Women in management positions with a focus on STEM professions
Identification of barriers and measures

Kerstin Grosch, Katharina Gangl,
Florian Spitzer, Anna Walter

INSTITUT FÜR HÖHERE STUDIEN
INSTITUTE FOR ADVANCED STUDIES
Vienna

![IHS Institut für Höhere Studien · Institute for Advanced Studies · Vienna logo]

Authors

Kerstin Grosch, Katharina Gangl, Florian Spitzer, Anna Walter

Title

Women in management positions with a focus on STEM professions – identification of barriers and measures

Contact

T +43 1 59991-178

E grosch@ihs.ac.at

Institut für Höhere Studien – Institute for Advanced Studies (IHS)

Josefstädter Straße 39, A-1080 Vienna

T +43 1 59991-0

F +43 1 59991-555

www.ihs.ac.at

ZVR: 066207973

Abstract

Women are still strongly underrepresented in so-called STEM occupations that are seen as male domains, such as in top management or in technical branches internationally and in Austria. Women's quotas have a direct impact on the representation of women in the areas that they have been applied to (such as on supervisory boards), but the quotas have so far been able to produce very little indirect spillover effects on the representation of women, e.g., at executive board level. In this Policy Brief, which is based on the report "Frauen in Führungspositionen insbesondere in technischen Berufen" (only published in German), we summarize the most important barriers to women's careers in male domains and use this as a basis to derive possible interventions to promote women. To this end, we carried out a literature analysis and a qualitative interview study with an innovative sample design. We interviewed a total of eight women and two men in top positions, 10 women with managerial responsibility in technical industries, and 10 young professionals with a degree in engineering and natural sciences. The apparently strongest individual, social, organizational, and socially entangled barriers for women are the lack of compatibility between family and work, the lack of professional handling of strategic discrimination up to sexual assault, and the lack of systematic activities to build networks and allies. Accordingly, we suggest the expansion of childcare, the promotion of shared leadership, and the further development of training in dealing with discrimination and the establishment of networks as possible interventions for schools, studies, and company seminars.

Key words: Gender diversity, leadership, STEM, discrimination, quota for women

1   Results from the literature analysis and qualitative interviews

In this study, we distinguish between the *barriers* faced by women in leadership positions, *resources* that women can use, and *measures* that could be implemented to effectively address barriers and increase the proportion of women in leadership positions. We also distinguish between individual, social, organizational, and societal levels. The individual level refers to personality factors and individual motivations. The social level analyzes group phenomena, i.e., relationships with friends and colleagues, for example. At the organizational level, barriers/resources/measures which refer to explicit and implicit structures in the company are analyzed. At the social level, barriers that arise from values, norms, and stereotypical thinking are discussed and appropriate measures are identified. These findings are summarized below:

Literature often identifies **barriers at the individual level** as a low competitiveness of women, so-called competitive preferences, and a lower self-confidence. This is also confirmed by our qualitative study: lower self-confidence, especially in negotiations, the feeling of always having to perform better than male colleagues, lesser aptitude for technology on the part of women than men, and resignation in the face of discrimination and sexual assault can lead women to target occupations in technical sectors or in top positions less, or lead to them quitting early.

Resources at individual level. Conversely, the women surveyed indicate that self-confidence, a strong will, special skills, and hard work, playing on female strengths, for example emphasizing that communication or empathy are important for certain occupations, and distancing themselves from or "suppressing" some discrimination, could help them forge careers in male domains.

Measures at the individual level could primarily be geared toward supporting women in dealing professionally with a discriminatory situation: Guidelines that are easily accessible online can help women to identify discriminatory situations and to pinpoint opportunities for action. In individual coaching sessions, women can be helped in developing career strategies and spotting perspectives despite discrimination. To establish networks and find allies, also in men, who can advise and actively promote careers, is probably another essential strategy. The helpfulness of women's and mixed networks depends on preference or objectives. It might be important for women to also generate such networks and supporters themselves, professionally and privately. After all, women can stand up for other women and make sure that, in their surroundings, discrimination is actively ended and women are supported in their endeavors and promotions.

As a barrier at the social level, the unequal distribution of unpaid work, especially parenting, between men and women has a negative impact on the proportion of women in management positions.

Support from family, the partner, and the wider social environment is a key **resource at the social level** for women's careers. The birth family, and especially the father, contribute to the self-confidence of young women and shape their interest in technology. For professionally experienced women, the family and also the partner play an important advising and supporting role. The wider social environment of friends also provides support and enables advice on career issues.

Measures on a social level could aim at promoting a gender-neutral upbringing. Parents, especially fathers, must be aware that they can increase or decrease self-confidence and interest in technical and scientific fields. Another intervention would aim at encouraging partners, mostly men, to get more involved in caring for the children. Finally, on a social level, maintaining social relationships and friendships is also an important step toward retaining and garnering the strength to follow a strenuous career path.

In the literature, a variety of **barriers at the organizational level** are discussed. At the organizational level, the lack of compatibility between family and work and the discrimination of mothers represents a key barrier to women's careers. Furthermore, organizations that are generally accepted as male domains act as a barrier through several channels. On the one hand, men are more likely to promote men (*homosocial reproduction*), and they have stronger networks than women, thus reproducing the status quo. Behavioral Economics experiments show, for example, that women are rated worse, supported less often, and promoted less often than men despite equal performance. On the other hand, women seem to have too little solidarity with other women. The prevalence of a male-dominated environment with specific, sometimes harsher, manners can act as a deterrent for women. More importantly, these male domains are probably maintained by men's networks, which tend to not only encourage men but also create an environment in which physical assault, sexism, and direct, open discrimination occur. These assaults are also used strategically and, as the stories of the women interviewed make clear, they decidedly serve to edge women out, or at least to make them feel insecure, especially in top positions. Accordingly, in these professional fields, a very aversive environment can prevail which drives women away in a downright aggressive manner. In this situation, in addition to individual and social resources, organizational resources such as various support programs for women, but especially those encouraging superiors and specific mentors and sponsors, are essential.

Measures at the organizational level must enforce a zero-tolerance policy toward discrimination and promote the compatibility of family and career, for example through

more flexibility, shared leadership which also allows part-time management positions, active management of maternity leave, and a return to work. Further interventions would be the introduction of standardized performance appraisals, training of managers, considering the promotion of women in target agreement discussions, and the institutionalization of mentoring programs for women.

As a barrier at the societal level, stereotypes have a negative effect on women's careers. Stereotypes create a social pressure on women and men to conform to their gender roles, such as that men should go to work and women should rather stay at home cooking and cleaning. Studies show that non-stereotypical behavior can lead to social rejection. This particularly affects women in leadership positions who are stuck in a "double bind." In order to assert themselves as leaders, they should be dominant and ambitious. However, this does not exactly correspond to the female stereotype, which is why some women in the office may be perceived as unlikable. Experiments also show that stereotypes lead to women being less confident in technical or scientific activities and assigning failures to their lack of skills more often than to external circumstances compared to men. This can lead to frustration and faster surrender in the competition for high-level positions.

Stereotypes also have a negative effect on young women who then stop even aspiring to a technical career, they affect women in middle management who are not trusted with leadership tasks due to stereotypes, and they affect women in top positions who are confronted with rumors of their success or whose "leadership personality" is interpreted negatively. These stereotypes also impede the reconciliation of family and career: children and career are treated as separate spheres, with women responsible for the former and men for the latter. In the recent interviews, the women often do not perceive any compatibility. They have to decide between career or family – both at the same time is unimaginable for them.

Resources at the societal level. The female role model, which is presented to young women in particular at school and university, is seen as a great resource. For a start, they show that women are also successful in male domains and they show how careers and children can be reconciled.

2 Derivation and summary of recommendations for political action

The results of the qualitative interviews show that the barriers, resources, and interventions constitute a complex web that is reflected at the individual, social, organizational, and societal level. Nevertheless, it is apparent that women face major

barriers, especially at the individual and organizational level. However, central issues such as the compatibility of family and work, dealing with discrimination, support from others, and the prevalence of gender stereotypes come into play at all levels, and these are likely to be mutually reinforcing and thus have a particularly aversive effect on women's careers. Political recommendations for action could therefore primarily concern these four areas. Each intervention could be specifically aimed at strengthening women in their individual situation and at encouraging companies to promote women's careers. In addition, interventions such as advertising or training campaigns must raise awareness of the problem as early as possible on the career path and create a climate that sees women and men equally in top positions and in technical sectors, thus breaking down prevailing gender stereotypes. Starting points for this would be (advanced) training for caregivers and teachers, sensitizing parents, as well as redesigning books and gender-neutral toys (cf. Heisig, 2019). On this basis, recommendations for political action can nevertheless relate to four priority areas:

Breaking up gender stereotypes. Interventions should be carried out as early as possible so as to create a climate that sees women and men equally in top positions and in technical sectors. Starting points for this would be basic and further training for caregivers and teachers, sensitizing parents in preparatory courses, and redesigning books and gender-neutral toys.

In order to promote the **reconciliation of work and family life**, the Swedish policy could serve as a model, where paternity leave is promoted by linking a large part of the leave entitlement to each parent. The Swedish parental leave model, for example, includes a total of 16 parental leave months, eight of which are symbolically reserved for each parent. Five of these can be transferred to the partner, but three months are tied to one parent (this is known as a "use-it-or-lose-it quota"). In addition, parents receive the "equality bonus" introduced in 2008, if the parental leave months are divided equally between the partners. Parents also have the option of reducing their working hours by up to 75% until the child is eight years old (Ministry of Social Affairs, 2016). Individual aspects of the Swedish system have already been implemented in a partially weakened form in Austria (e.g., the "partnership bonus" for the equal division of childcare hours or fixed months reserved for one parent). On the one hand, these approaches could be further developed, on the other hand, a stronger focus could be placed on the application of Behavioral Economic findings.

For example, the waiting period (or childcare allowance entitlement period) could be divided equally between both parents by default (e.g., "7+7" instead of "12+2"), whereby a transfer is only possible by application. In this way, the equal division is presented as the "**default**." People are less likely to deviate from a default and the perception of the starting position for negotiations within the partnership also changes, hence a more

balanced distribution could hereby be achieved. A less invasive intervention would be a change in the public presentation of the various childcare allowance entitlement variants, i.e., the design of the "**framing**" (Mazal et al., 2019). The communication of the distribution of parental leave as "7+7" compared to "12+2" can have an effect in itself (even without a default), as experiments with framing variations show (e.g., Ellingsen et al., 2012).

A particularly important factor is the **expansion of nationwide, flexible, and high-quality childcare**, even for very young children. Companies could be encouraged through subsidies or tax reliefs to invest more in the compatibility of family and career, to provide greater support for paternity leave, and to allow top management positions as part-time or shared-leadership models. One behavioral economic intervention at the organizational level would be for companies to approach future parents with regard to parental leave planning, to provide them with information material and to ask them about their preferred form of parental leave (without unduly increasing the bureaucratic burden on the companies concerned). Thus, as companies become more proactive the employees, especially the fathers, would avoid being placed in a supplicant role and paternity leave would increasingly be regarded as something normal.

All in all, a child-friendly climate must be created at the societal level that would make women and men equally responsible for raising children and make companies aware that they should also be supporting their employees as parents.

Dealing with discrimination. Discrimination, sexism, and also physical assault are part of the reality of many women working in male domains and represent a massive barrier. From the political side, women should be supported in dealing with these situations professionally – at school and university or in seminars for working women. For female managers in particular, they could be taught and trained in role-plays how to react well and protect themselves against discrimination. Women who aim at top positions must be aware that they have to expect strategic sexual assaults and should therefore train (also physical) defensive reactions. In the interviews on hand, it was mostly women in top positions who actively and openly fought discrimination and sexism in the company through their position of power. Women at lower hierarchical levels probably have fewer possibilities to do so. Rather, there is a danger that they will thereby make themselves a target and harm themselves and their careers. In certain situations, dealing with discrimination professionally can therefore also mean distancing oneself from discrimination or sexism instead of seeking open confrontation.

Interventions at the organizational level must be a zero-tolerance policy toward discrimination and promoting the reconciliation of family and career, for example through more flexibility, shared-leadership positions, part-time leadership, and active

management of comebacks. Other possible interventions would be the introduction of standardized performance appraisals, training of managers, consideration of the promotion of women in target agreement discussions, and the institutionalization of mentoring programs for women.

The political side should support women in dealing professionally with these situations. The law for the protection of employees (AschG) would be a lever to support women in dealing professionally with discrimination. Not least, discrimination – like other forms of bullying – can lead to serious illnesses and are therefore part of occupational health and safety. For one thing, the mandatory assessment of psychological stress (since 2013) could also include experiences of discrimination and harassment and thus encourage companies to address this issue. Politicians could also make greater use of the possibilities offered by public procurement law (Section 20 (6)) and take women's employment into consideration in the award procedure. For another thing, guidelines could be issued within the framework of employee protection or already existing seminars could be supplemented with the topic of dealing with discrimination, sexism, and sexual stress.

Looking for networks and allies. The interviews illustrate that women's careers are essentially promoted by networks, allies, and mentors. For a start, the importance of networks and the search for individual support, especially by the girls themselves, can be made clearer at school. In schools and at university, seminars for women and men could be offered in which the formation of social networks and the search for allies could be actively trained. Companies could use incentives and information campaigns to train their managers specifically and offer support for developing their own mentoring programs. From the political side, further support programs for women such as "Zukunft.Frauen", an existing networking platform in Austria, for women could help to establish mentoring and social networks. Behavioral Economic findings on the effectiveness of social norms, role model effects, and reminders could be used to motivate more women to form social networks.

3 Literaturverzeichnis

Ellingsen, T., Johannesson, M., Mollerstrom, J., & Munkhammar, S. (2012). Social framing effects: Preferences or beliefs? *Games and Economic Behavior*, *76*(1), 117–130.

Heisig, K. (2019). *Vom Sinn einer geschlechtsneutralen Erziehung und Bildung*, ifo Dresden berichtet, Heft 2, S. 12–16

Mazal, W., Dörfler, S., Greiner, B., Kittel, B., Sausgruber, R., Schwaninger, M., & Spitzer, F. (2019). *Verhaltensökonomie und Vereinbarkeit von Familie und Erwerb. Mögliche Anwendungen mit Fokus auf Väterbeteiligung und die Gewährleistung von Vereinbarkeit auf Unternehmensseite*. Österreichisches Institut für Familienforschung (ÖIF). Studie im Auftrag des Bundeskanzleramtes über die Familie & Beruf Management GmbH. Unveröffentlichter ÖIF-Projektbericht.

Sozialministerium (2016). Männer und Vereinbarkeit von Beruf und Familie. http://www.lrsocialresearch.at/files/Factsheet_Vaeterbeteiligung.pdf