shows the distribution of the Excellence Group placements across all the universities in the ranking.

Table 3: Distribution of excellence group placements across universities

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
Universiteit van Amsterdam	7	NE	X	X	X	X	X	X	X

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
University of Bristol	7	UK	X	X	X	X	X	X	X
Katholieke Universiteit Leuven	7	BE	X	X	X	X	X	X	X
University College London, University of London	7	UK	X	X	X	X	X	X	X
University of Manchester	7	UK	X	X	X	X	X	X	X
Ludwig-Maximilians-Universität München	7	DE	X	X	X	X	X	X	X
University of Oxford	7	UK	X	X	X	X	X	X	X
Humboldt-Universität zu Berlin	6	DE	X		X	X	X	X	X
University of Cambridge	6	UK	X	X	X	X	X		X
Helsingin Yliopisto	6	FI	X	X		X	X	X	X
Københavns Universitet	6	DK	X	X	X	X	X	X	
Uppsala Universitet	6	SE	X	X		X	X	X	X
Universitat de Barcelona	5	ES		X	X	X	X		X
The University of Birmingham	5	UK	X		X		X	X	X
University of Edinburgh	5	UK	X	X		X	X		X
Albert-Ludwigs-Universität Freiburg	5	DE	X	X	X	X			X
Rijksuniversiteit Groningen	5	NE	X	X	X		X		X
Ruprecht-Karls-Universität Heidelberg	5	DE	X	X		X	X		X
Universiteit Leiden	5	NE	X	X			X	X	X
Lunds Universitet	5	SE	X	X	X	X	X		
University of Sheffield	5	UK	X	X	X			X	X
Universiteit Utrecht	5	NE	X	X		X	X		X
Aarhus Universitet	4	DK	X			X	X	X	
Universitat Autònoma de Barcelona	4	ES	X	X	X	X			
Freie Universität Berlin	4	DE	X	X			X	X	
Università di Bologna	4	IT		X	X			X	X
University of Glasgow	4	UK	X			X		X	X
École Polytechnique Fédérale de Lausanne	4	CH	X	X		X	X		
University of Leeds	4	UK		X	X			X	X
University of Liverpool	4	UK	X	X			X		X
Imperial College London	4	UK	X	X		X	X		
Université catholique de Louvain	4	BE			X	X		X	X
Universidad Complutense de Madrid	4	ES		X	X	X	X		
Radboud Universiteit Nijmegen	4	NE	X	X			X		X
The University of Nottingham	4	UK	X	X	X			X	
Università degli Studi di Padova	4	IT	X			X	X		X
Université Paris-Sud 11	4	FR	X	X		X	X		
Université Pierre et Marie Curie	4	FR	X	X		X	X		
The University of Warwick	4	UK			X	X		X	X
Universität Wien	4	AT	X		X	X	X		
The University of York	4	UK	X		X			X	X
Eidgenössisch Technische Hochschule Zürich	4	CH	X	X		X	X		

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
Universität Zürich	4	CH	X		X			X	X
Rheinisch-Westfälische Technische Hochschule Aachen	3	DE		X		X	X		
University of Aberdeen · King's College	3	UK	X		X				X
Vrije Universiteit Amsterdam	3	NE	X		X				X
Universität Bern	3	CH	X		X			X	
Cardiff University	3	UK	X					X	X
Technische Universiteit Delft	3	NE		X		X	X		
University of Essex	3	UK			X			X	X
Johann Wolfgang Goethe-Universität Frankfurt	3	DE	X				X	X	
Göteborgs Universitet	3	SE	X					X	X
Universität Hamburg	3	DE	X	X			X		
Friedrich-Schiller-Universität Jena	3	DE					X	X	X
Universidad Autónoma de Madrid	3	ES		X		X	X		
Philipps-Universität Marburg	3	DE	X	X					X
Technische Universität München	3	DE	X	X			X		
Newcastle University	3	UK	X		X			X	
Université Paris 7 - Denis Diderot	3	FR	X			X	X		
Univerzita Karlova v Praze	3	CZ			X	X		X	
KTH Kungliga Tekniska Högskolan Stockholms	3	SE		X		X	X		
Universitet Stockholms	3	SE	X	X	X				
University of Sussex	3	UK			X			X	X
Université Paul Sabatier	3	FR	X			X	X		
Universitat de València	3	ES		X			X		X
Bayerische Julius-Maximilians-Universität Würzburg	3	DE	X				X		X
Universitat Pompeu Fabra	2	ES			X			X	
Universität Basel	2	CH	X				X		
University of Bath	2	UK			X				X
Universität Bielefeld	2	DE			X	X			
Rheinische Friedrich-Wilhelms-Universität Bonn	2	DE				X	X		
Eötvös Loránd University Tudományegyetem	2	HU				X	X		
University College Dublin, National University of Ireland	2	IE	X		X				
Durham University Science Laboratories	2	UK		X			X		
Friedrich-Alexander-Universität Erlangen-Nürnberg	2	DE		X			X		
Université de Geneve	2	CH	X				X		
Universiteit Gent	2	BE	X						X
Chalmers Tekniska Högskola	2	SE		X			X		
Université Joseph Fourier Grenoble	2	FR		X			X		
Uniwersytet Jagiellonski	2	PL		X				X	
Universität Karlsruhe	2	DE		X			X		
Universität Konstanz	2	DE						X	X
University of Lancaster	2	UK			X			X	

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
University of Lausanne	2	CH	X					X	
King's College London	2	UK	X						X
London School of Economics and Political Science	2	UK			X			X	
Danmarks Tekniske Universitet	2	DK	X	X					
Université Claude Bernard Lyon 1	2	FR	X				X		
Universiteit Maastricht	2	NE			X				X
Johannes Gutenberg-Universität Mainz	2	DE		X			X		
Università degli Studi di Milano	2	IT	X			X			
Université Montpellier 2	2	FR	X	X					
Westfälische Wilhelms-Universität Münster	2	DE	X			X			
Università degli Studi di Napoli Federico II	2	IT		X			X		
Universitetet i Oslo	2	NO	X					X	
L'Université Paris Descartes	2	FR	X						X
Università di Pisa	2	IT		X			X		
Vysoká škola ekonomická v Praze	2	CZ			X			X	
University of Reading	2	UK	X		X				
Université de Rennes 1	2	FR		X		X			
Università degli Studi di Roma La Sapienza	2	IT					X		X
Università di Roma Tor Vergata	2	IT				X	X		
Erasmus University Rotterdam	2	NE			X				X
University of Southampton	2	UK		X					X
Karolinska Institutet	2	SE	X						X
Université de Strasbourg	2	FR	X	X					
University of Strathclyde	2	UK			X			X	
Universität Stuttgart	2	DE		X			X		
Université Bordeaux 1	2	FR		X		X			
Universiteit van Tilburg	2	NE			X				X
Università degli Studi di Torino	2	IT		X			X		
Eberhard Karls Universität Tübingen	2	DE	X			X			
Wageningen Universiteit	2	NE	X		X				
Uniwersytet Warszawski	2	PL		X			X		
Technische Universität Wien	2	AT				X	X		
Aberystwyth University	1	UK						X	
Université de Provence - Aix Marseille I	1	FR							X
Bangor University	1	UK							X
Universitat Politècnica de Catalunya	1	ES				X			
Queen's University Belfast	1	UK						X	
Technische Universität Berlin	1	DE				X			
Università Commerciale Luigi Bocconi Milano	1	IT			X				
Vrije Universiteit Brussel	1	BE			X				
Université Libre de Bruxelles	1	BE					X		

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
Budapesti Corvinus Egyetem	1	HU			X				
Central European University	1	HU						X	
Universidad de Cantabria	1	ES			X				
Universidade de Coimbra	1	PT							X
Technische Universität Darmstadt	1	DE						X	
University of Dublin, Trinity College	1	IE						X	
University of Dundee	1	UK	X						
Heinrich-Heine-Universität Düsseldorf	1	DE	X						
University of East Anglia	1	UK			X				
Heriot-Watt University Edinburgh	1	UK			X				
Technische Universiteit Eindhoven	1	NE		X					
University of Exeter	1	UK	X						
European University Institute	1	IT						X	
Università degli Studi di Firenze	1	IT					X		
Georg-August-Universität Göttingen	1	DE	X						
Universidad de Granada	1	ES					X		
Technische Universität Graz	1	AT				X			
Leopold-Franzens-Universität Innsbruck	1	AT		X					
University of Joensuu	1	FI			X				
Technische Universität Kaiserslautern	1	DE				X			
Christian-Albrechts-Universität zu Kiel	1	DE	X						
Universität zu Köln	1	DE					X		
Universität Leipzig	1	DE							X
Université des Sciences et Technologies de Lille U.S.T.L.	1	FR			X				
University of Limerick	1	IE			X				
Johannes Kepler Universität Linz	1	AT				X			
Loughborough University	1	UK			X				
Leuphana Universität Lüneburg	1	DE			X				
Université Lumière Lyon 2	1	FR							X
Universidad Carlos III de Madrid	1	ES			X				
Universidad Politécnica de Madrid	1	ES			X				
Universität Mannheim	1	DE			X				
Facultés Universitaires Notre-Dame de la Paix	1	BE			X				
Örebro universitet	1	SE							X
Universidad del País Vasco	1	ES		X					
Université Paris-Dauphine	1	FR			X				
Université Paris 1 Panthéon Sorbonne	1	FR			X				
Université Paris-Nord 13	1	FR			X				
University of Plymouth	1	UK	X						
Universität Potsdam	1	DE						X	
Uniwersytet im. Adama Mickiewicza w Poznaniu	1	PL		X					

University	Number of fields in the Excellence Group	Country*	Biology	Chemistry	Economics	Mathematics	Physics	Political Science	Psychology
University of Salford	1	UK						X	
Universität St. Gallen	1	CH			X				
University of St Andrews	1	UK					X		
Handelshögskolan i Stockholm	1	SE			X				
University of Sunderland	1	UK							X
Tartu Ülikool	1	EE						X	
Politecnico de Torino	1	IT				X			
Université Toulouse 1	1	FR			X				
Universität Trier	1	DE							X
Università degli Studi di Trieste	1	IT					X		
Norges Teknisk-Naturvitenskapelige Universitet	1	NO				X			
Sveriges Lantbruksuniversitet	1	SE	X						
Medizinische Universität Wien	1	AT				X			
Wrocław Uniwersytet	1	PL		X					
Bergische Universität Wuppertal	1	DE			X				
Universidad de Zaragoza	1	ES		X					

*Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

4.3 Findings for the Single Subjects

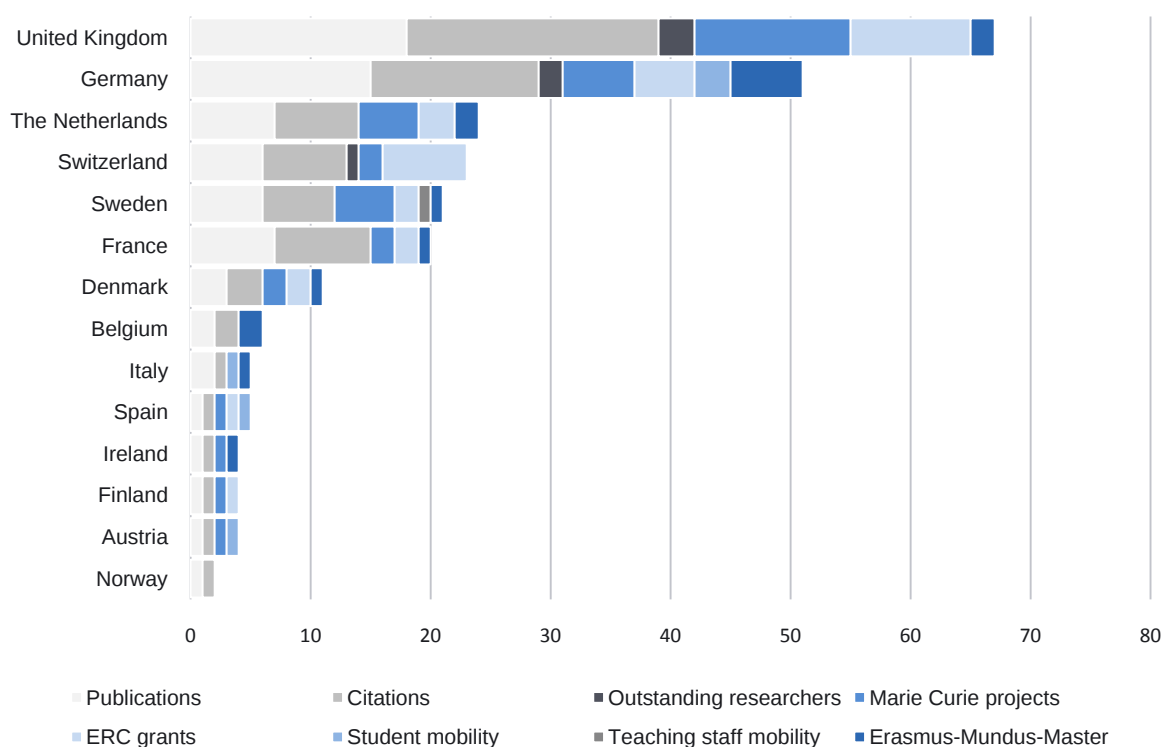
For each of the seven subjects included in the ranking similar tables and figures are shown here: An overview of the distribution of “stars” gathered by the departments in the preselection (i.e. not the institutional and students’s survey), the distribution of stars across the different preselection criteria as well as – of course – the list of the departments that made it into the Excellence Group in the respective subject.

4.3.1 Biology (2010)

Table 4: Stars Table Biology

Country	Stars	Universities
United Kingdom	67	21
Germany	51	15
The Netherlands	24	7
Switzerland	23	7
Sweden	21	6
France	20	8
Denmark	11	3
Belgium	6	2
Spain	5	1
Italy	5	2
Ireland	4	1
Finland	4	1
Austria	4	1
Norway	2	1

Figure 3: Star distribution across countries in Biology



Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 5: Excellence Group Biology

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Aarhus Universitet	DK	X	X			X			
University of Aberdeen · King's College	UK	X	X		X				
Universiteit van Amsterdam	NE	X	X		X				
Vrije Universiteit Amsterdam	NE	X	X		X				
Universitat Autònoma de Barcelona	ES	X	X		X	X	X		
Universität Basel	CH	X	X			X			
Freie Universität Berlin	DE	X		X			X		X
Humboldt-Universität zu Berlin	DE	X	X		X	X			X
Universität Bern	CH	X	X			X			
The University of Birmingham	UK	X	X						
University of Bristol	UK	X	X		X				
University of Cambridge	UK	X	X		X	X			
Cardiff University	UK	X	X						
University College Dublin, National University of Ireland	IE	X	X		X				X
University of Dundee	UK	X	X						
Heinrich-Heine-Universität Düsseldorf	DE	X	X			X			
University of Edinburgh	UK	X	X		X	X			
University of Exeter	UK		X		X	X			
Johann Wolfgang Goethe-Universität Frankfurt	DE	X	X		X				
Albert-Ludwigs-Universität Freiburg	DE	X	X						X
Université de Genève	CH	X	X			X			
Universiteit Gent	BE	X	X						X
University of Glasgow	UK	X	X						
Göteborgs Universitet	SE	X	X		X			X	
Georg-August-Universität Göttingen	DE	X	X				X		X
Rijksuniversiteit Groningen	NE	X	X		X	X			
Universität Hamburg	DE	X	X						
Ruprecht-Karls-Universität Heidelberg	DE	X	X			X			
Helsingin Yliopisto	FI	X	X		X	X			
Christian-Albrechts-Universität zu Kiel	DE	X	X		X				X
Københavns Universitet	DK	X	X		X	X			X
École Polytechnique Fédérale de Lausanne	CH		X		X	X			
University of Lausanne	CH	X	X			X			
Universiteit Leiden	NE	X	X						X
Katholieke Universiteit Leuven	BE	X	X						X
University of Liverpool	UK	X	X						
Imperial College London	UK	X	X		X	X			
King's College London	UK	X	X						
University College London, University of London	UK	X	X	X	X	X			X
Lunds Universitet	SE	X	X		X				
Danmarks Tekniske Universitet	DK	X	X		X				
Université Claude Bernard Lyon 1	FR	X	X		X				
University of Manchester	UK	X	X	X		X			
Philipps-Universität Marburg	DE	X	X						
Università degli Studi di Milano	IT	X	X						
Université Montpellier 2	FR	X	X						
Ludwig-Maximilians-Universität München	DE	X	X		X	X			
Technische Universität München	DE	X	X		X	X			X

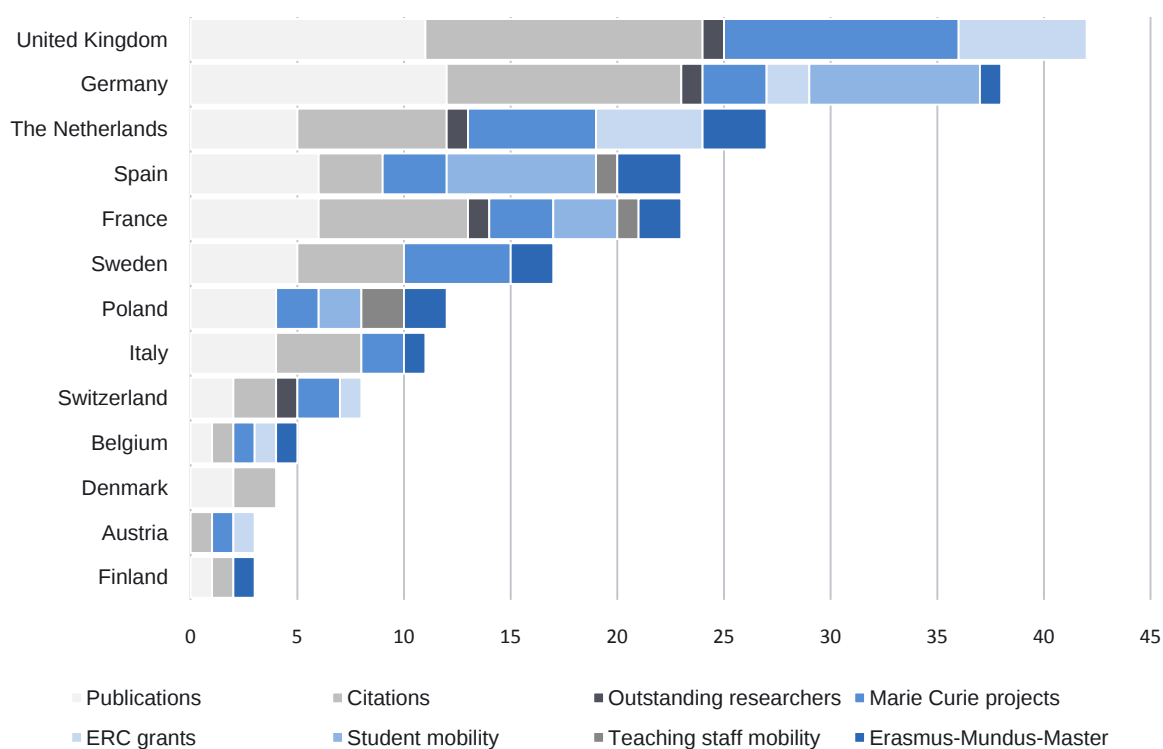
University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Westfälische Wilhelms-Universität Münster	DE	X	X						
Newcastle University	UK		X		X	X			
Radboud Universiteit Nijmegen	NE	X	X			X			
The University of Nottingham	UK	X	X		X				
Universitetet i Oslo	NO	X	X						
University of Oxford	UK	X	X		X	X			
Università degli Studi di Padova	IT	X					X		X
L'Université Paris Descartes	FR	X	X						
Université Paris-Sud 11	FR	X	X						
Université Pierre et Marie Curie	FR	X	X		X	X			X
Université Paris 7 - Denis Diderot	FR	X	X						
University of Plymouth	UK		X			X			X
University of Reading	UK	X	X		X				
University of Sheffield	UK	X	X		X	X			
Karolinska Institutet	SE	X	X		X	X			
Universitet Stockholms	SE	X	X		X				
Université de Strasbourg	FR		X			X			
Université Paul Sabatier	FR	X	X						
Eberhard Karls Universität Tübingen	DE	X	X		X				
Sveriges Lantbruksuniversitet	SE	X	X						X
Uppsala Universitet	SE	X	X		X	X			
Universiteit Utrecht	NE	X	X		X	X			
Wageningen Universiteit	NE	X	X		X				X
Universität Wien	AT	X	X		X		X		
Bayerische Julius-Maximilians-Universität Würzburg	DE	X	X	X			X		
The University of York	UK	X	X	X	X				
Eidgenössisch Technische Hochschule Zürich	CH	X	X	X	X	X			
Universität Zürich	CH	X	X			X			

4.3.2 Chemistry (2010)

Table 6: Stars Table Chemistry

Country	Stars	Universities
United Kingdom	42	13
Germany	38	12
The Netherlands	27	7
Spain	23	7
France	23	7
Sweden	17	5
Poland	12	4
Italy	11	4
Switzerland	8	2
Belgium	5	1
Denmark	4	2
Finland	3	1
Austria	3	1

Figure 4: Star distribution across countries in Chemistry



Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 7: Excellence Group Chemistry

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Rheinisch-Westfälische Technische Hochschule Aachen	DE	X	X	X	X		X		
Universiteit van Amsterdam	NE	X	X		X	X			X
Universitat Autònoma de Barcelona	ES				X		X		X
Universitat de Barcelona	ES	X	X				X		X
Freie Universität Berlin	DE	X					X		X
Università di Bologna	IT	X	X		X				X
University of Bristol	UK	X	X		X				
University of Cambridge	UK	X	X	X	X	X			
Technische Universiteit Delft	NE	X	X		X				X
Durham University Science Laboratories	UK	X	X		X				
University of Edinburgh	UK		X		X	X			
Technische Universiteit Eindhoven	NE	X	X		X	X			
Friedrich-Alexander-Universität Erlangen-Nürnberg	DE	X	X						
Albert-Ludwigs-Universität Freiburg	DE	X	X		X		X		
Chalmers Tekniska Högskola	SE	X	X		X				X
Université Joseph Fourier Grenoble	FR	X	X						
Rijksuniversiteit Groningen	NE		X	X	X	X			
Universität Hamburg	DE	X	X				X		
Ruprecht-Karls-Universität Heidelberg	DE	X	X			X	X		
Helsingin Yliopisto	FI	X	X						X
Leopold-Franzens-Universität Innsbruck	AT		X		X	X			
Uniwersytet Jagielloński	PL	X					X		X
Universität Karlsruhe	DE	X	X						
Københavns Universitet	DK	X	X						
École Polytechnique Fédérale de Lausanne	CH	X	X		X				
University of Leeds	UK	X	X		X				
Universiteit Leiden	NE	X	X		X				X
Katholieke Universiteit Leuven	BE	X	X		X	X			X
University of Liverpool	UK		X		X	X			
Imperial College London	UK	X	X		X	X			
University College London, University of London	UK	X	X						
Lunds Universitet	SE	X	X		X				
Danmarks Tekniske Universitet	DK	X	X						
Universidad Autónoma de Madrid	ES	X	X				X		
Universidad Complutense de Madrid	ES	X					X		X
Johannes Gutenberg-Universität Mainz	DE	X	X		X		X		
University of Manchester	UK	X	X		X				
Philipps-Universität Marburg	DE	X	X				X		
Université Montpellier 2	FR	X	X						
Ludwig-Maximilians-Universität München	DE	X	X			X			
Technische Universität München	DE	X	X				X		
Università degli Studi di Napoli Federico II	IT	X	X						
Radboud Universiteit Nijmegen	NE		X		X	X			
The University of Nottingham	UK	X	X		X	X			
University of Oxford	UK	X	X		X	X			
Universidad del País Vasco	ES	X			X		X		
Université Paris-Sud 11	FR	X	X		X		X		
Université Pierre et Marie Curie	FR	X	X		X		X		
Università di Pisa	IT	X	X						

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Uniwersytet im. Adama Mickiewicza w Poznaniu	PL	X			X		X		
Université de Rennes 1	FR	X	X					X	X
University of Sheffield	UK	X	X		X				
University of Southampton	UK	X	X						
KTH Kungliga Tekniska Högskolan Stockholms	SE	X	X		X				X
Universitet Stockholms	SE	X	X		X				
Université de Strasbourg	FR		X	X			X		
Universität Stuttgart	DE	X	X						
Université Bordeaux 1	FR	X	X		X				X
Università degli Studi di Torino	IT	X	X		X				
Uppsala Universitet	SE	X	X		X				
Universiteit Utrecht	NE	X	X			X			
Universitat de València	ES	X	X		X		X		
Uniwersytet Warszawski	PL	X			X			X	
Wrocław Uniwersytet	PL	X						X	X
Universidad de Zaragoza	ES	X					X	X	
Eidgenössisch Technische Hochschule Zürich	CH	X	X	X	X	X			

4.3.3 Economics (2009)

Table 8: Stars Table Economics

Country	Stars	Universities
United Kingdom	54	23
The Netherlands	23	7
Spain	21	7
Germany	18	7
France	13	5
Switzerland	9	3
Belgium	8	4
Czech Republic	7	2
Sweden	6	3
Italy	5	2
Ireland	4	2
Hungary	3	1
Finland	2	1
Denmark	2	1
Austria	2	1

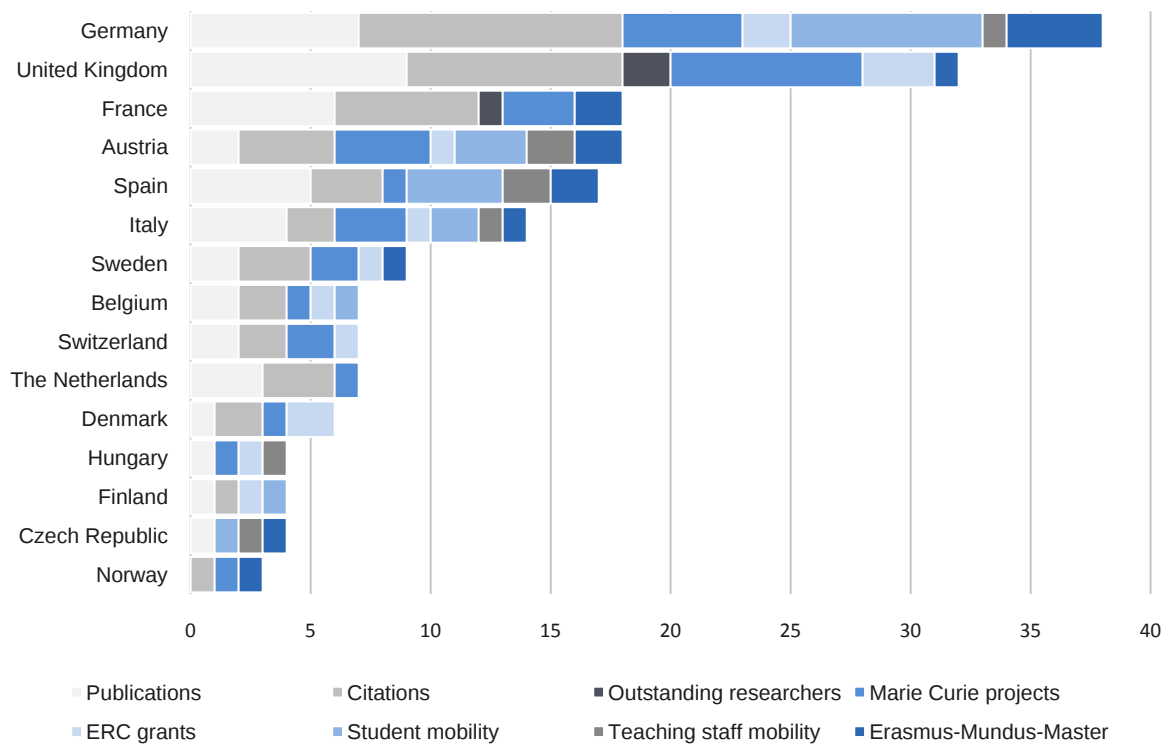
Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Book citations
United Kingdom	22	20	5	2	0	0	0	0	0
The Netherlands	7	7	1	3	1	0	0	0	0
Spain	3	3	0	0	0	0	0	0	0
Germany	3	5	0	0	0	0	0	0	0
France	2	3	0	0	0	0	0	0	0
Switzerland	2	3	0	0	0	0	0	0	0
Belgium	2	3	0	0	0	0	0	0	0
Czech Republic	2	3	0	0	0	0	0	0	0
Sweden	2	3	0	0	0	0	0	0	0
Italy	2	3	0	0	0	0	0	0	0
Ireland	2	3	0	0	0	0	0	0	0
Hungary	1	1	0	0	0	0	0	0	0
Finland	1	1	0	0	0	0	0	0	0
Denmark	1	1	0	0	0	0	0	0	0
Austria	1	1	0	0	0	0	0	0	0

Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 9: Excellence Group Economics

University	Country	Publications	Citations	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Highly Cited Books
University of Aberdeen · King's College	UK	X	X				
Universiteit van Amsterdam	NE	X	X	X	X		
Vrije Universiteit Amsterdam	NE	X	X	X			
Universitat Autònoma de Barcelona	ES	X		X	X	X	
Universitat de Barcelona	ES		X	X			
Universitat Pompeu Fabra	ES	X	X	X	X		
University of Bath	UK	X	X		X		
Humboldt-Universität zu Berlin	DE	X		X	X	X	
Universität Bern	CH		X	X	X		
Universität Bielefeld	DE			X	X	X	
The University of Birmingham	UK	X					X
Università Commerciale Luigi Bocconi Milano	IT	X	X				
Università di Bologna	IT	X			X	X	
University of Bristol	UK	X	X				
Vrije Universiteit Brussel	BE		X			X	
Budapesti Corvinus Egyetem	HU			X	X	X	
University of Cambridge	UK	X	X				X
Universidad de Cantabria	ES			X	X	X	
University College Dublin, National University of Ireland	IE		X			X	
University of East Anglia	UK	X	X				
Heriot-Watt University Edinburgh	UK		X			X	
University of Essex	UK	X	X		X		
Albert-Ludwigs-Universität Freiburg	DE		X	X			
Rijksuniversiteit Groningen	NE	X	X	X			
University of Joensuu	FI		X		X		
Københavns Universitet	DK	X	X				
University of Lancaster	UK	X	X				
University of Leeds	UK	X	X				
Katholieke Universiteit Leuven	BE	X	X				
Université des Sciences et Technologies de Lille U.S.T.L.	FR			X	X	X	
University of Limerick	IE		X		X		
London School of Economics and Political Science	UK	X	X				X
University College London, University of London	UK	X	X			X	
Loughborough University	UK	X			X		
Université catholique de Louvain	BE	X		X			
Lunds Universitet	SE		X			X	
Leuphana Universität Lüneburg	DE		X		X		
Universiteit Maastricht	NE	X	X	X			X
Universidad Complutense de Madrid	ES			X	X	X	
Universidad Carlos III de Madrid	ES	X		X	X		
Universidad Politécnica de Madrid	ES		X			X	
University of Manchester	UK	X	X				
Universität Mannheim	DE	X	X	X			
Ludwig-Maximilians-Universität München	DE	X	X				
Facultés Universitaires Notre-Dame de la Paix	BE		X	X			
Newcastle University	UK	X	X				
The University of Nottingham	UK	X	X		X		
University of Oxford	UK	X	X				
Université Paris-Dauphine	FR		X		X		
Université Paris 1 Panthéon Sorbonne	FR	X		X		X	
Université Paris-Nord 13	FR		X		X		

University	Country	Publications	Citations	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Highly Cited Books
Univerzita Karlova v Praze	CZ	X		X	X	X	
Vysoká škola ekonomická v Praze	CZ	X		X		X	
University of Reading	UK	X			X		
Erasmus University Rotterdam	NE	X	X			X	
Universität St. Gallen	CH		X	X	X		
University of Sheffield	UK	X	X				
Handelshögskolan i Stockholm	SE	X	X				
Universitet Stockholms	SE	X	X				
University of Strathclyde	UK	X	X			X	
University of Sussex	UK	X	X		X		
Universiteit van Tilburg	NE	X	X			X	
Université Toulouse 1	FR	X	X	X			
Wageningen Universiteit	NE	X	X			X	
The University of Warwick	UK	X	X				
Universität Wien	AT	X				X	
Bergische Universität Wuppertal	DE		X		X		
The University of York	UK	X	X				
Universität Zürich	CH		X	X	X		



Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 11: Excellence Group Mathematics

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Rheinisch-Westfälische Technische Hochschule Aachen	DE	X	X				X		X
Aarhus Universitet	DK		X		X	X			
Universiteit van Amsterdam	NE	X	X						
Universitat Autònoma de Barcelona	ES	X						X	X
Universitat de Barcelona	ES	X	X				X		
Universitat Politècnica de Catalunya	ES	X	X				X	X	X
Humboldt-Universität zu Berlin	DE	X	X		X		X	X	
Technische Universität Berlin	DE	X	X		X				
Universität Bielefeld	DE	X	X				X		X
Rheinische Friedrich-Wilhelms-Universität Bonn	DE	X	X		X				
University of Bristol	UK	X	X		X				
Eötvös Loránd University Tudományegyetem	HU	X			X	X		X	
University of Cambridge	UK	X	X	X	X	X			
Technische Universiteit Delft	NE	X	X						
University of Edinburgh	UK	X	X		X				X
Albert-Ludwigs-Universität Freiburg	DE		X		X		X		
University of Glasgow	UK	X	X		X				
Technische Universität Graz	AT		X				X	X	
Ruprecht-Karls-Universität Heidelberg	DE	X	X			X			
Helsingin Yliopisto	FI	X	X			X	X		
Technische Universität Kaiserslautern	DE		X				X		X
Københavns Universitet	DK	X	X			X			
École Polytechnique Fédérale de Lausanne	CH	X	X		X	X			
Katholieke Universiteit Leuven	BE	X	X			X			
Johannes Kepler Universität Linz	AT		X		X				X
Imperial College London	UK	X	X	X	X				
University College London, University of London	UK	X	X		X				
Université catholique de Louvain	BE	X	X		X		X		
Lunds Universitet	SE		X		X	X			
Universidad Autónoma de Madrid	ES	X	X				X		
Universidad Complutense de Madrid	ES	X			X		X		
University of Manchester	UK	X	X		X				
Università degli Studi di Milano	IT	X			X			X	
Ludwig-Maximilians-Universität München	DE	X	X				X		
Westfälische Wilhelms-Universität Münster	DE		X				X		X
University of Oxford	UK	X	X		X	X			
Università degli Studi di Padova	IT	X			X		X		X
Université Paris-Sud 11	FR	X	X	X	X				X
Université Pierre et Marie Curie	FR	X	X		X				
Université Paris 7 - Denis Diderot	FR	X	X						
Univerzita Karlova v Praze	CZ	X					X	X	X
Université de Rennes 1	FR	X	X		X				
Università di Roma Tor Vergata	IT	X	X		X	X			
KTH Kungliga Tekniska Högskolan Stockholms	SE	X	X		X				X
Université Bordeaux 1	FR	X	X						X
Politecnico di Torino	IT	X	X				X		
Université Paul Sabatier	FR	X	X						
Norges Teknisk-Naturvitenskapelige Universitet	NO		X		X				X
Eberhard Karls Universität Tübingen	DE		X		X	X	X		
Uppsala Universitet	SE	X	X						

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Universiteit Utrecht	NE	X	X		X				
The University of Warwick	UK	X	X			X			
Medizinische Universität Wien	AT		X		X			X	
Technische Universität Wien	AT	X			X		X		X
Universität Wien	AT	X	X		X	X	X		
Eidgenössisch Technische Hochschule Zürich	CH	X	X		X				

4.3.5 Physics (2010)

Table 12: Stars Table Physics

Country	Stars	Universities
Germany	53	16
United Kingdom	35	11
The Netherlands	23	6
Italy	22	8
France	21	6
Spain	17	5
Sweden	13	4
Switzerland	12	4
Austria	8	2
Belgium	7	2
Denmark	6	2
Finland	3	1
Poland	2	1
Hungary	2	1

Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Germany	13	15	1	8	3	2	0	3
United Kingdom	9	11	1	7	5	0	0	0
The Netherlands	4	6	1	4	5	2	0	2
Italy	8	8	0	2	2	2	0	2
France	6	5	1	4	1	1	0	2
Spain	4	4	0	6	4	2	0	0
Sweden	4	3	0	2	2	2	0	2
Switzerland	2	4	0	3	3	0	0	0
Austria	2	2	0	1	2	1	0	0
Belgium	2	1	0	2	1	1	0	0
Denmark	2	2	0	1	1	1	0	0
Finland	1	1	0	1	1	0	0	0
Hungary	1	1	0	1	1	0	0	0
Poland	1	1	0	0	0	0	0	0

Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 13: Excellence Group Physics

University	Country	Publications	Citations	Outstanding researchers	Marie Curie projects	ERC grants	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master
Rheinisch-Westfälische Technische Hochschule Aachen	DE	X	X		X		X		
Aarhus Universitet	DK	X	X			X			
Universiteit van Amsterdam	NE	X	X		X	X			X
Universitat de Barcelona	ES	X	X		X				
Universität Basel	CH		X		X	X			
Freie Universität Berlin	DE	X				X	X		
Humboldt-Universität zu Berlin	DE	X	X						
The University of Birmingham	UK	X	X						
Rheinische Friedrich-Wilhelms-Universität Bonn	DE	X	X		X				
University of Bristol	UK		X		X	X			
Université Libre de Bruxelles	BE	X	X		X				
Eötvös Loránd University Tudományegyetem	HU		X			X			
University of Cambridge	UK	X	X	X	X	X			
Technische Universiteit Delft	NE		X		X	X			X
Durham University Science Laboratories	UK	X	X		X				
University of Edinburgh	UK	X	X		X				
Friedrich-Alexander-Universität Erlangen-Nürnberg	DE		X	X	X				
Università degli Studi di Firenze	IT	X	X						
Johann Wolfgang Goethe-Universität Frankfurt	DE	X	X						
Université de Geneve	CH		X		X	X			
Chalmers Tekniska Högskola	SE	X	X						X
Universidad de Granada	ES		X				X		X
Université Joseph Fourier Grenoble	FR	X	X			X			X
Rijksuniversiteit Groningen	NE	X	X						
Universität Hamburg	DE	X	X		X	X			
Ruprecht-Karls-Universität Heidelberg	DE	X	X		X	X			
Helsingin Yliopisto	FI	X	X			X			
Friedrich-Schiller-Universität Jena	DE		X				X		X
Universität Karlsruhe	DE	X	X				X		
Københavns Universitet	DK	X	X		X				
Universität zu Köln	DE	X	X		X				
École Polytechnique Fédérale de Lausanne	CH	X	X						
Universiteit Leiden	NE	X	X		X	X			X
Katholieke Universiteit Leuven	BE	X			X	X			X
University of Liverpool	UK	X	X						
Imperial College London	UK	X	X		X				X
University College London, University of London	UK	X	X						
Lunds Universitet	SE	X	X		X	X			
Université Claude Bernard Lyon 1	FR	X	X						
Universidad Autónoma de Madrid	ES	X	X		X		X		
Universidad Complutense de Madrid	ES	X			X		X		X
Johannes Gutenberg-Universität Mainz	DE	X	X		X				
University of Manchester	UK	X		X	X	X			
Ludwig-Maximilians-Universität München	DE	X	X	X	X		X		X
Technische Universität München	DE	X	X				X		X
Università degli Studi di Napoli Federico II	IT	X	X		X				
Radboud Universiteit Nijmegen	NE		X		X	X			
University of Oxford	UK	X	X		X	X			
Università degli Studi di Padova	IT	X	X						
Université Paris-Sud 11	FR	X	X	X	X		X		X

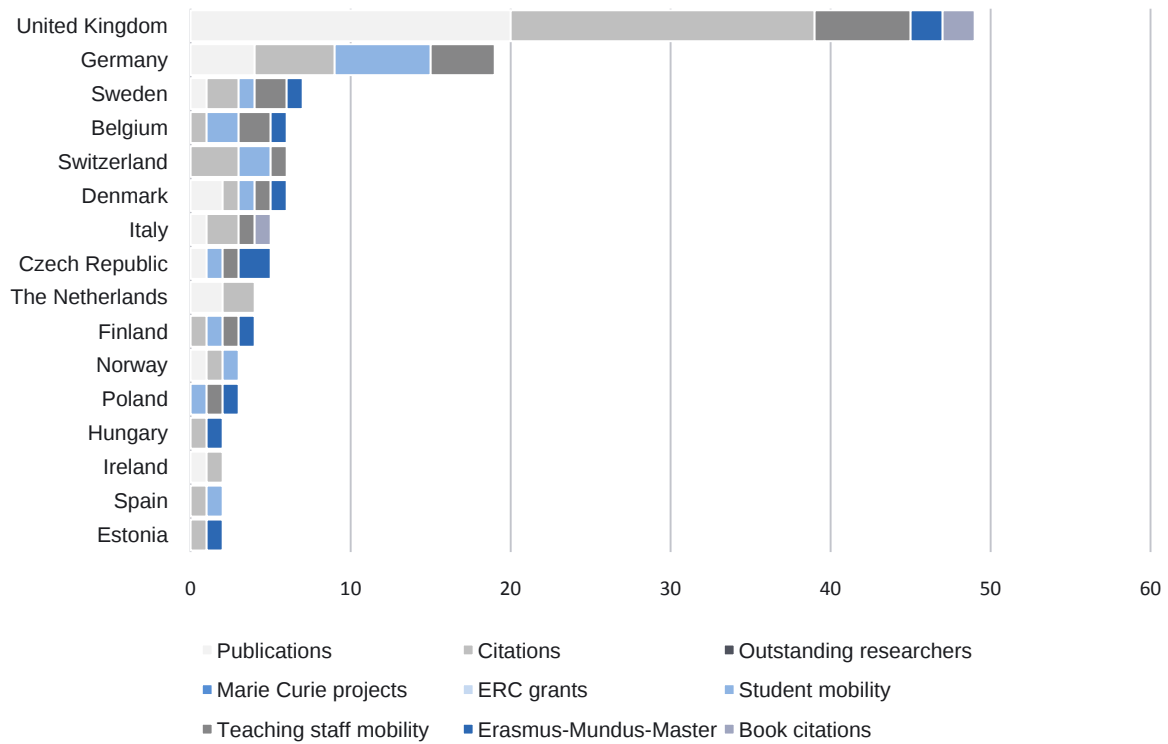
Université Pierre et Marie Curie	FR	X	X		X				
Université Paris 7 - Denis Diderot	FR	X	X		X				
Università di Pisa	IT	X	X						
Università degli Studi di Roma La Sapienza	IT	X	X			X			X
Università di Roma Tor Vergata	IT	X	X		X				
University of St Andrews	UK		X			X			X
KTH Kungliga Tekniska Högskolan Stockholms	SE	X				X			X
Universität Stuttgart	DE	X	X						X
Università degli Studi di Torino	IT	X	X						X
Université Paul Sabatier	FR	X			X				X
Università degli Studi di Trieste	IT	X	X			X			
Uppsala Universitet	SE	X	X		X				
Universiteit Utrecht	NE	X	X	X		X			
Universitat de València	ES	X	X				X		
Uniwersytet Warszawski	PL	X	X						
Technische Universität Wien	AT	X	X		X	X	X		
Universität Wien	AT	X	X			X			
Bayerische Julius-Maximilians-Universität Würzburg	DE		X		X				X
Eidgenössisch Technische Hochschule Zürich	CH	X	X		X	X			

4.3.6 Political Science (2009)

Table 14: Stars Table Political Science

Country	Stars	Universities
United Kingdom	49	21
Germany	19	8
Sweden	7	2
Switzerland	6	3
Denmark	6	2
Belgium	6	2
Italy	5	2
Czech Republic	5	2
The Netherlands	4	2
Finland	4	1
Poland	3	1
Norway	3	1
Estonia	2	1
Ireland	2	1
Spain	2	1
Hungary	2	1

Figure 8: Star distribution across countries in Political Science

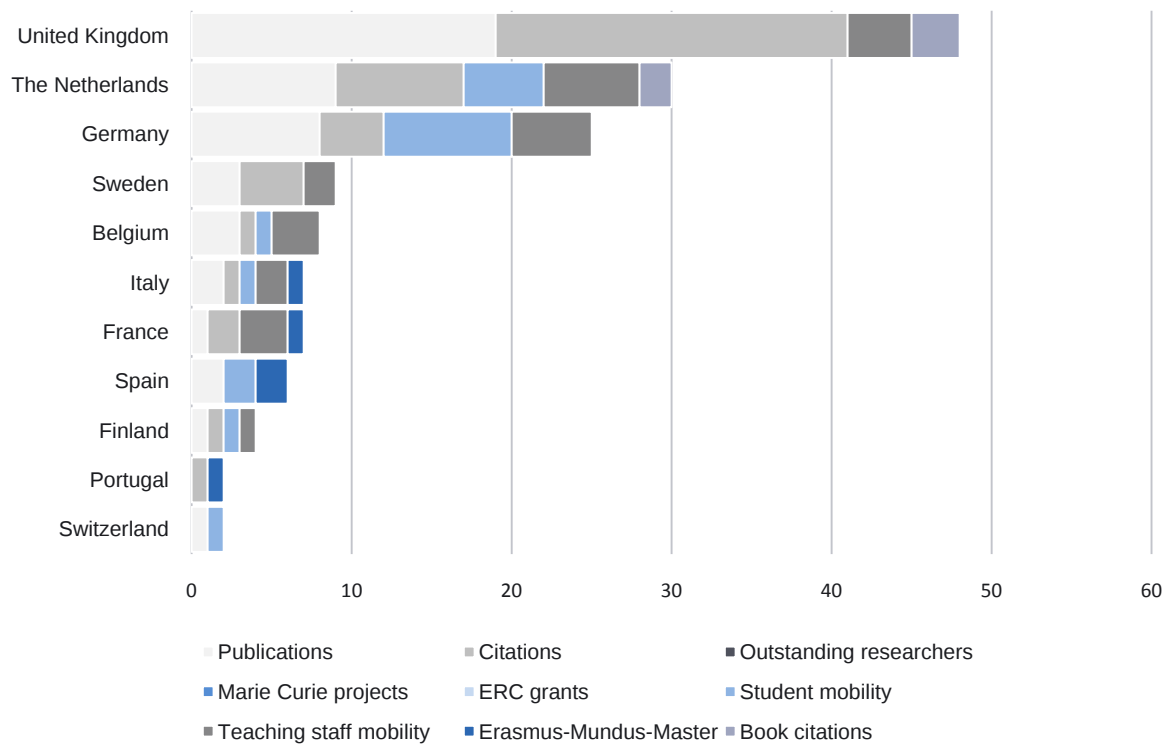


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Table 15: Excellence Group Political Science

University	Country	Publications	Citations	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Highly Cited Books
Aarhus Universitet	DK	X	X		X	X	
Aberystwyth University	UK	X	X				
Universiteit van Amsterdam	NE	X	X				
Universitat Pompeu Fabra	ES		X	X			
Queen's University Belfast	UK	X	X		X		
Freie Universität Berlin	DE	X		X	X		
Humboldt-Universität zu Berlin	DE	X			X		
Universität Bern	CH		X	X			
The University of Birmingham	UK	X	X				
Università di Bologna	IT		X		X		
University of Bristol	UK	X	X				
Central European University	HU		X			X	
Cardiff University	UK	X	X		X		
Technische Universität Darmstadt	DE		X	X			
University of Dublin, Trinity College	IE	X	X				
University of Essex	UK	X	X				
European University Institute	IT	X	X				X
Johann Wolfgang Goethe-Universität Frankfurt	DE		X	X			
University of Glasgow	UK	X	X				
Göteborgs Universitet	SE		X		X		
Helsingin Yliopisto	FI		X	X	X	X	
Uniwersytet Jagiellonski	PL			X	X	X	
Friedrich-Schiller-Universität Jena	DE		X	X	X		
Københavns Universitet	DK	X		X			
Universität Konstanz	DE	X	X				
University of Lancaster	UK	X	X				
University of Lausanne	CH		X		X		
University of Leeds	UK	X	X				
Universiteit Leiden	NE	X	X				
Katholieke Universiteit Leuven	BE		X	X	X		
London School of Economics and Political Science	UK	X	X				X
University College London, University of London	UK	X				X	
Université catholique de Louvain	BE			X	X	X	
University of Manchester	UK	X	X				X
Ludwig-Maximilians-Universität München	DE	X		X			
Newcastle University	UK	X	X				
The University of Nottingham	UK	X			X		
Universitetet i Oslo	NO	X	X	X			
University of Oxford	UK	X	X				
Universität Potsdam	DE		X	X	X		
Univerzita Karlova v Praze	CZ			X	X	X	
Vysoká škola ekonomická v Praze	CZ	X				X	
University of Salford	UK		X		X		
University of Sheffield	UK	X	X				
University of Strathclyde	UK	X	X		X		
University of Sussex	UK	X	X				
Tartu Ülikool	EE		X			X	
Uppsala Universitet	SE	X	X	X	X	X	
The University of Warwick	UK	X	X		X		
The University of York	UK	X	X			X	

Universität Zürich	CH		X	X			
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Legend: AT=Austria; BE=Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; EE=Estonia; ES=Spain; FI=Finland; FR=France; HU=Hungary; IE=Ireland; IT=Italy; NE=The Netherlands; NO=Norway; PL=Poland; PT=Portugal; SE=Sweden; UK=United Kingdom

Table 17: Excellence Group Psychology

University	Country	Publications	Citations	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Highly Cited Books
University of Aberdeen · King's College	UK	X	X				
Université de Provence - Aix Marseille I	FR		X		X		
Universiteit van Amsterdam	NE	X	X	X	X		
Vrije Universiteit Amsterdam	NE	X	X		X		
Bangor University	UK	X	X		X		
Universitat de Barcelona	ES	X		X		X	
University of Bath	UK		X		X		
Humboldt-Universität zu Berlin	DE	X	X	X			
The University of Birmingham	UK	X	X				
Università di Bologna	IT		X			X	
University of Bristol	UK	X	X				
University of Cambridge	UK	X	X				X
Cardiff University	UK	X	X				
Universidade de Coimbra	PT		X			X	
University of Edinburgh	UK	X	X				
University of Essex	UK		X		X		
Albert-Ludwigs-Universität Freiburg	DE	X		X			
Universiteit Gent	BE	X	X		X		
University of Glasgow	UK	X	X				
Göteborgs Universitet	SE	X	X				
Rijksuniversiteit Groningen	NE	X	X	X	X		
Ruprecht-Karls-Universität Heidelberg	DE	X		X			
Helsingin Yliopisto	FI	X	X	X	X		
Friedrich-Schiller-Universität Jena	DE	X		X	X		
Universität Konstanz	DE		X	X			
University of Leeds	UK	X	X				
Universiteit Leiden	NE	X	X				
Universität Leipzig	DE	X		X	X		
Katholieke Universiteit Leuven	BE	X		X	X		
University of Liverpool	UK	X	X				
King's College London	UK	X	X				
University College London, University of London	UK	X	X				X
Université catholique de Louvain	BE	X			X		
Université Lumière Lyon 2	FR		X		X		
Universiteit Maastricht	NE	X		X			
University of Manchester	UK	X	X				
Philipps-Universität Marburg	DE	X			X		
Ludwig-Maximilians-Universität München	DE	X	X		X		
Radboud Universiteit Nijmegen	NE	X	X	X	X		X
Örebro universitet	SE		X		X		
University of Oxford	UK	X	X				
Università degli Studi di Padova	IT	X		X	X		
L'Université Paris Descartes	FR	X			X	X	
Università degli Studi di Roma La Sapienza	IT	X			X		
Erasmus University Rotterdam	NE	X	X				
University of Sheffield	UK	X	X				
University of Southampton	UK	X	X				
Karolinska Institutet	SE	X	X				
University of Sunderland	UK		X		X		
University of Sussex	UK	X	X				
Universiteit van Tilburg	NE	X	X		X		X

University	Country	Publications	Citations	Student mobility	Teaching staff mobility	Erasmus-Mundus-Master	Highly Cited Books
Universität Trier	DE		X	X			
Uppsala Universitet	SE	X	X		X		
Universiteit Utrecht	NE	X	X	X	X		
Universitat de València	ES	X		X		X	
The University of Warwick	UK	X	X				
Bayerische Julius-Maximilians-Universität Würzburg	DE	X		X	X		
The University of York	UK	X	X				X
Universität Zürich	CH	X		X			

5 Results of the In-Depth-Analysis

The in-depth-analysis consisted of the institutional questionnaire in which a number of facts were asked from the departments and a student (master's and doctoral students) questionnaire.

Of all the indicators chosen for the ranking (i.e. with "stars" assigned) listed in section 3.2, the results regarding the proportion of international staff and students, the gender balance on different levels of qualification as well as on the overall study situation as judged by the students are reported here.

The results for the other indicators can be found in the online-version of the ranking (www.excellenceranking.org).

5.1 Institutional Survey

In order to identify the right contact person, the universities chosen for the in-depth analysis were contacted at the central level, usually the office of the vice-chancellor, president or equivalent. In addition, where the information was available, international offices were often identified as first contact points. The institutions were asked to name a contact person for the project. In the end, this varied from one person for the entire project to different persons for each subject and from academics to administrators. Not all institutions answered and others did, but stated that they were not interested in participating.

Table 18: Response rates in the institutional survey

Subject (year of publication)	Universities included in the survey	Universities answering the questionnaire
Biology (2010)	76	43 (56,6%)
Chemistry (2010)	66	44 (66,7%)
Economics (2009)	69	34 (49,3%)
Mathematics (2010)	56	34 (63,0%)
Physics (2010)	69	51 (73,9%)
Political Science (2009)	51	27 (52,9%)
Psychology (2009)	59	37 (62,7%)

The questionnaire can be found at www.che-excellenceranking.eu.

5.1.1 Proportion of International Staff and Students

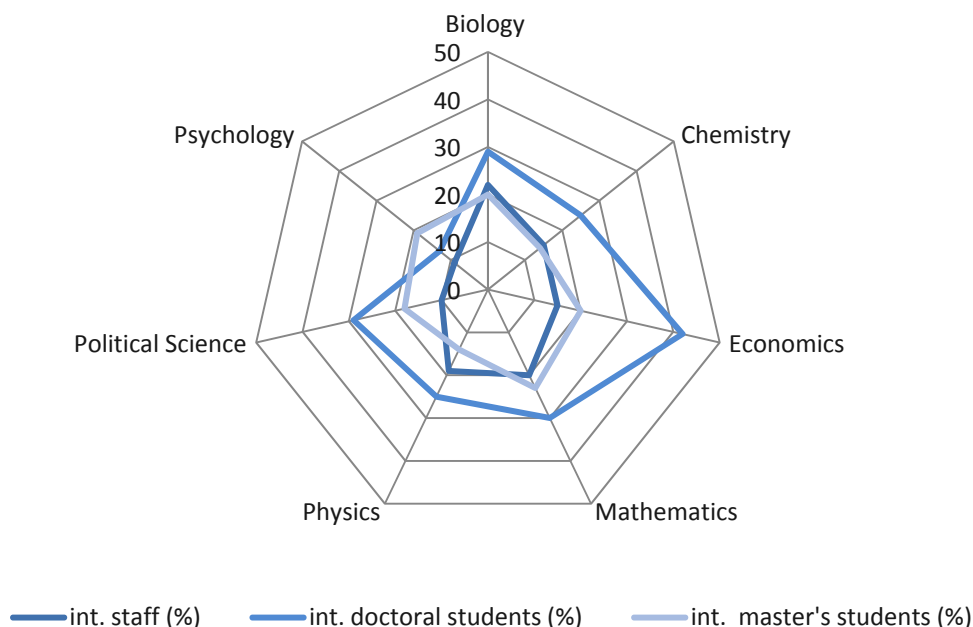
Table 19 shows the median proportion of internationals for the academic staff, doctoral and master's student as well as the number of cases (i.e. departments that answered the question). Figure 10 shows medians graphically.

Table 19: Proportion of international staff and students across subjects (in %)

	Biology		Chemistry		Economics		Mathematics		Physics		Political Science		Psychology	
	Md	N	Md	N	Md	N	Md	N	Md	N	Md	N	Md	N
staff	22	32	15	39	15	34	20	29	19	46	10	26	9	34
doctoral students	29	41	25	43	42	35	30	25	25	49	29	27	13	32
master's students	20	37	14	41	20	29	23	29	14	48	18	22	19	30

Remarks: Md=Median; N=Number of cases

Figure 10: Proportion of international staff and students across subjects (in %)



With the exception of psychology, the degree of internationalisation is highest for the doctoral students, reaching a median of 42% in economics. In Biology, Chemistry and Physics, the median of the percentage of international academic staff is higher than the median percentage for the master's students. In Mathematics, Economics, Political Science and Psychology it is the other way around – the proportion of international master's students being higher than the proportion of international staff.

5.1.2 Proportion of Female Staff and Students

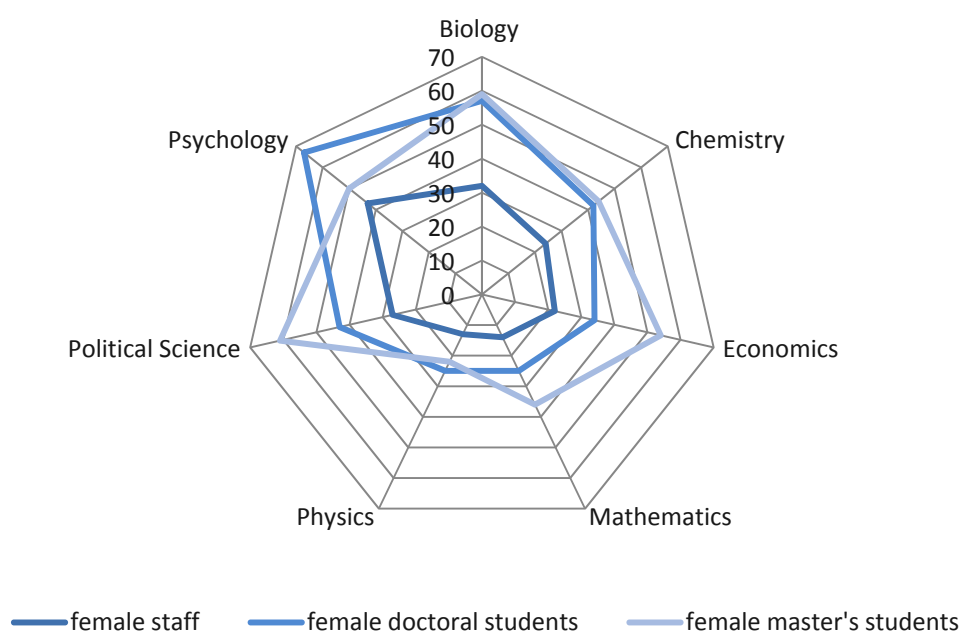
Table 20 shows the median proportion of females for the academic staff, doctoral and master's student as well as the number of cases (i.e. departments that answered the question). Figure 11 shows medians graphically.

Table 20: Proportion of female staff and students across subjects (in %)

	Biology		Chemistry		Economics		Mathematics		Physics		Political Science		Psychology	
	Md	N	Md	N	Md	N	Md	N	Md	N	Md	N	Md	N
staff	32	40	24	41	22	32	14	31	13	49	27	27	43	36
doctoral students	57	41	42	42	34	37	25	30	25	50	43	28	67	35
master's students	59	37	44	40	54	33	36	29	22	49	61	24	50	31

Remarks: Md=Median; N=Number of cases

Figure 11: Proportion of international staff and students across subjects (in %)



With the exception of psychology and physics, the median of the proportion of females is highest between the masters's students. In psychology, the proportion of female doctoral students is significantly higher, reaching as much as 67 percent. In all other subjects, except for physics, the median of the proportion of female doctoral students is smaller than the median of the master's students. The smallest proportion of females can be found between the academic staff, especially in physics and mathematics. This is a very common finding – the proportion of women decreasing with the rising level of qualification.

5.2 Students' Judgements

The student survey used an online questionnaire both intended to master's students and to doctoral students. The questionnaire was accessible only via a certain web link and with a personal code. Anonymity of student identity was maintained. The universities could choose whether they wanted to invite the students via paper letters or e-mails containing the link and a personalised code.

Table 21: Universities participating in the student surveys

Subject	Universities included in the survey	Universities conducting a student survey
Biology (2010)	76	44 (57,9%)
Chemistry (2010)	66	46 (69,7%)
Economics (2009)	69	40 (58%)
Mathematics (2010)	56	31 (55,4%)
Physics (2010)	69	47 (68,1%)
Political Science (2009)	51	29 (57%)
Psychology (2009)	59	38 (64,4%)

The questionnaire can be found at www.che-excellenceranking.eu.

Students were asked for their opinions on different aspects of their study situations. They were provided with several statements like "the study conditions are excellent" and were asked to choose how much they agree with this statement, from "I agree very much" to "I don't agree at all." For computations and graphics, these judgements were translated to a scale from 1 = "very much agreement" to 6 = "total disagreement."

Table 22: Details on the composition of the indicators

Indicator (mas. = master's students, doc. = doctoral students)	Short description
Overall study situation (mas.&doc.)	Comprehensive judgement looking at the overall situation.
Advisory (mas.&doc.)	Comprises judgements on the availability of advisors, their assistance in career planning, their caring for the student's personal development and the quality of counselling.
Career centres (mas.&doc.)	Judgements on the assistance in finding an adequate employment position by the university's career centre, on informational events, student initiatives, partnerships with companies or research institutes, and the possibilities of internships.
Examinations (mas.&doc.)	Contains judgements on the transparency of study and examination requirements, whether the coursework is in line with the content of the examinations, the fairness of examinations and the awarding of marks and organisational aspects.
Laboratories (mas.&doc.)	Considers judgements on the state of the laboratories as well as the space and the equipment of laboratories.
Library (mas.&doc.)	Judgements on the stock of literature (whether it is up-to-date, available and accessible) and on services such as search facilities or opening hours
Training (mas.&doc.)	Includes judgements on the quality of theory and methodology training, the level of interdisciplinarity, the variety of course content and quality of instruction.
Study organisation (mas.&doc.)	Comprises judgements on the transparency of admission conditions, assistance regarding formal procedures, and the organisational framework.
IT-infrastructure (mas.&doc.)	Includes judgement on hardware equipment, subject-specific software, condition of computers and service.
Counselling (mas.&doc.)	Judgements on admission, counselling on studying abroad, social and psychological counselling, counselling in relation to studies.
Websites (mas.&doc.)	Judgements on the web sites of the department: information on organisational aspects, courses and research team. Availability of an English website.
Rooms (mas.&doc.)	Students' opinions on the rooms: their condition, space and technical facilities
Social relations (mas.)	What students think about student organisations, contact to other students, teamwork and the relation to academic teaching staff.
Scientific community (doc.)	Doctoral students' judgements on the informal contact to the scientific community, contact to guest researchers, student organisations, teamwork and social relations to other students.
Conference attendance (doc.)	Doctoral students' opinions about the information on conferences, the time to prepare contributions for these and the financial support for visiting conferences.
Contact with other doctoral students (doc.)	Doctoral students' opinions about the teamwork with other PhD-students, PhD student organisations and discussions outside own team.
Publication possibilities (doc.)	What doctoral students think about their opportunity to publish and the counselling services on writing and placing papers.
Research community (doc.)	Doctoral students' judgements on the informal contact to the scientific community

Indicator (mas. = master's students, doc. = doctoral students)	Short description
	and guest researchers.
Teamwork (doc.)	What doctoral students think about team communication, organisation and social relationships.
Time for PhD project (doc.)	Doctoral students judge whether they have enough time for writing their thesis.
Workroom (doc.)	Doctoral students' opinions about the state of the workroom, the space and the computer equipment.
Workshops (doc.)	What doctoral students think about the possibilities to participate in workshops, whether they get enough information about these and financial aid for them.
Research stay (doc.)	Doctoral students' opinions about their possibilities to arrange a research stay abroad.

The judgements were grouped according to the mean of the departments' students, the overall mean, the number of students answering, and the variation of their judgements. The following figure, for example, shows for chemistry the one-sided confidence intervals, the departments' mean judgements and the overall mean for one indicator - the overall work and study situation.

Universities with a confidence interval completely on the left side of the overall mean can be said to receive judgements above average and therefore belong to the top group in students' judgements. The rest of the universities remain in the intermediate group.

Figure 12: Error bar diagram for chemistry

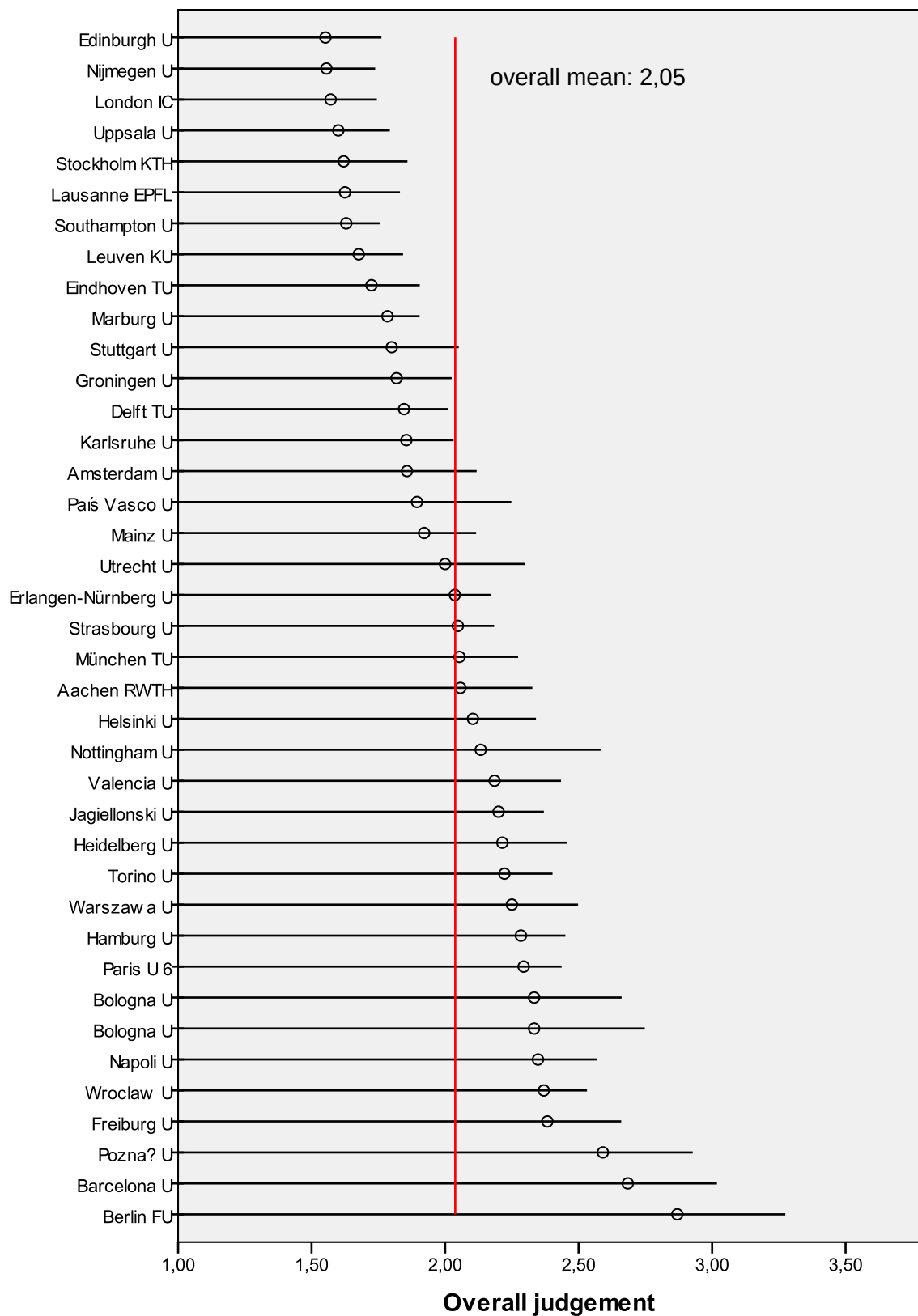
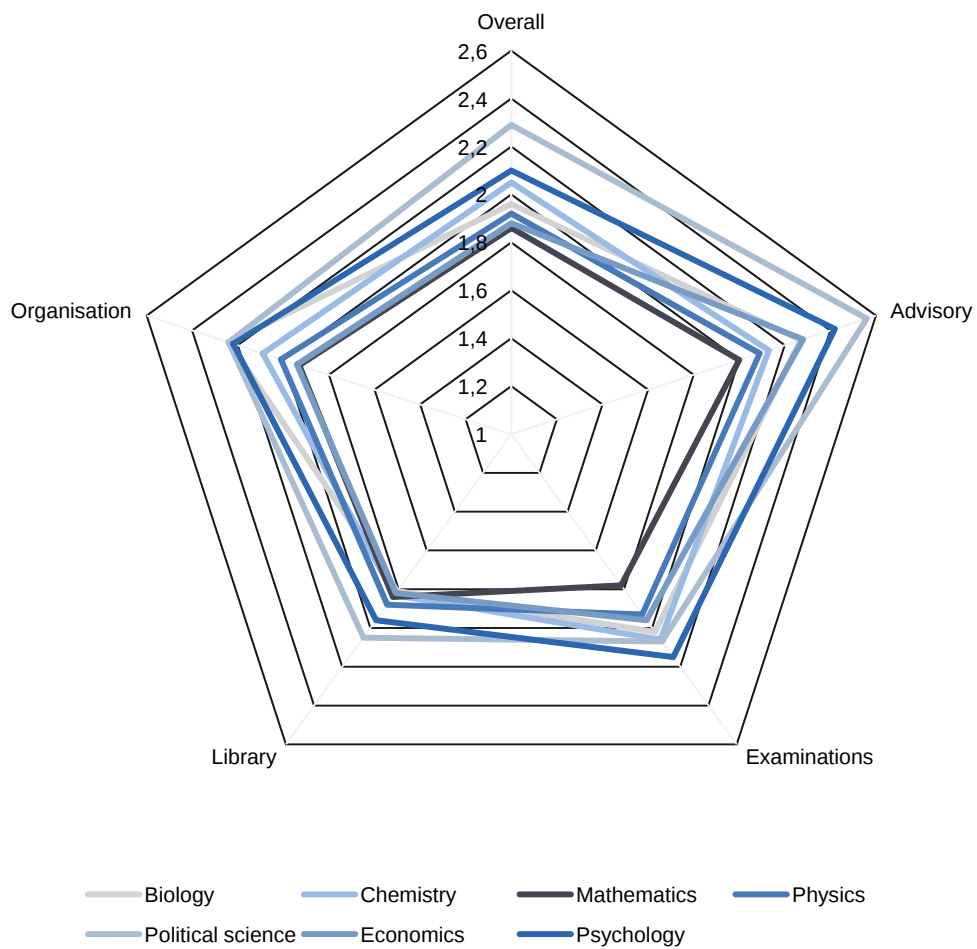


Figure 13 shows the average judgements of students across fields for four of the above mentioned indicators: Advisory, Study organisation, Examinations and Library. Though the limited number of universities in the sample does not allow general conclusions from these

averages, one can see that the level of judgement does not differ that much throughout these fields.

Figure 13: Average student judgements across fields



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