

## Gender and Research Funding (GEFO) Summary of the Synthesis Report

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### Objectives

The study, which was commissioned by the Swiss National Science Foundation (SNSF) to address the topic of 'Gender and Research Funding' (GEFO), aims first to gather and quantify the gender-specific rates of loss from the academic career path (Leaky Pipeline) in the Swiss higher education system. In addition, it also investigates the reasons internal and external to scientific/academic institutions for the disproportionate loss of women from this career path. Of particular interest are the importance and role of the SNSF and other research funding organisations in the (dis)integration of younger women researchers. The study is thus also centrally concerned with accessibility to research funding, the success of applications and the effect of research funding on academic careers.

### Research Design and Evidence Bases

The research questions are addressed by means of a triangulated process using various evidence bases and methodological approaches. The envisioned target group consists of younger academic researchers from all disciplines. The following partial studies were executed:

1. Progress analyses of the transition to the doctoral and habilitation<sup>1</sup> stages, based on individual data from the Swiss University Information System (SHIS)
2. Analyses of the career paths of academics who received their doctorate in 2002, based on a panel survey of the doctoral graduates as part of the University Graduates Survey carried out by the Federal Statistical Office (FSO)
3. Evaluations of first-time applications to the SNSF submitted between 2002 and 2006 for project funding or SNSF Professorships, based on data from the application administration system at the SNSF
4. Analyses of files from the SNSF application dossier submitted by first-time applicants in four selected groups: human medicine, physics/astronomy, law, and literary/linguistics studies
5. Qualitative analyses of interviews with doctoral graduates from partial studies 2 and 4 above.

### Description of the Leaky Pipeline

The analyses of SHIS data show that as students advance from one degree level to the next (specifically to the doctorate and habilitation), disproportionately large numbers of women fall out of the academic system in comparison to men. Without the intake of women from foreign academic

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<sup>1</sup> The habilitation is a research-only degree, required in most cases for access to the professorial level, which is undertaken after successful completion of the doctorate.

systems at the doctoral level and later, the potential of younger women researchers in the Swiss higher education system would be minor, especially in those disciplines with a low proportion of women.

Understanding the 'leaky pipeline' effect requires that we take discipline-specific differences into account. In the technological and economic sciences, as well as particular disciplines within the hard and natural sciences, choosing this major for the first degree already represents a gender-specific hurdle. The transition from the graduate degree to the doctorate is thus less marked by inequality. By contrast, in the arts and social sciences, where the proportion of women in undergraduate study is high, the start of doctoral study represents the first decisive barrier for women, and the completion of a habilitation represents the second. In medicine and pharmacology, the gender-specific differences up to and including the doctoral level are comparatively small, but thereafter women much less frequently make the transition to the habilitation stage.

After completing the first degree, starting – and to a lesser extent successfully completing – a doctorate is a gender-specific obstacle. Particularly in law, arts, the social sciences and business/economics, women who have completed a first degree begin doctoral study much less frequently than men. If the decision to start a doctorate is made, then women also complete it less frequently than men, although the differences between the success quotas for women and men are smaller at this stage than at the point of entry to doctoral study.

As a general tendency, a convergence can be observed in gender-specific doctoral completion rates over the approximately twenty-year period under investigation (1978-2006). This, however, can predominantly be ascribed to the fact that the number of men completing doctorates has long been decreasing, especially in law, arts, the social sciences, and the hard and natural sciences.

An investigation of professional careers (positions in higher education) shows that within five years after the doctorate, taking into account disciplinary differences, there are no indications of a disproportionate number of women dropping off the academic career ladder. They are just as frequently employed in higher education and occupy research-active positions just as often as men. A withdrawal or forced exit from academic employment is not (yet) discernable in the post-doctoral phase. It can therefore be assumed that at this crucial stage of the academic career there is an undiminished pool of younger women researchers who are attempting to build an academic career after completing the doctorate.

### **Research funding at the SNSF**

Up to five years after the doctorate, women submit applications for individual and project funding to the SNSF and other research funding institutions just as frequently as men. Amongst those researchers who between 2002 and 2006 submitted applications for the first time to the SNSF for project funding or a SNSF Professorship, women did not submit fewer applications than men, and they asked for equal sums and had the same chances of success.

Furthermore, there are no indications that women attempt to finance their careers more frequently with the acquisition of third-party funding like stipends or research grants, which would be an index of their weaker integration into higher education employment, nor do we find evidence that women researchers are less well informed about the possibilities of research funding, that they have a greater reluctance to apply for funding, or that they experience the SNSF as less accessible and less supportive than men do. In recent years the SNSF has made various efforts toward equality between women and men, which now seem to be paying off.

The research funding provided by the SNSF and other institutions has had demonstrable effects on the academic career paths of women and men. Having an application approved supports one's chances of remaining in the academy after the doctorate, increases the likelihood of undertaking postdoctoral study in a foreign country, and extends academic contacts abroad. The SNSF thus

has a considerable capacity to influence the career opportunities of women in academic research. No demonstrable effect could be established between SNSF research funding and the publication output of younger academic researchers.

### **Integration**

After the doctorate, women receive less career-specific support by established researchers, male or female, in the sense of mentoring. This is one of the most significant factors leading to the disproportionate drop-out rate of women researchers from the academy. As the results of the doctoral stage of the study show, career-specific support increases the likelihood of remaining in the academy and undertaking research abroad; it also increases the chances of further support by mentors at later career stages, promotes the submission of applications for stipends at the SNSF, supports the development of an academic network and increases publication output.

Receiving no mentoring means receiving no support from a professor, male or female, who operates in the background as a patron and gatekeeper, writes references, helps establish contacts and vouches for the capability of the mentee. It means being without someone who can introduce the younger researcher to the rules of the game, and its requirements and practices. The important aspects of integration and support, without which an academic career is not possible, are thus lacking, including advice on submitting applications for research funding, job opportunities – especially after one's return from abroad – or opportunities for (joint) publications.

Like many other studies, our investigation also substantiates low-level integration of younger women researchers into the academic network of the scientific community. This holds, however, only for contacts with professors and peers in research institutions abroad, not for domestic contacts. An established network is one of the decisive factors when it comes to judging a career as successful or best discontinued. This is because social contacts, established and developed over time, are a form of capital as well as a security net. They can lead to further relationships and collaborations which are important for one's visibility, reputation, integration and productivity, and they generate cultural, symbolic and even economic capital. International social capital is becoming increasingly relevant. Visiting professorships or research periods abroad, publications in international journals and research collaborations with foreign institutions all serve as a means of distinction in the symbolic battle for recognition and self-differentiation.

The lower level of support for and integration of younger women researchers within the academic network is part of a very subtle ongoing disintegration process, which begins with the doctoral stage and stretches across the career path up to the postdoctoral phase. Women thus have fewer opportunities to build up the capital necessary for an academic career and they experience acts of latent underestimation and disregard, which leads step by step to a withdrawal from and discontinuation of their academic career.

### **Reconciling Research and Family**

Women with doctorates who remain in the academy have children less frequently than their male counterparts, and amongst younger researchers women without children plan on having them less frequently than men without children. Women as well as men with doctorates have children less frequently than those with doctorates who left the academy after five years. The reconciliation of family and research is thus bound up with problems for women as well as men, but for women the problems are greater. Women are confronted more acutely with the decision regarding 'either research or a family' and tend to forego one in favour of the other.

When there are children, the dependence on traditional gender roles works in favour of men. Half of the fathers can fall back on a partner who is responsible for all of the childcare. This is rarely

the case for mothers in research. They are always involved in childcare, either because they are themselves occupied with childcare duties and/or they organise childcare with the help of third parties or childcare centres. Women who hold a doctorat with children often work part-time, whereas their partners make only small changes in their employment and often continue to be employed full-time. By contrast, the partners of men with a doctorate reduce their employment hours to part-time or stop working altogether, while the men mostly continue to work full-time. The time that mothers have for academic work is thus much more limited than that of fathers, which can lead the mothers to feel habitual uncertainty about whether they are able to cope with the requirements of an academic career and successfully compete with their male counterparts. For both sexes, having children leads to time delays and lower chances of success when it comes to the first application they submit to the SNSF (for project funding as principal investigator or an SNSF Professorship). Moreover, there is an inverse relationship between having children and remaining in the academy and gaining further academic qualifications (postdoc, habilitation). Children impede networking activities with foreign contacts and decrease the likelihood of a research period abroad.

Because of the taboos associated in the academy with social commitment to partnership and family, an uninterrupted and unlimited time commitment is put forward as the ultimate, decisive criterion of excellence. This gives a competitive advantage to childless researchers over parents, to fathers in traditional roles over fathers who take on partnership roles, and to fathers in general over mothers. This cannot be the goal of the academic pursuit of excellence. It must be taken as a matter of course that partners, whether male or female, as well as children belong as much to an academic career as to any other profession.

### **Mobility and Internationality**

The academic employment market is internationally oriented. In the Swiss academy, too, geographic mobility (Incoming, Outgoing, Returning) is an important aspect of the structure. The academic immigration of younger researchers from abroad has seen a sharp increase since the 1990s. Particularly in the hard and natural sciences as well as in the technological sciences, this incoming mobility has led to a noticeable increase in the proportion of women with a doctorate, and to an increase in the proportion of women with a habilitation in medicine and pharmacology. In regard to gender-specific markers of outgoing mobility, it seems at first glance that there are no indications of gender difference to be found in the first five years after the completion of the doctorate. Just as many women as men go abroad for research periods. What does, however, influence outgoing mobility and reveal gender-specific aspects is the social commitment to partnership or family. Many men as well as women are not prepared to forego living with their partner for the medium or long term. Children and family planning throw a further complication into plans for mobility. Those who have children are less likely to go abroad. Those who are geographically mobile give up (at least temporarily) on having children.

The starting position for men, however, is not the same as for women. Men tend to have a better opportunity to connect the academic career with geographical mobility without having to forego having a partner or starting a family in the long term. Women are more frequently confronted with the dilemma of not being able to count on the flexibility they require from a partner who is willing to bring his professional career in line with the demands of her academic career. Younger women researchers thus fit mobility to family plans, suffer from time and space restrictions, or dispense with academic mobility altogether.

The majority of younger academic researchers, especially those who have been domestically educated, wish to return from abroad and in the medium term pursue a permanent position in Switzerland (returning mobility). They are, however, confronted with the fact that the academic

labour market in Switzerland is very small. If their partner is also pursuing an academic career, then the planning of a dual career poses a nearly insoluble difficulty. Further, the return after a research period abroad is not equally possible for all researchers. It is to be assumed that women, on the basis of gaining less support and – as other studies show – finding employment less frequently at universities, have more uncertainties to cope with in relation to returning from a research period abroad.

## **Publication Output**

Numerically, women researchers have a significantly lower publication output in the five years after completing a doctorate than younger male researchers. On average they have only two-thirds as many publications to show as the men. This outcome has been addressed by a long line of research studies on this topic. Since the length of a publication list is one of the most important indicators of academic performance and is relevant to applications for positions and funding, the lower publication output of women is a factor that makes it more difficult for them to apply successfully for university positions and research money, in comparison to their male counterparts.

Our investigations, however, show no indications that this result can be attributed to a fundamentally lower commitment or limited academic interest on the part of women. Nor do children have a negative impact on the publication rate of women, despite their greater responsibility for care and lower level of support from a partner. The result has much more to do with the lower degree of integration of women into the academic network and the lower level of support available from mentors, without whom it is not possible to generate academic output and have access to publication platforms.

## **Recommendations**

This report has found no gender-specific disadvantages at work in SNSF research funding. Precisely because of this result, which can presumably be traced back to its ongoing efforts at equal opportunity, the SNSF today needs to be sensitive to its increasing influence when it comes to supporting younger academic researchers in Switzerland. As one agent in this process, amongst others, the SNSF can help to dispel the existing gender-specific barriers on the way to an academic career by supporting true excellence. The following points of action arise from the results of our investigation:

*Increasing the proportion of femal doctoral students:* The Pro-Doc programme and the project funding grants provided by the SNSF can be used to increase the proportion of women.

*Requiring evidence of support for younger researchers:* The SNSF can integrate funding standards into the submission of applications. With regard to project funding in particular, project leaders who submit an application can be required to give evidence of their previous support practices, including support for women (theses, conference participation, publications, mobility, etc. of younger researchers), as well as of the support planned for younger researchers in the project under application. These support practices would be included in the overall assessment of the application.

*Reconciling research and family:* The funding policies of the SNSF should recognise career models other than the uninterrupted career that guarantees a high degree of availability and mobility, which advantages predominantly men and academics without children. The SNSF could explicitly incorporate the temporal and geographical limitations associated with having a family into its funding practices (such as when it comes to assessing academic performance in applications) by

asking applicants to declare such conditions. This would also contribute to dismantling the academic taboo associated with family duties.

*Strengthening the career focus:* The SNSF can offer career-oriented know-how, experience sharing and networking opportunities to stipend recipients and those involved in research projects.

*Avoiding disintegration when requiring and supporting international mobility:* The SNSF could take the opportunity to promote international mobility, even amongst academic couples, in such a way that women (and men) would be supported in their attempts to combine career, family and partnership. To achieve this, funding opportunities would need to be easier to plan, in some cases stretch over a longer term, and provide the financial means to enable childcare abroad. In addition, alternative forms of inland support remain important, such as subsidies from the Marie Heim Vögtlin Programme or the new funding line Ambizione.

*Preventing women from being pushed out of university research:* Because of the lack of pressure to be geographically mobile, the greater job security and the lower level of career-specific requirements at the universities of applied sciences, there is a certain danger in future that women will be pushed out of the traditional universities in larger numbers and will emigrate to the universities of applied sciences. The SNSF can respond to this danger by ensuring the permeability of the two systems through standardised funding practices and by not creating, where possible, any funding instruments that are fundamentally intended only for the traditional universities or for the universities of applied sciences.

*Improvement of databases and monitoring in the support of younger academic researchers:* The SNSF's application administration system should in future collect applications in such a way that makes it possible to undertake more valid statistical evaluations.

Further research needed: Amongst the younger academic researchers temporarily supported by the SNSF (e.g., stipend recipients and those involved in research projects), it would be possible to differentiate and evaluate their situations and development routes according to gender-specific criteria. It would also make sense, by means of long-term studies (in cooperation with the Federal Statistical), to regularly monitor professional careers in the academy over longer periods.

*Further equal opportunity efforts by the SNSF:* Gender-related equal opportunity is far from being realised in the academy, which is why the SNSF, as an important agent in the field of research funding especially for younger academic researchers, has to continue to concern itself with equal opportunity issues. It could be highly counterproductive for it to rest on the laurels of its initial achievements.

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