The gender challenge in research funding - assessing the European national scenes
Germany

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Background

In Germany, gender differences in the labour market are relatively pronounced: the labour market participation of women is low in comparison to other countries whereas the proportion women working part time, the gender wage gap and the degrees of horizontal and vertical segregation are high. In recent years, these differences are more and more discussed as "inequalities" since participation and achievement in general and higher education is levelled out between men and women. A remaining cleavage concerns the occupational choices by men and women reflecting the choices of academic fields for study. Among the EU countries, the representation of German women at highest academic positions is the group of countries at the very bottom (She Figures 2006: grade A: 9.0% in 2004) although the females and males show an equal representation for university degrees equals. Concerning the research system the loss of women is seen as highly problematic because investments into human capitals are wasted when women drop out at higher academic levels. This discussion is related to the question of a general "loss of talents" and the challenges for knowledge based economy. Thus, investments into research and development are seen as key factors for the German economy and society at large. In 2004, Germany spent 55.534 million € on research on development. This equals 2.5 percent of the gross national product. The main part is financed by the private sector (54%). Due to the federal structure of Germany, the public share is partly provided by the federal government and partly by the federal states. The most important research funding organisation, especially if the criteria for excellence are under focus, is the Deutsche Forschungsgemeinschaft (DFG), the national science foundation. The yearly budget was at 1.411 million € (DFG Jahresbericht 2006b). This represents a rather small part of the overall expenditures. However, research funding as an important aspect of signalling excellence is mainly administered by this institution. Therefore, the country report concentrates on the DFG.

Equal opportunity in academic research is a major policy topic since the beginning of the 1990s. Normative issues of equality play a key role as well as the argument of a dramatic loss of talent if there is an illegitimate gender bias in academia. Starting point of the discussion is often the strong vertical segregation of the academic world (the "leaky pipeline"): the higher the academic position, the less female scientists (for an overview: Fuchs et al. 2001). Besides the rhetorical claims to change this situation, public and private institutions have developed a variety of measures to promote a higher representation of women in academia. Universities – at least prima facie – practise an affirmative action approach favouring female applicants over male competitors with equivalent qualification. All institutional actors endorse a higher integration of women into science and academia. Recently, the prestigious German Science Council ("Wissenschaftsrat") adopted a declaration to promote gender equality in the German research system ("Offensive für Chancengleichheit"). The Center of Excellence Women and Science (CEWS) provide a wide ranging information source on programmes and studies related to equal opportunity issues in academia and science (CEWS 2003, 2005, 2006).[1]

[1] CEWS regularly publishes a newsletter and thematic expert reports (http://www.cews.org).

Equal opportunities for scientists are one of the DFG's statutory objectives since 2002. The DFG employs different measures to meet this goal. Concerning research funding, the DFG Head Office established a working group coordinating different activities (Knoop 2005). One first important step was to facilitate the combination of research work and family activities. In projects funded by the DFG temporary pregnancy replacements are possible, a job guarantee after a family break for researchers who are employed in projects funded by the DFG and a general prolonging of research projects for the research directors/universities are given without major bureaucratic effort. Concerning fellowships, part time arrangements are feasible. In addition, some general measures improve gender equality: junior researchers do not longer need a senior partner to apply for grants and changed regulations on who is eligible to participate in the election of the Review Boards ("Fachkollegien") yield to an earlier involvement of scientists into the self governance system of the DFG. Both measures should indirectly improve the conditions of younger female scientists to seek an academic career. The current aims of the DFG working group on gender equality are (DFG 2006a): (1) a higher involvement of female scientist in positions with decisive power in all research programmes and boards, (2) a more intensive support of young (female and male) scholars and (3) a higher representation of women in the evaluation process.

In general, the attention to gender issues in academia is on a high level. Especially the "Excellence Initiative" recently even strengthened the general policy orientation. Competing universities and research institutes had to depict in detail how goals of equal opportunities for female scientists are implemented in their proposals. Even if gender inequality is such a highly visible matter of discussion and all actors actually support a higher representation of female scientists especially in higher ranks only a small minority of scientific institutions endorses the demand for a quota.

Context of research funding in Germany

Research funding in Germany can take many forms and is organized by a bundle of different organisations. This report only focuses on funding of *academic* research. Scientific research in cooperation with and on demand of private corporations and firms is not covered. Academic research is conducted at universities which combine research and teaching and – as a specific characteristic for Germany – at research organisations which are not integrated into the university system like Max-Planck-Institutes, Fraunhofer-Institutes and the institutes of the Leibniz-Gesellschaft. Usually scientists from universities and research institutes receive a freely disposable minimum funding from their institutions for research purposes, whereas the sums vary enormously between scientific disciplines, universities and research institutes. Especially at universities, this budget decreased over time and scientists are now more and more prompted to apply for extra funding (third party funding, "Drittmittel"). Thus, personal success in grant approval has become an important selection criterion for the recruitment of young scientists at universities and research institutes. Partly, universities reward researchers for third party funding by increasing their share of in house funding, partly they pay higher salaries dependent on successful research applications. Regarding the careers of scientists, research grants create possibilities for recruiting own doctoral candidates and publishing. In sum, actual productivity as well as professional status of scientists is more and more influenced by third party funding.

There are mainly two different kinds of public research funding. (1) Institutions (e.g. government agencies, ministries, research foundations etc.) define a research topic and place a call for proposals (sometimes limited to certain organisations and researchers). Interested researchers develop proposals which are evaluated regarding their fit with the programmes' goals. Thus, projects need to be integrated into a

predefined research context (often created by a politically motivated decision). Research funding within such programmes is restricted to certain thematic fields which are of specific (political and economic) interest, e.g. climate change, nanotechnology, etc. (2) Scientists develop their own research ideas – independently of a thematic frame. In this case, projects are proposed in order to address innovative research questions, to fill knowledge gaps and to improve methodological tools without restrictions to a predefined topic. In allocating public funding to project proposals of this "bottom up" type of research, the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft) is the central organisation. The DFG is a public association, funded partly by the federal government (Bund) and the states (Länder). In addition to representatives of the Bund and the Länder, scientists with a very high reputation take part in all of the DFG's boards (e.g. "DFG Senate"). To a high degree, the DFG is a self-governance organisation. The DFG is the most import

All qualified scientists (i.e. with a doctoral degree) can apply for project funding for any kind of research ("Individual Grant Programme (Normalverfahren)"). During the last decades, coordinated programmes became more important in the DFG like "Research Units", "Collaborative Research Centres (Sonderforschungsbereiche)", "Research Training Groups (Graduiertenkollegs)". In contrast to the "top down" agenda setting described above, coordinated programmes of the DFG are proposed by the scientific community itself. Coordinated programmes are designed to promote cooperation and structural innovation by encouraging national and international collaboration in areas of current relevance and by concentrating scientific potential at a university (DFG 2008). Most recently, the DFG was also involved into the evaluation of a newly launched initiative to promote excellence in science ("Excellence Initiative"). This initiative supports the creation of larger research networks ("Clusters of Excellence") and graduate schools, it is explicitly designed to "strengthen the strength" of both universities and research institutes in order to improve the academic achievement of the German research system at large. In all research funding, the DFG is obliged to a peer review evaluation and to equal opportunity policies.

As noted above, this report covers mainly the funding system of the DFG due to its central importance and due to data available. The DFG publishes basic information on the participation of female and male scientists in different funding programmes as well as success rates by gender on its website. The following results come from a recent study which was conducted on behalf of the DFG and addresses most of the subjects that are of main interest for the Gender and Excellence Group (Hinz/Findeisen/Auspurg 2008).

Evaluation system

As already stated the evaluation system at the DFG and in other funding bodies relies on the professional judgement of peers (see for a general critic: Hirschauer 2004). The following description is again based on the procedures of the DFG. They are applied in a similar manner by other research funding organisations. Again, a distinction between single proposals and coordinated programmes is important. In case of smaller (single) projects, decisions are based on written documents without a personal discussion between evaluators and applicants. In coordinated programmes, a review panel discusses the application (partly together with the applicants and sometimes on site).

For single proposals, the amount of funding applied for is decisive for the number of reviewers involved. Usually, two evaluators are asked to write a brief report on each project proposal with a clear recommendation whether to fund it as proposed, to fund it with budget cuts or to reject it. The criteria for excellence are generally defined: creativity, innovativeness, feasibility. The peer review is anonymous so far as the

applicants do not know who reviews their proposals. The reviewers have however all information on the applicants identity and their track record at hand. Apart from the fact that in smaller research areas a fully anonymous situation is not realistic, a systematic argument supports this “one-sided” blindness. The reviewers use information given in the track records as important signals when they evaluate the proposals.

In the evaluation system of DFG there are two different levels of evaluation. The proposals are first judged by reviewers who are chosen by DFG Head Office. The appropriate programme director must ensure that all important aspects of the proposal fall within the expertise of the selected reviewers. Reviewers must be recognised experts in their fields and be capable of giving an objective appraisal of the proposal. Often reviewers have the formal status of professors. The DFG Head Office is careful to avoid conflicts of interest arising from collaboration or competition, teacher-student relations, reciprocal reviews, etc. The DFG Head Office has an important position in assigning reviewers and proposals. Nevertheless, there are no systematic studies on how reviewers are chosen. An important criterion might be the experience with the reviewers in the past (e.g. accuracy, reliability, distinctness etc.). The DFG tries to increase the number of female reviewers. Reviewers work on an honorary basis. They are asked to deliver written reviews which are the basis for the funding decision.

On the second level, Review Boards (“Fachkollegien”), the members of which are elected by peers, should ensure the quality of the decision. The Review Boards assess whether reviewers were appropriately chosen and the content of their statements, in order to prepare a funding decision. In programmes with a thematic focus and a given budget the decision should consider a comparison of all proposals received for the particular programme. The funding recommendation of the Review Boards is then forwarded to the decision-making bodies. Mostly, the final funding decision approves the recommendation.

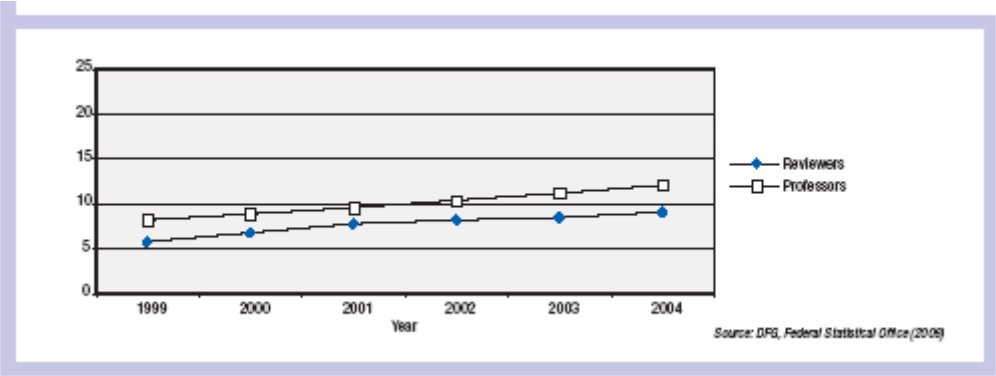
After a decision has been made the result of the reviewing process is communicated to the applicant. In case of a rejection applicants are informed on the main reasons responsible for a negative result. Positive decisions are only commented if reviewers make additional suggestions on the project.

The procedure described also applies to the coordinated programmes, such as Collaborative Research Centres and Research Units. The DFG has modified the procedure slightly, to allow for special requirements in these programmes. For example, members of Review Boards and the decision-making body join a on-site review panel, in order to ensure that the same quality and standards are applied throughout all programmes and disciplines, and to give an account of the experiences made on-site. Decisions in the Excellence Initiative are also based on the same quality criteria as in other DFG programmes.

The cited study (Hinz/Findeisen/Auspurg 2008) looks at the involvement of women in the DFG's peer review system. The study only takes scientists into account who provided written reviews to the DFG in recent years. Between 1999 and 2001, almost 10,000 scientists wrote written reviews for the DFG, between 2002 and 2004 this rose to almost 11,000 (DFG 2003, 2006). In the majority of cases reviewers have the status of professors. However, reviewers not necessarily have to have the status of professors. Figure 1 nevertheless compares the trend in the proportion of women relative to the total number of DFG peer reviewers to the trend in the proportion of female professors at German universities.[2]

[2] Data on the use of reviewers has been collected by the DFG's Head Office since 1999. The time series here is therefore limited to the 6 year period commencing in 1999.

Figure 1: The trend in the proportion of women amongst special reviewers in the Individual Grants Programme and amongst professors (1999-2004, in percent)



Source: DFG, Hinz/Findeisen/Auspurg (2008)

The proportion of women professors has steadily increased over time. This trend is mirrored by the proportion of women amongst peer reviewers – although it does not reach the same level as that of university professors. Whereas the proportion of women amongst DFG peer reviewers had reached 9% by 2004, the figure for the reference group in the same year was 13.6%. Judged on this basis, women are underrepresented amongst DFG peer reviewers. Probably, this difference is partly explained by the senior status of reviewers. The study of Hinz et al. (2008) shows that reviewers' age is on average five years above the average age of applicants. In addition, female reviewers are on average five younger than male reviewers.

On the second level, the members of the Review Boards are elected by peers. Each four years people employed at universities and research institutes qualified by a doctoral degree have the right to vote for representatives on Review Boards. Candidates have been nominated by professional scientific organisations. Analyses of electoral votes show that the representation of female scientists is more dependent on their nomination by their associations than by voters' preferences. In scientific disciplines with female candidates the female scientists do not have lower chances to be elected as member of the Review Boards. The last election took place in late 2007, the former president of the DFG argued in favour of a quota for female candidates. In fact, the proportion of women as elected members of Review Board increased from 12% to nearly 17%.

An overview on the current representation of women on different scientific boards is given by table 1. It is published on the website of the DFG where a detailed of description of tasks can be found (see: http://www.dfg.de/dfg_im_profil/aufgaben/chancengleichheit/download/chancengleichheit_dfg.pdf, page 11). With the exception of the review system the proportion of female scientists is above their representation among full professors.

Table 1: Representation of female scientists on boards of the DFG (2007)

	total number	*number females*	*per-cent*
Executive committee	9	2	22.2
Senate	38	9	23.6
Senate's committee for special research units	36	6	16.6
Senate's committee for graduate schools	32	12	37.5
Review Boards	594	99	16.8
Reviews	21,037	2,300	10.9
Reviewer	9,488	1,135	12.0

Source: DFG

All in all, the evaluation system is based on a long term professional experience. Experts praise it as highly objective and reliable based on the built in checks and balances (Neidhardt 1988; Hartmann/Neidhardt 1990). A recent reform of the evaluation system even improved the self binding quality standards (Koch 2006). Interestingly, junior researchers who received a research fellowship express a gender-specific estimation on how the criteria of excellence are met in the factual evaluation system. According to a survey, women are significantly more sceptical when they rate the systems standards as men. This result is rather striking since the factual success rates do not remarkably differ by gender. Thus, the imagination of a gender biased system might prevent applications by women while the system itself works without any discriminatory practise. The long process of qualification of young researchers comes to very different crossroads. Research funding might be a relatively late one.

Participation and success rates and by gender

The DFG publishes basic information on participation and success rates by gender and conducts regularly some surveys among the people who receive funding. This is much more than other German research institutions involved in research funding provide. Besides aggregate data on placement decisions of universities there is no gender monitoring system established (BLK 2006). However, the DFG and some other research institutions conducted some extra studies to analyse possible gender biases (e.g. Matthies et al. 2001; von Stebut 2003). An important step towards a periodical report system is the study mentioned above: "Wissenschaftlerinnen in der DFG: Förderprogramme, Förderchancen, Funktionen 1991-2004" (Hinz/Findeisen/Auspurg 2008).[3] It covers the topics of application and success rates as well as the representation of female scientists on scientific boards.[4] The DFG has updated some

[3] For this country report a summary of the study was used (DFG Infobrief 1/2007: Gender Equality in DFG Research Funding - Facts and Assessment).

[4] The DFG provided the data on which the study was based. The main focus was on data generated in the process of processing funding proposals, which provide information on funding proposals and decisions for selected DFG funding programmes for applications from 1991 to 2004. In addition to this, the study used the findings of surveys of people who submitted funding proposals to the DFG (1997 and 2002) as well as material from a study about former DFG fellows and their subsequent career development (Enders/Mugabushaka 2004). Annual surveys of Research Training Group coordinators (1997-2004) and the DFG's databases containing data on Review Committee elections and Review Board elections complete the DFG-related material

numbers and figures of the report on its website for the year 2007 (http://www.dfg.de/dfg_im_profil/aufgaben/chancengleichheit/download/chancengleichheit_dfg.pdf).

The study answers one key question of gender specific success rates with a fine grained analysis considering differences by programme and scientific discipline. Here, only the main findings can be reported. The study first deals with the most prevalent form of research funding: the Individual Grant Programme ("Normalverfahren"). Approximately 35% of DFG funding is awarded as research grants in this programme. The Individual Grants Programme is open to scientists from every discipline for research on any topic. In principle, every scientist working in Germany or at a German research institution located abroad who is fully qualified (usually by having obtained a doctorate) is eligible to apply for a research grant.

Between 1991 and 2004 the DFG approved almost 79,000 new proposals for funding under the Individual Grants Programme. During the period covered by the study there was a significant increase in the number of proposals – a clear sign of the general growth in the importance of third party research funding and of the increased competition for funding. Almost 10% of these proposals were submitted by women. A steady increase in the proportion of women submitting proposals can be observed over this period. In 1991, only about 6% of the grant proposals under the Individual Grants Programme were submitted by women, by 2000 they broke the 10% mark for the first time, and by the end of the period covered by the study (2004) it grew to almost 14%.

How well does this reflect the proportion of women at German universities? In order to even come close to answering this question, the study compares the proportion of women who submitted proposals to the DFG to the proportion of women amongst all scientific staff at universities as well as the proportion of female professors. The result of this comparison is shown in Figure 2. The overall increase in the proportion of funding proposals received for the Individual Grants Programme from female researchers (only from universities) is in line with the increase in the total percentage of potential female applicants from universities.

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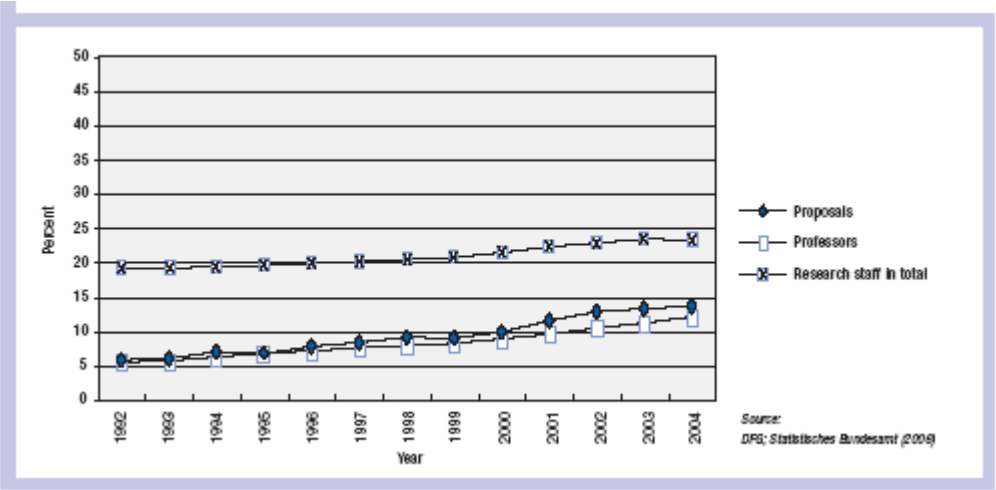
used for the study. In order to be able to have a comparative perspective on the participation of female scientists in the DFG, the study used also data of the Federal Statistical Office (Statistisches Bundesamt) that provided information on the proportion of women amongst research staff.

Figure 2: Proportion of women who submitted proposals under the Individual Grants Programme, of professors and of research staff in total (1992-2004 in percent, only for universities)



Source: DFG, Hinz/Findeisen/Auspurg (2008)

In the 1990s the proportion of women funded under the Individual Grants Programme is more or less in line with the proportion of female professors. From 2000 onwards it is generally slightly higher. Assuming that proposals submitted to the Individual Grants Programme are primarily submitted by professors, in the light of these figures it would seem logical to conclude that the proportion of women submitting new proposals to the DFG's Individual Grants Programme is, by and large, representative of the proportion of women at German universities, or even slightly higher in recent years. Due to data processing constraints, detailed analysis of the academic status of DFG applicants has only been possible since 2006. Surprisingly the result of the analysis contradicts this conclusion. Whereas 61% of the proposals submitted by men were from professors, the proportion of professors amongst women who submitted proposals was just 37%. Women thus submit proposals to the DFG at an earlier stage of their research career significantly more frequently than their male peers. Against this backdrop, Figure 2 can be taken as an indicator of an under-representation of women amongst applicants. Another indicator of the differences in the "proposal demographics" of women and men is the average age of the two groups. Whereas women were, on average, 42.8 years old when they submitted proposals, the average age of male applicants was almost six years higher, at 48.5.

What is the difference in the success rate of proposals submitted by men and women? Before answering this question, it is first necessary to look at the general trend over the period covered by the study. Between 1991 and 2004 there was a significant change in the chances of obtaining funding approval. Whereas more than 60% of all new funding proposals were granted in the early 1990s, this figure had dropped to just 38% by 2004 due to the increased competition mentioned above.

Figure 3 shows how the proposal success rate for men and women varied over this period. In the 14 years under consideration here, the success rate was lower for women than for men, with the exception of two years (1991 and 1995). The difference is generally minor, however. In nine of the 14 years the difference was of a statistically barely significant magnitude of between 0.1 and 2 percentage points. However, there were also years when the difference exceeded three percentage points (with the

greatest difference being 4.8 percentage points in 1999). In the light of these figures, it seems obvious that the minimally, but consistently, lower success rate of proposals submitted by women which the detailed study reveals applies to all disciplines across the board, could be due to the fact that female applicants are, on average, younger and therefore less experienced in submitting research funding proposals than their male peers. According to this assumption, it should, theoretically, be possible to demonstrate that younger applicants of both sexes receive more rejections to funding proposals than older (and thus, in general, more experienced) applicants. This assumption is not confirmed, however. The data on funding rates actually reveals that both younger and more senior applicants (of both genders) achieve a slightly higher success rate than their middle aged peers. The chances of grants being funded, taken over the entire period covered by the study, were greater than 50% for applicants under 40 as well as for applicants over 60, whereas it is less than 50% for applicants between 41 and 50 and between 51 and 60.

The study also tested the effects of other key variables (such as the scientific discipline). On the basis of the data used for the study, it was almost, although not completely, possible to explain the gender-specific differences in the success rates of funding proposals. In addition, the study analyzed the amount of funding applied for and approved. The gender specific differences are again very small. Taking into account the age structure, scientific disciplines and a time trend during the period covered, female scientists apply for grants with a minimally lower budget. For applications of female scientists, cuts are minimally higher. The range of gender specific difference in both cases is 1 to 2 percent.

The gender specific success rates by scientific disciplines are reported for 2004 in table 2. It seems that in disciplines with a higher proportion female among the applicants the difference of success rates is smaller. In the humanities, female applicants have even higher success than male applicants. However, a more comprehensive and fine-grained analysis shows that there is no systematic variation between proportion female in a discipline and success rates and differences in success rates respectively.

Table 2: Gender specific success rates of funding proposal (DFG individual grants, 2004) by scientific disciplines [5]

	Female	*Male*	*Diff.*
Natural Sciences	38,0	43,8	-5,8
Engineering and Technology	29,6	31,4	-1,8
Medicine (Life Sciences)	34,4	37,7	-3,3
Agricultural Sciences	29,8	38,7	-8,9
Social Sciences	34,5	38,7	-4,2
Humanities	45,5	40,5	+5,0

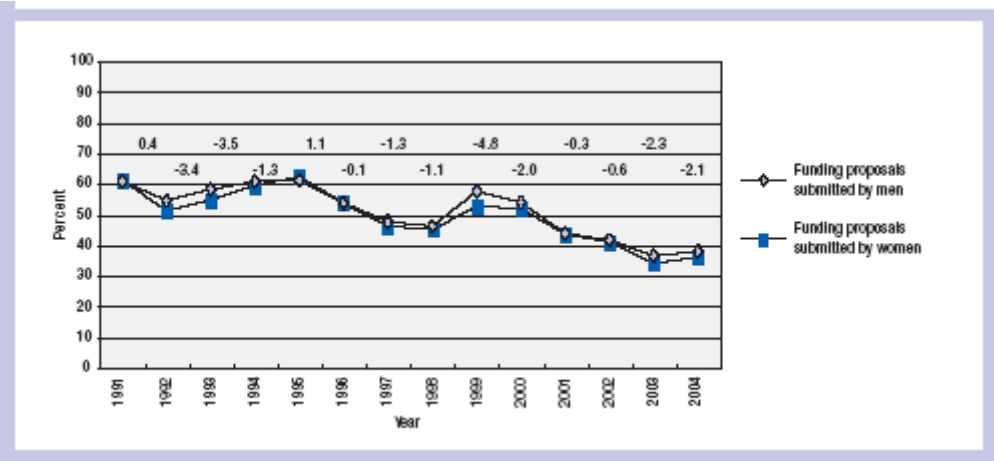
Source: DFG, own calculations

Further analyses of the study dealt with other programmes of the DFG: Priority Programmes ("Schwerpunktprogramme") [6], Research Fellowships

[5] In 2007, the differences in success rates are slightly larger. Overall, there is five point difference at the expense of chances of female scientists (47.4% males/42.3% females). For details see: http://www.dfg.de/dfg_im_profil/aufgaben/chancengleichheit/download/chancengleichheit_dfg.pdf

("Forschungsstipendien"), "Researching Training Units" (Graduiertenkollegs) and "Emmy Noether-Programme" (which is designed to promote excellent research facilities for young researchers). In general, the proportion of female applicants is approximately at the level of female representation among potential applicants ("pool"). This "pool", however, is sometimes difficult to reconstruct from available data sources. In the Priority Programmes (one of the coordinated programmes), the participation of female scientists is for the period covered somewhat lower (7.7%) compared to the Individual Grant Programme. At large, success rates do not show gender-specific differences for this programme. Comparing the representation of women in different funding programmes, there is a tendency that fewer women apply for the coordinated programmes. This might be explained by the fact that these programmes attract more experienced (and therefore older) scientists who show a lower proportion of women.

Figure 3: Trends in success rates of funding proposals under the Individual Grants Programme by gender (1991-2004 in percent)



Source: DFG, Hinz/Findeisen/Auspurg (2008)

With regard to the promotion of young scientists, several prestigious programmes have been analysed. In comparison to the proportion of women submitting applications for grants in the Individual Grants Programme dealt with above, the figures for the DFG's programmes for promoting young researchers which are aimed at a significantly younger target group are considerably higher. For example, in 1997, the first year in which this data was recorded, in the Research Training Groups ("Graduiertenkollegs") programme, the proportion of women relative to the total number of grant recipients in the programme as a whole, already accounted for some 32%. Seven years later (2004) the proportion of women had risen to some 41% (source: Annual Survey of Research Training Groups). Among those receiving doctoral funding the proportion of women is relatively high. However, there are considerable differences between scientific disciplines. Whereas in 2004 in the humanities and in the life sciences more than half of the grant recipients were women (humanities: 53%, life sciences 52%), there are comparatively few women

[6] Priority Programmes are established when the coordinated support given to the area in question promises to produce particular scientific gain. A particular feature of the Priority Programme is the nationwide cooperation between its participating researchers.

in the natural sciences (27%) and in particular in engineering (16%). A similar picture can be found for the Emmy Noether Programme.

In addition to the research funding programmes, scientific prizes signal the excellence of research within an academic field. The DFG awards several scientific prizes, some of them with a very high reputation and considerable extra-funding. All laureates are listed on the web site of the DFG. Decisions on the laureates are made by the DFG joint committee based on proposals of nomination committees. The most prestigious prize is the Leibniz prize which is awarded each year since 1985. The prize is endowed with up to 2.5 million Euros. From 2002-2008, 77 scientists have been awarded – among of them 10 female scientists (13%). The Maier-Leibnitz-Prize acknowledges outstanding achievements of younger scholars. The prize money is 16.000 Euros. 42 scientists have been awarded, 11 of them are younger female scientists.

The analysis of success rates in DFG research funding does not reveal a pronounced gender bias. However, the chances of grant approval are almost in all programmes somewhat lower.[7] After controlling for other relevant factors, these differences are very small. The chances for women are by 1 to 2 percent lower. The study tested whether segregation patterns of female and male scientists into different fields are responsible for different success rates in funding. There is no tendency that the proportion of women in a scientific field is systematically linked with a lower chance of grant approval. It seems that in regard of applicants' gender the system works without an indication of discrimination against female scientists. However, the datasets do not allow a direct test of the Wenneras/Wold hypothesis since academic achievements could not be considered in the analyses.[8] Further (qualitative) studies on the scientific system in Germany demonstrate that other structural characteristics than the research funding system affect women's decision to stay or to leave the scientific community. Anecdotic evidence supports the argument that the high level of career uncertainty and certain elements of work organisation push women out of academia. Additionally, social interaction at the workplace and a male sub-culture tend to exclude women from the "social construction" of excellence, at least in some disciplines (Krais 2000, Beaufays/Krais 2005, Matthies 2007).

Conclusions

The results of the reported studies do not show a large deviance in the gender-specific success rates while the participation rates are somewhat different by sex. Female applicants are younger than male applicants. This is due to the different age structure of female and male scientists in general and to a higher proportion of women applying without the status of a professorship. There is an indication that female scientists are underrepresented among the applicants. Therefore, the DFG puts on its agenda to encourage younger female scientists to apply for different forms of research funding, especially because there is no evidence of discrimination by sex and younger applicants have relatively better chances of grant approval. As a consequences of the cited study female scientists should receive an adequate career coaching, female senior scientists

[7] A meta-analysis using a variety of different studies is conducted by Bornmann et al. (2008). They state a significantly lower chance of getting funding for female scientists, However, methodological problems of meta-analyses are considerable. How can different samples be mixed up to one meta-sample?

[8] The study could not use additional information on achievement provided by CVs of applicants – due to practical problems (coding etc.) and due to data security considerations.

should be better represented in coordinated programmes as project leaders, speakers etc.

In general, important elements of monitoring system have been established. The cited study should be regularly updated. On behalf of the DFG an independent institute with a monitoring mandate has been founded (Institut für Forschungsinformation und Qualitätssicherung, IFQ Bonn). This institute will play a major role in the self-evaluation and quality control of the scientific system in the future. Although existing reports create a solid ground for monitoring additional data is needed for other kinds of research funding. With priority, the programme driven research funded by the federal government could be more transparent with regard to gender specific questions of application and success rates. As said above a German replication of the Wenneras/Wold study is still on the agenda. In addition, there is a lack of information on the relevance of research funding on the careers of female and male scientists.

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