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Wissenschaftler-Befragung 2010: Forschungsbedingungen von Professorinnen und Professoren an
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Executive Summary (english)

The scientists survey 2010¹

Apart from the key topic (third-party funded research), this study deals with a broad range of topics which are partly oriented towards older surveys among university teachers and DFG [*German Research Foundation*] proponents, among other things. The survey is based on questioning professors at German universities, the Statistisches Bundesamt [*Federal Statistical Office*] giving a number of 22,337 (2008). Based on Kürschner's Deutscher Gelehrtenkalender [*Kürschner's Almanac of German Scholars. Bio-bibliographic Directory of Contemporary German-speaking Scholars*], a representative sample of 9,768 people was selected and invited to participate in the survey. The online survey was conducted in April and May 2010. Almost half of the addressed scientists accepted the invitation. After data adjustment, the following statements are based on information provided by 3,131 people. Thus, the evaluation is based on a solid data foundation allowing for presenting a representative image of the situation at German universities from the point of view of professors working there.

19.5 per cent of the participants of the survey were women. Thus, female respondents are slightly overrepresented, both regarding the gross sample and their share of professors at German universities. At the time of the survey, the average age of professors was 53 years. The majority of respondents (78%) had acquired habilitation. The average age when achieving the doctorate is 30 years, the mean age when acquiring habilitation is 37.5 years. The first appointment had been about 10 years after the doctorate or three years after habilitation – 80 per cent were at once appointed full professors (see chapter 2).

The number of proposals submitted

During the past five years, the overwhelming majority of respondents has been trying to raise third-party funds. Only 11 per cent of the respondents stated that during the past five years they had not applied for third-party funding (with a total volume of more than 25,000 €). With 22.1 per cent, the humanities' share of non-proponents is the biggest. Reasons given were most of all a lack of time, work overload and the amount of time as well as the work to be invested in a proposal. But according to their own statements, it was also criticism of third-party funding as well as the procedures and review criteria what prevented some from submitting proposals (see section 3.1.3 and section 3.1.4).

For the respondents, the DFG is by far the most important funding institution: During the past five years, 73 per cent of professors have submitted one or several proposals to the DFG. For more than 40 per cent of the scientists, the DFG is the preferred funding institution. Almost 22 per cent of the respondents have decisively contributed to submitting proposals in the context of the Excellence Initiative. The average number of proposals submitted is clearly different for the individual subjects – ranging from four proposals in the humanities to 15 proposals in engineering subjects (see section 3.1). In relation to their subjects, 10.5 per cent of all respondents proved to be very active as proponents. Among them there are particularly many who also act as reviewers more frequently than the average, raising third-party funds, because this is the only way to pursue their research questions. Scientists being very active as proponents

¹ The full paper „Wissenschaftler-Befragung 2010: Forschungsbedingungen von Professorinnen und Professoren an deutschen Universitäten. iFQ-Working Paper No.8“ is available in German only and can be downloaded at http://www.forschungsinfo.de/Publikationen/Download/working_paper_8_2010.pdf.

spend significantly more time on raising third-party funds, and clearly less time on their teaching and examination obligations (see section 3.1.2).

Grant rates

About 25 per cent of the questioned professors have grant rates that are higher than average. These are clearly related to their number of proposals submitted – however, this effect is also due to our definition of “high grant rate”². In respect of the grant rates, we also found that those scientists having particularly high grant rates also particularly often act as reviewers (see section 3.2).

Choice of funding institution and review processes

Crucial for deciding about the institution where third-party funding is applied for are the topical suitability of the funding programme and the research project as well as the fairness of the review process and expected chances of funding to be granted. Those having applied at the DFG judge most positively on the transparency of the proposal and review processes (see section 3.3.2).

Projects submitted to ministries or foreign funding institutions (incl. EU, ESF, ERC) are particularly often related to calls for proposals which more or less suit one’s own research interest. On the other hand, professors submit project concepts to the DFG and national foundations most of all in the context of project concepts which are primarily based on their own specific research interests (see section 3.3.3).

Failed proposals for third-party funding are most of all seen to be due to the competitive situation, i. e. the high number of competitors and the restricted availability of funds. But also features of the procedures, such as a lack of transparency or an unfavourable composition of the reviewers' committee are given as reasons. Project characteristics, previous experiences or the proponent’s reputation are hardly given as reasons for a proposal to be rejected (see section 3.3.5). The quality of the written explanatory statements, as far as subject-related correctness, transparent criteria of assessment, comprehensibility etc. are concerned, is judged upon rather critically (see section 3.3.6).

Significance of raising third-party funds

Third-party funds are raised as otherwise research questions could not be worked on, and to secure the (further) employment of staff members, but also because this will have a positive effect on one’s own reputation. Only proposals by respondents from the discipline of medicine were motivated by taking third-party funding into account in the context of procedures of performance-oriented distribution of funds. Nevertheless, 70 per cent of the respondents stated that their basic funding was dependent on a minimum of one performance criterion, third-party funds raised being the most significant of all criteria. Half of the professors stated that fundings from the various funding institutions were weighed differently in this context, DFG fundings being of particular importance (see section 3.4).

Funding high-risk research

High-risk research cannot be clearly defined or differentiated, and accordingly only 42 per cent of the respondents agree with the statement that high-risk projects are basically different from ordinary research projects. Particularly in humanities, social sciences and economics, with more than 40 per cent the share of those not having a clear position on this question is particularly high. It became obvious that the term “high-risk” was mainly associated with a higher degree of insecurity in respect of achieving the goal or of the functioning of new methods. However, the open text statements also referred to completely different connotations, such as “dangers for society” (see section 3.5.1).

Three fourths of those respondents who identify differences between ordinary and high-risk research are of the opinion that for high-risk research there should also exist special funding offers. In particular, such offers should be characterised by a higher degree of flexibility, for example by the possibility of accessing and using funding in a flexible way. For the choice of the project, the focus should most of all be on the project idea, not on the proponent. This point was also further emphasised by the many remarks and suggestions (see section 3.5.2).

² People stating a higher average number of grants and no rejected proposals were filed under the category of the highest grant rate. This way, the probability that somebody who overall submitted a low number of proposals was attributed to one of the higher grant rate groups is clearly reduced.

Situation concerning the subject

Particularly chemistry and physics professors judge positively on funding possibilities for demanding research in their disciplines. Regarding this aspect, voices from the humanities tend to be more critical. It is also the latter who indicate an input-output imbalance regarding the raising of third-party funds. Furthermore, it becomes obvious that proponents with particularly high grant rates judge clearly more positively on the funding possibilities and less negatively on the necessary input in proportion to the benefit than scientists who are less successful (see section 4.1).

With the exception of economics and social sciences, the significance of German research for the respective subject areas is judged to be high to very high in the international comparison. At the same time, professors feel to be under pressure to perform both in respect of acquiring third-party funding and of publications and evaluations.

Science-political measures and reforms

The funding of interdisciplinary and high-risk research as well as of “emerging fields” is considered a suitable measure to strengthen Germany as a science and research hub. Besides, the respondents believe that international cooperation should be particularly supported (see section 4.2).

Also the creation of reliable career prospects for young scientists as well as the active international recruitment are judged on positively. However, the majority - particularly among chemistry, physics and engineering professors - rather rejects an extension of structured training of doctoral candidates.

Interestingly, both an increase of non-performance-related basic funding and more performance-orientation of funding are rather supported. Here, a clear positioning can be identified only for the humanities which explicitly speak out in favour of an increase of basic funding and in tendency against an increase of performance-orientation.

Excellence competitions – both for research and for teaching – are considered rather inappropriate for strengthening Germany as a science and research hub. Here, the judgements of medical scientists are least critical. As could be expected, these judgements are connected to the degree to which the respondents are personally involved in relevant measures: judgements by respondents funded by Excellence Initiative funds³ are clearly more positive (see section 4.3).

Reviewing activities

On average, the professors questioned spend nine per cent of their working time on reviews. Here, the focus is on reviewing magazine manuscripts, followed by written expert reviews on proposals for funding. On average, people who were particularly active as reviewers wrote between 57 expert reviews (mathematics/geosciences) and 129 expert reviews (chemistry/physics) in the past 12 months (see section 4.5).

Cooperation

The overwhelming majority (79%) of respondents states that cooperation with other researchers is indispensable. With 93 or 94 per cent, as the case may be, this share is particularly high with life sciences. Cooperation with scientists from one's own field of work as well as cooperation with peers are most significant, the least significance is attributed to cooperation with partners from the industry and business (with the exception of engineering sciences) as well as to cooperation referring to the region (see section 4.6).

Situation of young scientists

The respondents clearly agree with statements saying that too few jobs are available for young scientists (although at the same time considerable recruitment problems are reported) and that career prospects for young scientists are too insecure. The least critical judgements on the situation of young scientists come from respondents from chemistry/physics, mathematics/geosciences and engineering sciences. What is debated – not surprisingly – is the significance of habilitation. In this respect, the respondents' judgements clearly differ. Only humanists judge uncritically on habilitation without exception. Furthermore,

³ Data from the iFQ survey among professors (2010) funded by Excellence Initiative funds

judgements depend on age: Younger professors are rather of the opinion that habilitation is only a ritual, but qualification is acquired otherwise (see section 4.7.1).

Staff recruitment

During the past 24 months, more than 80 per cent of the respondents have been dealing with staff recruitment or have been members of appointments committees. Whereas usually the recruitment of doctoral candidates ran smoothly, only for 58 per cent of offered post-doctoral positions it was possible to find applicants showing the desired qualification profiles. A lack of suitable candidates is given as the most frequent reason. The time limitation of these positions is considered as another problem. Regarding the recruitment of doctoral candidates, the uncompetitive level of salaries is given as a problem. Regarding the occupation of chairs, according to the estimations of the respondents particularly the time needed for appointment procedures is an obstacle. (see section 4.7.2).

Equal opportunities

Childcare, family-friendly working hours, dual-career options and transparent selection procedures were given as particularly suitable measures to support equal treatment of men and women – fixing of quotas, the statistic recording of changes and gender sensitisation of decision makers were rejected as being inappropriate (see section 4.8).

Scientific misconduct and granting authorship

Most frequent are reports of misconduct – by others or by oneself – in the context of granting authorship (artificial authorship and refused authorship): More than half of the respondents had been confronted with misconduct in this field. Carelessness in connection with reviews is given as the second commonest form of misconduct, for example reasons of bias were not reported. Like the reports of the ombuds committees, also the scientists survey 2010 reports on violations of good scientific practice occurring particularly often in the life sciences (see section 4.9).

In general, it can be stated that most of the respondents are aware of and indeed apply the generally accepted criteria for granting authorship. Nevertheless, the actual procedures do differ quite considerably. In the life sciences as well as in chemistry/physics, usually all essential contributors are named as authors – in tendency, however, too many authors are named in these disciplines. In humanities, there is a different picture: Here it seems to be most frequent than elsewhere that essential contributors are refused authorship (see section 4.10).

Role and function of the DFG

Respondents see in particular the promotion of young scientists as well as the support of national research cooperation as the DFG's key tasks in the context of research funding. Furthermore, they consider it particularly important that the DFG represents science towards politics and is committed to securing good scientific practice. The DFG's involvement in the Excellence Initiative has a polarising effect – the shares of those rather endorsing an involvement (41.3 per cent) and of those rather or fully rejecting it (36.4 per cent) are about equal.

Judgements on how well the DFG fulfils these tasks are positive without exception: Judgements on the DFG are particularly positive regarding the promotion of young scientists, the support of national cooperation, the involvement in the Excellence Initiative and the securing of good scientific practice (see section 5.1).

Completing remarks stressed particularly often that the DFG must keep its focus on "broad funding" and should not further shift the emphasis towards cooperation projects/big projects.

Overview of subject-related particularities

Although the questioned scientists from the various disciplines rather agreed on many judgements, nevertheless it became obvious that some judgements are most of all dependent on the respective subject-cultural background and less on structural features such as age or gender. Thus, in the following the most

conspicuous findings for the individual scientific fields (however bringing together heterogeneous research cultures⁴) shall be sketched.

Humanities and social sciences: With a total of 1,236 people, by far most of the 3,131 participants of the survey belong to this scientific field, which consists of historical sciences, linguistics, philosophy and theology, jurisprudence, economics and social sciences as well as psychology.

Among the respondents from these disciplines, with 21 per cent (humanities) and 14.6 per cent (social sciences and economics), respectively, the share of those not having applied for third-party funding in the past few years⁵ is clearly higher than in the other scientific fields. That humanities and social sciences seem to be less dependent on third-party funding becomes obvious by the particularly low share of those stating that without third-party funding they would not be able to pursue their research questions. With an average of 4-5 proposals in the past five years, proponents from these subjects were those submitting the lowest number of proposals.

At the same time, the professors from these groups of subjects are those judging most negatively on the possibilities of third-party funding in Germany (although giving average marks). According to the opinion of respondents from humanities and social sciences, the necessary input for making a proposal is much too high in proportion to the output. Thus, this judgement is clearly more negative than that of representatives of the other disciplines.

Professors from humanities and social sciences are those expressing the strongest doubts that excellence competitions for research and teaching are suitable to strengthen Germany as a science and research hub. Also – regarding the intended effect: the strengthening of Germany as a science and research hub – the active international recruitment of excellent scientists is judged on clearly less positively than in the other subjects. In tendency, an increased performance orientation in the allocation of funds is rejected. However, particularly humanists and social scientists consider the strengthening of the non-performance-related basic funding of research reasonable.

Only two thirds – and thus clearly less people than in the other disciplines – stated that cooperation was indispensable for their research projects.

Regarding the situation of young scientists, economics and social sciences are rather “inconspicuous”, whereas humanists criticise particularly a lack of financial support as well as a lack of jobs for young scientists. Humanities are also the only discipline to “defend” habilitation.

Economics and social sciences were conspicuous in two fields of scientific misconduct: Here, particularly often the unlawful use of funds (particularly the use of university funds for external reviews) and the changing of results due to pressure from funding institutions are stated. In the humanities, on the other hand, it becomes obvious that justified authorship is refused more often than in other disciplines.

When asked about the DFG’s tasks, professors from humanities and social sciences believe it to be clearly less important (although giving average marks) that the DFG is committed to providing policy advice. Also its involvement in the Excellence Initiative is in tendency considered rather unimportant – in tendency, the other disciplines consider the involvement rather important or their judgement on this aspect is neutral.

Life sciences: A total of 21.7 per cent (N=678) of all respondents belong to medicine, biology and agronomics. In the relevant period of five years, the professors from these groups of subjects submitted an average of 9-10 proposals for third-party funding with a total volume of more than 25,000 €. Particularly in biology, with only 1 per cent, the share of non-proponents is lowest in comparison to all subjects. The respondents from the life sciences also state particularly often that without third-party funding they would not be able to pursue their research questions. Furthermore, the raising of third-party funds in the context of performance-oriented fund appropriation plays an important role mainly in the life sciences (particularly in medicine).

Life scientists are those perceiving the pressure to publish as being particularly high. It is thus not surprising that respondents from these disciplines are those who report particularly often on the unlawful granting of authorship or honorary authorship. Also most of the other forms of scientific misconduct were more frequent in this scientific field.

⁴ On the attribution of individual disciplines see in detail the DFG’s systematics of subjects:

http://www.dfg.de/download/pdf/dfg_im_profil/gremien/fachkollegien/dfg_fachsystematik_en_08_11.pdf.

⁵ The survey asked only about proposals for third-party funding with a total volume of more than 25,000 €.

Medicine scientists are those who judge slightly less critically than those from other disciplines on excellence competitions as a suitable science-political measure. This also holds true for a further extension of structured training of doctoral candidates, which is rather endorsed only by respondents from medicine.

In life sciences, cooperation is particularly important – far more than 90 per cent of the respondents from these subjects stated that cooperation was indispensable for their research projects. Although all subjects consider cooperation at their own university to be important to a certain degree, it is respondents from medicine who by far attach most importance to this form of cooperation.

Representatives of biology/agronomics are those who particularly lament a lack of jobs for young scientists as well as insecure career prospects, and habilitation is rejected more clearly than by the other disciplines.

Natural sciences: A total of 681 of the questioned professors belong to the scientific field of the natural sciences (chemistry, physics, mathematics and geosciences). Respondents from chemistry/physics submitted an average of nine proposals for third-party funding, with scientists from mathematics/geoscientists it was an average of six proposals in that period of time. With more than 55 per cent, among natural scientists the share of those applying mostly for DFG funds is particularly high. On the whole, especially respondents from chemistry/physics judge particularly positively on the possibilities of third-party funding, at the same time, however, the share of third-party funded projects (in proportion to basic funding) is considered to be in tendency too high (the other disciplines rather perceive this as being balanced).

Respondents from the natural sciences are those to more clearly reject an increased funding of economically and socially relevant research. On the other hand, the increased funding of high-risk research is considered to be particularly suitable to strengthen Germany as a science and research hub. Particularly chemistry/physics professors clearly reject an extension of structured training of doctoral candidates. On the whole, natural scientists are those to judge most positively on the situation of young scientists with a doctorate.

Engineering sciences: Engineering sciences include mechanical engineering and production technology, heat technology/process engineering, materials sciences, electrical engineering, information technology and systems engineering as well as civil and structural engineering and architecture. 14 per cent (N=437) of the respondents must be filed under this field, which is thus the smallest scientific field of the sample. In the past five years almost 93 per cent of the respondents from these disciplines have applied for third-party funding. With an average of 15 proposals in five years, these are the subjects with the most proposals for third-party funding. The share of those focusing on applying at federal/state ministries or the industry is particularly high. Engineering scientists rather speak in favour of a stronger promotion of cooperation between university and non-university research – the position of the other disciplines (with the exception of medicine) towards this science-political measure to strengthen Germany as a science and research hub is rather neutral. With 75 per cent, the share of those stating that cooperation is indispensable for their own research activity is rather low. In contrast to the other disciplines, cooperation with industry and business is particularly significant – as was to be expected.

It seems that for the engineering subjects the problem of insecure career prospects for young scientists – which was made a topic of discussion by the other subject areas – is not that urgent. Accordingly, engineering scientists are slightly less convinced that the creation of reliable career prospects might strengthen the country. This impression was also confirmed when it came to judging on the situation of young scientists: Here, agreement to the aspect of “insecure career prospects” was less significant than it was the case in the other fields of science.