

GENDER AND EXCELLENCE

DETERMINATION AND ASSESSMENT
OF EVALUATION CRITERIA IN SCIENTIFIC
SYSTEMS

EXECUTIVE SUMMARY

*On behalf of the Austrian federal ministry of science
and research*

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Executive Summary

Abstract

Recent findings have shown that scientific excellence, still considered as neutral indicator for scientific quality by the majority of scientific communities and research politics, is open to definition and consequently to bias in various ways. The Austrian Federal Ministry of Science and Research commissioned an explorative survey on measuring and assessing scientific excellence in research funding and academic careers. Aim of the project is to analyse the established definitions and assessments of scientific excellence and the mechanisms causing (in)direct gender-bias. Based on a critical status-quo analysis of the debates on scientific excellence in research policy and academia in Austria, the first part of the report aims at a more profound understanding of the discourse and its implications on research funding systems and universities. The second part explores the characteristics of a dominant conception of scientific excellence at universities and the practical challenges for the new Austrian university system to enforce gender equality. Analysing the funding portfolio of the Austrian Science Fund (FWF), the third part of the report investigates the effects of existing funding instruments on women's participation and their advancement in scientific systems. The results will present an overview of good practices, barriers in the implementation process of gender equality and recommendations to improve the situation.

Discussion of Excellence/ Definition/ Indicators

Strategies of excellence on a European as well as on a national level aim at increasing the output of research and improving the visibility and comparability of the latter. This goal is to be achieved by means of competitive research funding, promotion of reinforced selection and creation of profile, as well as quality management through respective instruments of evaluation and control. The discourse of excellence seems to be dominated by the two parameters competition and guarantee of standards, i.e. promotion of excellence is always oscillating between the flashpoints of innovation, the readiness to undertake risks, and diversity on the one hand, quality maintenance, formalisation and systematic control on the other hand.

Definitions

To begin with, it can be stated that the definition of scientific excellence is only possible in a specific context and within the boundaries of the objectives of the respective institution. This fact contrasts with the tendency observable in practice that it is possible to refer to a generally accepted concept of excellence in connection with the development of strategies. The determination of goals, indicators, and appropriate actions constitute a weak point in the examined areas (universities, research funding). The most frequently used general definitions orientate themselves on a term shaped by the natural sciences, namely top quality research: evaluation and appreciation are based on internationally acknowledged methods and indicators (bibliometrics, peer review, benchmark-, impact- and patent analysis) and on relevant scientific awards - or else they are beyond precise definition: "...you can't define excellence - but you know it when you see it. "

Areas of application

Earlier papers on strategy emphasized the development and promotion of specific institutes of excellence, clusters or networks, application-oriented research in the fields of natural sciences and technology, and the sponsorship of scientific elites. More recent concepts point out the significance of basic research, of universities as training facilities, and subsidizing of junior talents. The Austrian Council

for Research and Technology Development does emphasize the social sciences, humanities and arts as national capacity, but in fact they play a rather subordinated part, due to their weak output of value production.

Methods of evaluation

The usual procedures and criteria are considered as structure conserving with regard to new or trans-disciplinary fields of research, as well as to social factors as sex or age of the applicants (tendency to favour established areas and scientists). The lack of transparency, the lack of accountability of committees, as well as stereotyping and double-standards in evaluation procedures open up a playground for unequal assessment of performance.

Diversity/ Equality

Definitions of excellence that are shaped by a classical understanding of science (mode 1, natural scientific ideals in methods of evaluation, male models of career), prove to be system-affirmative. They maintain resp. reinforce historically contingent horizontal and vertical effects of segregation and thus the underrepresentation of women in technical areas. Gender mainstreaming and the advancement of women are considered as necessary in the strategies of excellence, but scarcely carried out as cross-section matter, super-positioned across fields of action such as research, human resource management, administration, teaching etc.

Due to the lack of concrete directives, definition of goals, incentive systems or sanction possibilities, the claim for equality remains a rhetorical one, also in times of intensifying competition.

Universities

Establishing excellence at universities depends on the three levels of performance research, human resources and teaching. However, up to date no satisfying modes seem to have been found to join these levels accordingly and to achieve the agreed common goals. Observed from the outside, the scientific faculty works to all appearances as if not affected by strategies developed and objectives stipulated by the organisation.

The approach to the paradigm of excellence depends on the status resp. the position of the members of the university: while the university managements tend rather comprehensively to decide for the opportunistic way and comply with national strategies of excellence, in a critical perspective the discourse of excellence is considered as a method of control allowing politics the access to a hitherto self-regulating system of knowledge production transfer: The simultaneous under-financing on the one hand and expectation of increased excellent output on the other provokes a defensive attitude.

The definition of excellence is orientated to the term of top quality research: the accomplishment of research is traditionally determined through the quantity of publications and quotations as well as the attraction of third-party funds. Furthermore, it is extended by performances of cooperation and transfer of specific faculties (e.g. medicine, engineering). Differences between the disciplines are primarily determined through different practices of publication and the resulting difficulties to implement trans-disciplinary systems of evaluation predominating the single disciplines. Apart from this, the faculty-specific need of resources deducible from the height of gained third-party financing is to be taken into account. Tendencies of favouring application-orientated and strongly third-part financed areas are frequently observed.

In general, criteria for evaluating excellence are considered as suitable, provided that transparency in processes of definition and selection is guaranteed, and provided that the criteria comply with the objective resp. the strategy of development of the respective university. In practice, this is not always the case. The concentration on research is understood as one central weak point, as practice-orientated

criteria such as leadership competence and teaching are not given sufficient importance. Decentralized decisions about the human resources of the departments don't accord with the development of the profile of the entire university. Furthermore, there are no models of organisation for cooperation between personnel departments and scientific staff. First attempts to adapt the criteria for evaluating accomplishment to new requirements have met scientist's resistance and consequently failed.

Controlling instruments

Due to a lack of practical experience concerning the success of objective- and performance agreements no future consequences are predictable. The precise evaluation of the first period of application is thus crucial. The success depends both on the readiness of the universities to translate the determined objectives into action and on the funds at disposal. The form of interaction between state and university, as well as between university management and faculties is going to be an essential factor for redefining the boundaries and the possibilities of a new autonomy given since UG02.

Equality/ Diversity

Distortions of the principle of excellence on the basis of gender are primarily argued as social mechanisms. A progressive principle of performance is meant to serve equality. Research and gender are not co-reflected: not every interviewee has been familiar with discussions critical of society like, e.g., the correlation of gender and performance evaluation.

By establishing women's advancement in inner- and extra-university controlling systems a first step out of the niche position has been taken. The concentration on women's advancement as a social goal is neglected in favour of the issue's integration in matters of human resources development and quality maintenance. The significance of this shift will only be determinable after a thorough examination and evaluation of the consequences in practice. In a next move, gender mainstreaming should be integrated in all areas, especially into research (methods, criteria, expert practice), in order to contribute to the quality maintenance. In concrete terms, gender impact assessment and gender monitoring can be considered as precursors. An intensification of the gender research and equality potentials arranged by the university management and the departments might turn out advantageous for an analysis of the specific characteristics of their faculties. New cooperation, e.g. trans-departmental women's advancement programs and quality management have proven successful.

In the competition of the universities, encouraged by the UG02, the discussion about organisational development and human resources development (HRD) is gaining more and more importance. The profiles of the universities and the faculties likewise depend on a balanced, heterogeneous composition of the scientific personnel and the capacity of the latter. A gender-concerned approach to human resources management (HRM) and HRD is yet poorly developed in universities. Rather, parallel structures of women's advancement programs on the one hand and HRD on the other hand can be observed as dominating. The areas of performance human resources, research, and teaching and their respective tools (career models, methods of assessment and evaluation etc.) are not sufficiently linked, thus antagonizing the objective of HRM/HRD, i.e. the adaptation of an organisation's interests to the interests of the single members.

Research funding

This part of the analysis concerns gender-relevant evidence about the structures of the national research funding system and the thematic orientation of research programmes in Austria. Thereby, we discuss the respective effects on women's participation in science.

Funding structures and use of human resources

The Austrian university sector has been undergoing a strong structural change since the late 1990ies which concerned aside from modifications on the organisational level an absolute and relative extension of the financing of research and development (R&D) via programs and projects. Structural data on R&D funding of the university sector show that political actors increasingly influence universities by means of shaping the framework conditions of research funding: While the share of general university financing for R&D had been about 85% of the public R&D expenses for the university sector in 1993, this share has already dropped to 71% in 2004. This means that there is an increased potential for spurring competition between universities as research funding via R&D programmes is distributed by large on a competitive basis.

Whether this development will lead to a rise of scientific output or an improvement of scientific quality has yet to be awaited. However, the medium-term effects of the programs put into action depend essentially on the design of the research promotion instruments, its corresponding funding criteria, and finally on a sufficient overall funding of the entire research sector.

Although a considerable structural change in the number of university graduates can be witnessed, there are still large discrepancies as regards participation of women in science in Austria. R&D personnel data for the humanities and the social sciences (which have more female than male graduates over the last years and even decades) show in particular that an automatic adaptation to a gender balanced distribution in the R&D personnel can not be taken for granted. Hence, there is still a justified demand for concrete measures aiming at the promotion of women in science.

Instruments Portfolio

The R&D programme portfolio in Austria hardly stresses the promotion of women in science explicitly. Throughout the last decade objectives and priorities of the Austrian research funding were dominated by topics like the reinforcement of cooperation between science and industry, and the promotion of thematic/technology oriented fields in the area of natural, engineering and life sciences. Within the academic research funding a considerable increase large scaled network projects can be observed. Programs situated at the flashpoint between basic research and application directing experience an up-swing.

As especially the natural and the engineering sciences are still by large a male domain, it is to be expected that the large part of research project funding is going to be attracted by men. Hence, gender sensitive monitoring procedures in thematic oriented R&D programs are indispensable.

Amongst the tools for women's advancement in science a large number of coaching-, networking- and awareness measures can be observed. Explicit support programs for women which provide R&D funds still constitute an exception. Being optimistic, this could mean that R&D promotion measures have already been effectively integrated gender mainstreaming approaches. However, the lack of substantial published gender-specific monitoring data in the two major R&D promotion agencies, the Austrian Science Fund (FWF) and the Austrian research promotion agency (FFG) doesn't allow this positive conclusion.

Women's participation in FWF measures

The analysis of the FWF's instruments does hardly provide examples of definite emphasis on women's advancement. In 2006, only 3.4% of the total volume of funds is assigned to explicit actions for women's advancement. The share of women participants in FWF projects has risen from 12.9% in 1998 to 20.3% in 2005, relative to the applications. The proportion of grants has dropped for both men and women in the same period of observation. In 2002, 2003, and 2005 the proportion of approval for women's applications lay distinctly below that of men. This lower proportion of grants can be ex-

plained by the fact that female applicants are on average younger than their male colleagues, further by the different disciplinary distribution of female applicants in contrast to men.

These assumptions are based on an impact-analysis carried out in 2004 that points out that there is a remarkably low proportion of younger female applicants and applicants in the area of social sciences and of human medicine that achieve grants for their applications. In order to provide reliable explanations for the differences in these proportions it would yet be necessary to perform longer-term quantitative and qualitative analysis of the FWF project database.

Nevertheless, for women, the Austrian Science Fund represents a very important source of funding in the academic sector. This fact can be argued by two observations: firstly, women do more often apply for FWF projects than men, and secondly, the employment of women in FWF projects is above-average compared with the employees in the entire university sector:

- On average, every female professor in Austria submits about 0.8 applications per year, whereas their male colleagues submit only about 0.4.¹
- Since 1998, the number of women's full-time equivalent employments has risen from 30.4% to more than 40%. Observing the age group of 25 to 39 year olds it can be stated that relative to the total of employments at the universities the FWF employs more female researchers than the remaining sector.

The gender-specific analysis of a survey of female FWF beneficiaries carried out in 2004 points to differences between men and women as regards reasons for project decline, publication patterns, and objectives of the sponsored projects.

- With regard to project objectives it should be mentioned that women do more often than men stress that the reinforcement of national cooperation as well as the distribution of knowledge by means of conferences and workshops is an important aim of the project.
- Remarkably often, from the viewpoint of female applicants, projects submitted by women are considered as too broad in terms of contents, and their research hypothesis were perceived as insufficiently specified. This might be interpreted as an indication for women's strong interdisciplinary practices and a more explorative approach to the project. However, both assessments serve as arguments for refusal.
- According to their own statements, women do less often publish conference papers or articles in peer reviewed journals. In contrast, women do more often participate in conferences. Furthermore, typical differences in publishing routines can be observed depending on the discipline.

Recommendations

University Development

With regard to university development it must be stated in principle, that the criteria of excellence of a university cannot be determined as long as educational – and development objectives are not defined. A precondition for developing measures should be an agreement on the terms equal opportunities, equality and gender mainstreaming. Also, the objectives actually pursued by the university, the management, faculties and departments in this concern must be clear. Resulting from this the following recommendations regarding university development can be mentioned:

- A definition of excellence concentrated on research alone, and thus neglecting other essential areas of performance of the universities, does not grasp the notion completely. An appropriate self-

¹ As no distinct classification can be read from the available data concerning male and female applicants and employees of the university, the actual incline of applications appears slightly blurred.

definition of the universities taking into account their own strengths would be more comprehensive for members of the university, for the students and the public.

- There is a demand for creating rewards, in order to implement gender monitoring in all universities, to integrate the objectives of women's advancement plans into the monitoring and to initiate a co-operation of otherwise independently working departments.

Even if this does partly concern university internal matters, the interaction between the federal ministry of science and research on the one hand and the universities on the other hand is meant to put up signals. Reward systems and sponsorship of projects and programs might serve as such signals.

- The federal ministry must blaze distinct trails for promoting acceptance of the new controlling systems and to justify the considerable additional expenditure. This can be achieved by proving that monitoring is actually an important element of decision-making.
- In order to find an agreement upon the definition of objectives, the structures of feedback must be implemented between universities, ministries and departments.
- Regarding incentive systems, a more specialized orientation should be favoured. Specific branch-dependent models of motivating awards are recommended, addressing the faculties instead of the universities, as well as awards in proportion to the number of students of the respective faculty. Whether those reward systems, applied ex post, will contribute to a sensitization or even to a regulation of gender balance, has yet to be seen.
- Systematic personnel management / personnel development should provide an improved link between the three areas of performance, namely human resources, research and teaching and their respective instruments (career models, assessment models, evaluations, etc.). The interests of an organisation could then be accorded with the interests of their members. The authors have not yet encountered organisational models capable of this.
- Instruments for women's advancement and equality, adapted to the respective specific discipline as well as, among other things, the institutional support of young women scientists, realistic models of career, the demand for drop outs, a better implementation of gender research and institutional general framework for promoting the reconciliation of job and private life/family – all these developments are yet to be performed. It has been a long time that concrete measures exist in universities, and it would be useful if corresponding to the example of the organisational unities for women's advancement and equality the university management, personnel departments etc. were likewise linked.

Experience has shown hitherto, that not a single mechanism is to be held responsible for the gender-specific differences in the scientific system, rather, a combination of many different mechanisms leads to inequality. A productive interaction of the different unities of organisation (and by this we don't exclusively refer to the university's faculties but the complementary interaction of federal ministry, university and research funding) could have sustainable and extensive effects.

Research funding

A large part of research funding and its gender-specific effects have yet to be analysed. Due to the disastrous combination of badly remunerated but strongly fragmented women's advancement programs, and insufficient monitoring of existing programs regarding their effects on women, the limitation of insights beyond previous knowledge threatens to be upheld.

- The financially poor dimensions of explicit measures of women's advancement must be taken as an occasion to investigate the existing portfolio of sponsorship with regard to the participation of women and the effect on women. Monitoring systems and obligatory reporting in the annual statistics of the funding organisations like the FWF and the FFG, that have only provided fragments of information concerning the participation of women hitherto, could help to carry out the campaign.

While the FWF does at the moment at least mention the number of allowances for women and men, provides hints concerning the participation of women in FWF projects, and publishes these numbers on their homepage and in the annual reports, the FFG does not yet publish data concerning women's share in sponsorship programs systematically (for example, the insufficient information in the annual report 2006 of the FFG).

- Besides program-specific activities as for instance monitoring, measures have to be taken and rewards to be installed, in order to exploit the human resources' potential of women in research more thoroughly.
- Measures initiated by the FWF gender department have to be extended and reinforced, as the gender department represents an important source of information for women. E.g. special measures have been taken to diminish deficits in knowledge about FWF's application procedures.
- A turning away from the existing peer review system in FWF selection procedures is to be avoided, as these procedures and methods are appreciated by the entire scientific community. Furthermore, in consequence of the evaluation of 2003/2004, definite improvements of selection procedures have been asserted. One should avoid that R&D programs for women become a field of experimentation in terms of project selection/assessment procedures as this could have detrimental effects in terms of acceptance and administrative burdens.
- Because of the disparities in FWF funding between the scientific fields one might start to think about a transition to field specific calls. A strong benefit would be that the quality of projects could be compared across a number of projects. However, this transition would also limit flexibility as it would require an introduction of deadlines, and procedures of determining ex-ante funding volumes for specific fields would have to be established.