

Susanne Kohaut, Iris Möller\*

## Women and Leading Positions in Germany: The Role of Promotion Programs for Women\*\*

### Abstract

Although women are as well educated as men, they do not reach a proportion in management that reflects their workforce share. Obviously, different actors' policies are required to help promote women to leading positions. This paper addresses the question of whether the introduction and existence of special promotion programs for women impact the probability of reaching a management position. Social role and expectation state theory argue why it is difficult for women to rise to leadership positions. On the organisational level, the "homophily principle" leads to state dependence which is one explanation for the persistence of male leadership. Hence, it is argued that women need special opportunities to demonstrate their skills. Mentoring programs could be one way to support women in their careers. In multivariate analyses, probit models are estimated to model the influence of promotion programs on the probability of reaching a leading position. The estimations are based on a German linked employer-employee dataset of almost 142,000 women employed in 3,240 establishments. The dataset covers the time from 2008 to 2014 and allows to control for individual and firm-specific variables. The results show that the introduction of women-friendly policies increases the probability of reaching a managerial position, whereas the existence of such programs does not have an impact.

Keywords: executive positions, gender inequality, linked employer-employee data (JEL: D22, J16, M51)

### Introduction

Germany is one of the European countries where relatively few women reach top management positions. A legal regulation for a 30-percentage share of women on supervisory boards was just introduced in 2016. Meanwhile, the proportion of women on supervisory boards is close to one-third. However, the proportion of women in leading positions is still low (Kirsch & Wrohlich, 2021). In 2021, a new

\* Dr. Susanne Kohaut: Institute for Employment Research, Department Establishments and Employment, Regensburger Str. 107, 90478 Nürnberg. E-Mail: susanne.kohaut@iab.de  
Dr. Iris Möller (corresponding author): Institute for Employment Research, Department Establishments and Employment, Regensburger Str. 107, 90478 Nürnberg. E-Mail: iris.moeller@iab.de.

\*\* Date submitted: November 26, 2021.

Date accepted after double-blind review: August 2, 2022.

law passed in parliament that required listed companies with full codetermination to fill at least one board seat with the underrepresented gender if the board had more than three members.

Eurofound data for 2015 show that the female share of management in Germany only reaches the mean value of all EU Member States (Eurofound, 2018). Although different data sources show different female shares of management, they all paint the same picture: women in management in Germany have not reached a significant level that accurately reflects their share of the workforce (Boll, 2017; Holst & Wrohlich, 2019). Current data from the IAB Establishment Panel show that, rather, more women hold positions in middle and lower management (40 % in 2020), while only 27 % reach the top management level (Kohaut & Möller, 2022). As women in Germany constitute 43 % of the workforce, they have not reached a proportion in management that reflects their share of the workforce.

While women in Germany have the same formal qualifications as men, labour market segregation prevails, leading not only to a gender pay gap but also to a gender leadership gap. Several reasons are discussed why women do not reach the same echelon as their male counterparts. In Germany, the mother usually has the main responsibility for childcare and, very often, also has to work part-time. Part-time work is still one important obstacle to a career. Another explanation is based on stereotypes of the female character that describe women as not being able to occupy such top leadership positions. Women may also lack sufficient role models. A range of actions and appropriate policies are needed to help to promote women to leading positions.

One important factor in promoting women in leadership is the employer. There are various instruments employers can introduce to achieve this objective, such as measures to support employees with childcare or elder care responsibilities, flexible working time, and home office arrangements. In this paper, the interest is in special programs for women that aim to stimulate interest and willingness to take on the challenges of a managerial function and develop professional potential. These personnel instruments include mentoring schemes or programs, plans for the promotion of women, special ongoing training or target agreements to increase the proportion of women in management. In Germany, approximately 5 % of all establishments with more than ten employees offer special programs for women (Kohaut & Möller, 2017).

The aim of this paper is to analyse the role of firm activities in the promotion of women to top management positions. We like to answer the question of whether special personnel policies for women have an impact on the probability of reaching a management position. If mentoring programs or special personnel policies appropriately address the challenges women face, they should increase the probability of women reaching top positions. Empirically, this question will be addressed with data from a German linked employer-employee dataset from 2012 to 2014. This

unique dataset allows for the control of individual, as well as organisational factors, that influence the promotion of women to top management positions.

## Background and Theoretical Considerations

The phenomenon of women remaining seriously underrepresented in top management positions despite having good education and training and a high level of labour participation is often referred to as the glass ceiling effect (Bertrand, 2018; Jackson & O'Callaghan, 2009; Weissenrieder et al., 2017). Many empirical studies from different perspectives address the question of why women do not reach the upper echelons (for an overview, see, e.g. Calas et al., 2014 or Smith et al., 2013) or experience "sticky floors" (Booth et al., 2003). Different reasons are discussed in the literature why women are few in top management positions. On an individual level, the preferences and abilities of women are important factors. However, the conditions and opportunities at the company level also play a significant role, as do macro-level state and societal influences through legislation and underlying social roles (Krishnan, 2009).

On the individual level, it is argued that there are not enough qualified women for high-skilled jobs. However, as women in Germany are equally or even more qualified than men (e.g., Menke & Klammer, 2020), it is unlikely that this is still one of the main reasons.

Different career choices made by women and men are also partly to blame for unequal advancement and earnings opportunities. For instance, women are more likely than men to take up occupations with structural disadvantages (horizontal segregation), which offer fewer possibilities for progressing to management positions (Holst & Wiemer, 2010; Bertrand, 2020).

It is sometimes argued that women do not possess the necessary characteristics and abilities that are regarded as essential for a managerial position. Empirical studies, however, do not find significant differences in personality traits between men and women in leading positions (Holst, 2009; Powell, 2014). This result is important, as it indicates that gender stereotypes ascribing what men and women are or should be like still seem to play an important role.

Different theories on the formation and consequences of gender stereotypes are discussed in the literature. They treat gender not only as an individual characteristic but also as a system of social practices with gender stereotypes at the core (Ridgeway, 2001). Social role theory explains the content and development of stereotypes. They are based on commonly observed roles women and men play in society (Koenig & Eagly, 2014) and are "generalisations about the attributes of men and women" (Heilman, 2015, p. 74). Koenig and Eagly (2014) show in their studies that observations of group roles influence stereotypes. In our society, top managers are mostly male. Therefore, characteristics that are traditionally perceived

as masculine, such as low risk aversion or strong competitive orientation, are seen as suitable requirements for a manager. On the other hand, women are seen as possessing communal traits, such as warmth or social sensitivity. Expectation states theory extends other theories regarding gender stereotypes and argues that status beliefs lie at the core of gender stereotypes and that these status beliefs "link groups with higher status (e.g., men) with greater overall competence" (Ridgeway, 2001, p. 639). Status beliefs and gender stereotypes "cause us to see women, in general, as less qualified for leadership roles than men" (Brescoll, 2015, p. 115). This causes a perceived role incongruity between the female gender and the leadership role.

Role congruity theory argues that prejudice can lead to two forms of discrimination: Women are perceived to be less capable of leadership roles and are evaluated less favourably in their role as leaders (Eagly & Karau, 2002).

Consequently, women continue to have difficulties advancing into management jobs, not because of their individual abilities but due to hidden expectations (Mai et al., 2017).

On the organisational level, research in recent years has shown that excessively long working hours and a culture of presence keep women out of the boardroom (Bertrand, 2020), as women in Germany continue to bear the main responsibility for the family and are therefore, unable to devote the same amount of time to work as men (Billing & Alvesson, 2014), and hence for career purposes. This also makes women less flexible than men. This could be another reason why it is difficult for women to take up attractive job offers made by other employers (Smith et al., 2013), a fact that is likely to have an impact on their career advancement and their salaries<sup>1</sup>. A recent study in Sweden even finds empirical evidence for a child penalty "which remains large over the remaining course of the graduates' careers" (Keloharju et al., 2019, p. 21).

According to the so-called "homophily principle", persons prefer to interact with others who are similar in certain characteristics, such as race or gender and tend to build gender-homogeneous networks (Busch & Holst, 2011; van den Brink & Benschop, 2014). The dominant male group tends to select members of their own group. Therefore, "...women are likely to continue to encounter group membership obstacles as members of the (female) out-group in current organisations" (Metz & Kulik, 2014, p. 186).

More recent research also finds evidence for state dependence in the hiring processes for managers. Male managers tend to hire male managers, whereas female managers prefer the appointment of females. This means that "hiring managers is not gender neutral" (Bossler et al., 2020, p. 698), and as long as most managers are male, little change can be expected.

1 The gender pay gap is the subject of many research papers see for example Kulich et al., (2011).

One important determinant of career development is being assigned challenging tasks. Research indicates that "women are offered fewer opportunities to develop themselves" (De Pater et al., 2010, p. 447) and, therefore, advance less in their careers. The study also finds evidence that the supervisors' decisions to allocate challenging tasks are not gender-neutral and result in women having fewer opportunities to show their abilities.

Bjerk (2008) developed a labour market model in which he shows that even without direct discrimination, there may still be "inequality of opportunity" (Bjerk, 2008, p. 62) in getting to top positions due to missing occasions for women (or minorities) to signal competence.

It is also possible that the signals of women are evaluated less precisely than the signals of men. To overcome these problems, Bjerk (2008) suggests policies that encourage targeted recruiting and mentoring programmes for unrepresented groups, in this case, women. Keloharju et al. (2019) come to a similar conclusion. In Sweden, they find a positive selection of women in executive positions, which is "consistent with the view that professionals facing greater barriers may need to outperform their peers" (Keloharju et al., 2019, p. 20). Their suggestion is to pay more attention to potential female candidates, for instance, by implementing firm policies to promote women.

Mentoring or other programs designed to promote women are a way to address and reduce the impediments that women face in their careers. Other than mentoring plans for the promotion of women, special further training or target agreements can also be implemented in firms to support women. These programs can also help to address gender-specific stereotypes by raising awareness that decisions to hire managers are made by persons who might be biased or influenced by gender stereotypes or prejudice. Therefore, if the different theories correctly assume that social roles and gender stereotypes are the main obstacles to women's careers, then these programs should help women to reach top management positions.

Workplace-related mentoring, in general, has been analysed in many studies over the last decades (Allen et al., 2008). However, they rarely focus on women in organisations and promotion to top positions. Mentoring programmes for women in academia seem to be better covered by the research. In a literature review, Meschitti and Lawton Smith (2017) summarise the results from 51 empirical studies on mentoring women in academia. The focus is on mentoring that is designed to enhance women's careers. Their overall conclusion is that "mentoring seems to have positive effects on the mentee, but we need to understand if this is going to help institutions to change" (Meschitti & Lawton Smith, 2017, p. 187).

Empirical evidence for women in academia points to the implementation of mentoring programs for women. To date, little is known about the impact of mentoring or other career-enhancing programs for women in privately owned firms

and whether they increase the probability of women being promoted to leading positions. To shed more light on this question, a rich linked employer-employee dataset for Germany was used for controlling for individual characteristics of the women as well as firm characteristics.

## Empirical Analyses

### Descriptive Evidence

A first impression of the incidence of promotion programs for women in privately owned German firms can be gained from the data of the IAB Establishment Panel (for detailed information, see Ellguth et al., 2014). The IAB Establishment Panel is an annual survey of approximately 15,500 establishments of all sizes and industries. The survey has been conducted in the federal states of West Germany since 1993 and in those of East Germany since 1996. The sampling basis of the IAB Establishment Panel is the Establishment File of the Federal Employment Agency (Bundesagentur für Arbeit – BA), which is aggregated from the employment statistics and contains all establishments and branch offices with at least one employee covered by social security. The establishments are drawn in accordance with the principle of optimum stratification, where the sampling probability increases with the establishment size. Ten establishment size classes, 19 industries and the federal states serve as stratification variables. To depict newly established firms and to offset the effects of panel mortality, additional establishments are added to the sample each year. To compensate for the disproportionality of the random sample, the descriptive findings are each extrapolated to the benchmark figures of the overall population according to the BA Establishment File. In the survey, firm representatives are asked about personnel topics, economic determinants and other relevant factors.

The data show that promotion programs for women are not very common. In 2012, only 3 per cent of all establishments had instituted such programs in practice (Table 1).<sup>2</sup> However, the number of programs increases with establishment size. Almost 40 per cent of the very large establishments (with more than 1000 employees) have implemented promotion programs, whereas these programs are hard to find, with only 4 per cent of small establishments with 10 to 49 employees having them.

<sup>2</sup> Firm representatives were asked whether specific career enhancing programs for women exist. The question does not distinguish between different schemes like mentoring, special further training, target agreement.

**Table 1. Promotion Programs for Women by Size and Industry (in %)**

Establishment Size (No. of Employees)	
1 to 9	1
10 to 49	4
50 to 99	7
100 to 199	11
200 to 499	18
500 to 999	27
1000 and more	38
Industry	
Manufacturing	1
Finance and Insurance	4
Health Care Service and Education	5
Services for Businesses	2
Public Service and Social Security	24
Total <sup>a</sup>	3

IAB Establishment Panel 2012; Weighted results.

<sup>a</sup>Total covers all Industry Sectors. For Agriculture; Energy and Water Supply; Construction; Trade; Traffic and Storage; Hospitality and Other Services; Non-Profit-Organisations the Number of cases is too small to show figures.

There are also differences between the industries. Almost every fourth establishment in public services and social security had such programs, followed – with great distance – by health care services, education, and the finance and insurance sector, with only 5 and 4 per cent. In privately held businesses, which is the focus of our empirical analysis, only 2 per cent of these establishments had promotion programs for women.

**Table 2. Promotion Programs for Women (in %)**

	Promotion programs	
	Yes	No
<i>% Women</i>		
All sectors	14	86
Privat sector	8	92
<i>% Women in leading positions</i>		
All sectors	34	27
Privat sector	35	26

IAB Establishment Panel 2012; Weighted results.

Table 2 shows that only 14 per cent of all working women are employed in an establishment that has a promotion program. In privately held companies, this figure

even decreases to 8 per cent. Finally, focusing on management positions in establishments with or without promotion programs, the share of women in leading positions<sup>3</sup> (34 %) is 7 percentage points higher in firms with programs than in those without such programs. There is nearly no difference between all establishments and privately held firms. The figures in Table 2 indicate a positive correlation between promotion programs for women and their share in management. Correlation analysis, however, shows a low but significant correlation coefficient of 0.0581 (see also Table A2 in the appendix).

## Data

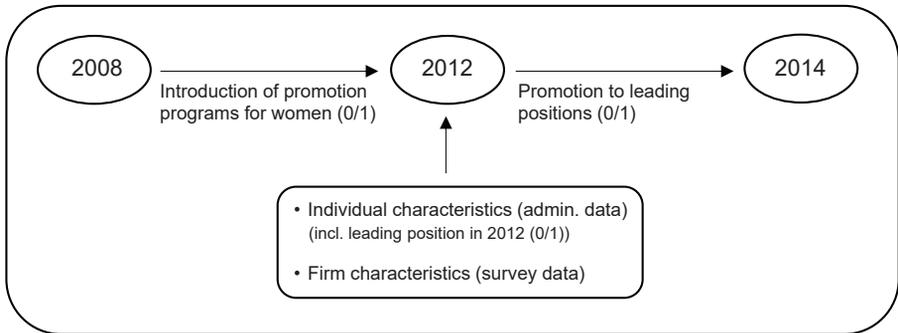
For the empirical analysis of the influence of promotion programs on women's career advancement, comprehensive data is needed to control for individual as well as firm-specific characteristics. Typically, a data set that links individual characteristics with firm-level data is called for. The Research Data Centre (FDZ) of the Federal Employment Agency (BA) at the IAB provides different linked employer-employee datasets. In these datasets, employer (survey) data of the above-described IAB Establishment Panel is linked with information from process-generated data on individuals employed in these firms. The data on individuals originate from notifications of the social security system. Therefore, only a limited set of variables is available. The linkage is possible because, for every person in the administrative data, there is also an identifier for the firm where the person is employed.

For our analyses, the LIAB Cross-Sectional Model 2 (LIAB QM2) (Schmidtlein et al., 2019) for the years 2012 to 2014 was used to construct the dependent variable promotion in leading positions. The employer data from the IAB Establishment Panel provides a huge range of yearly information on establishments in Germany (Ellguth et al., 2014). Every fourth year the question of whether or not an establishment offers a promotion program for female employees is asked. This longitudinal information in the dataset was also used to construct a variable that indicates whether an establishment introduced promotion programs for women between 2008 and 2012.

All explanatory characteristics at the individual and establishment levels are taken from the 2012 cross-section data. The focus is then on individuals and modelling the probability that a woman will attain a leading position in 2014.<sup>4</sup> Figure 1 illustrates the origin of the data.

3 In the IAB Establishment Panel 2012 firm's representative were asked about the total number of leading positions within the establishment and the respective number of female leaders.

4 The information within the different datasets is not available for a more recent time period, at least not for the special combination of datasets.

**Figure 1. Data Construction**

The final employer-employee dataset covers both information about women on the individual level and information about their employers. Therefore, for the construction of the advancement variable and, later on, the introduction of the promotion program variable, multiple matching procedures of the dataset were necessary. The number of women in the final employer-employee dataset is 141,715 or approx. 96,000 when the introduction of promotion programs is considered. It is quite rare for women to be promoted to a management position: almost 1,000 women made it from 2012 to 2014.

### Estimation Strategy

For the analyses, probit estimations<sup>5</sup> are relied upon because the dependent variable, whether a woman reaches a leading position between 2012 and 2014 or not [ $\text{prob}(p\_manager_{2012,2014})$ ], is binary.<sup>6</sup>

We estimate two different models for the dependent variable with a set of explanatory variables comprising the introduction of promotion programs in Model 1 and the existence of promotion programs (Model 2). Using the introduction of the promotion program is one way to control for unobserved heterogeneity in our model. Unfortunately, we do not have the exact year of the introduction of the programs, which would allow a causal interpretation of the results. Arguing more content-related, we like to find out whether there is a difference in the results for longstanding promotion programs or only recently introduced programs.

5 The probit model specifies the probability  $p$  as a function of regressors and the model fit by maximum likelihood (ML) (Cameron & Trivedi, 2010). For the estimations STATA 16.0 was used.

6 The definition leading position differs from the one in Chapter 3.1: For the estimations individual (administrative) data of the employee was used to distinguish whether a woman is a supervisor or leader.

We estimate the effects for both (1) for women in establishments that introduced promotion programs between 2008 and 2012 [ $i(pp_{2008,2012})$ ] and (2) women in establishments that simply had promotion programs in 2012 [ $pp_{2012}$ ]:<sup>7</sup>

$$\text{prob}(p\_manager_{2012,2014}) = F[i(pp_{2008,2012})] + \text{firm characteristics} + \text{individual characteristics} + \varepsilon \quad (1)$$

$$\text{prob}(p\_manager_{2012,2014}) = F(pp_{2012}) + \text{firm characteristics} + \text{individual characteristics} + \varepsilon \quad (2)$$

In the analyses, individual and firm characteristics are included to control for unobserved heterogeneity. The estimation is limited to women in firms with more than ten employees because small establishments usually do not see the need for formal programs. The public sector is also excluded, as different legal regulations apply.

The following individual characteristics are included.<sup>8</sup> First, the woman's age and age square were used to control for nonlinear age effects (see Table 3). The sample was restricted to the age of the working population, which means that we excluded women older than 65 and younger than 20 years because it is unlikely that they will reach a leading position before or after that age. Nationality is a dummy variable that equals 1 for "German" and 0 for all other nationalities.

**Table 3. Descriptive Statistics**

Variables	Name	Mean	Std.dev.
Advancement into a leading position (1=yes)	advance	0.0062	0.0787
Existence of a promotion program for women (1=yes)	pp	0.3357	0.4722
Introduction of promotion program for women (1=yes)	pp_intro	0.1360	0.3428
<i>Individual characteristics</i>			
Age (years)	age	44.5890	10.0630
Age squared (years)	age_sq	2089.438	865.2917
Nationality: German (1=yes)	nationality	0.9576	0.2015
Place of residence: West Germany (1=yes)	residence	0.7632	0.4251
Education and occupational level	education		
<i>Main or secondary school without vocational training (=1)</i>		0.0578	0.2323
<i>Main or secondary school with vocational training (=2)</i>		0.6256	0.4921
<i>A-level without vocational training (=3)</i>		0.0051	0.1128

7 Estimation models with clustered standard errors were used, taking into account that the information on the establishment level is similar for all women and, therefore, variance is missing.

8 For an overview of the correlations of the variables see appendix.

<i>A-level with vocational training (=4)</i>		0.1513	0.3667
<i>University degree of applied science (=5)</i>		0.0285	0.1639
<i>General university degree (=6)</i>		0.1317	0.3487
Part time (1=yes)	part time	0.3552	0.4786
Log. days of employment with the firm (duration)	seniority	8.1259	1.0092
<i>Establishment characteristics</i>			
Log. number of employees (size of the establishment)	size	0.7033	2.2058
Works council (1=yes)	wc	0.8403	0.3663
Collective agreement (1=yes)	cwa	0.7773	0.4162
Share of women	woman%	0.4229	0.2590
Manager-to-employee ratio	man/empl ratio	0.0102	0.0201
Labour turnover	lab turn	0.0718	0.0849
Positive annual results (1=yes)	ann pos	0.8230	0.3816
Measures to support work-family-balance (1=yes)	famfriendly	0.8781	0.3272
Mean age of the establishments' staff (year)	staff mean age	44.2572	2.6857
Non-profit organisation (1=yes)	nonprof	0.1119	0.3152
Member of chamber of handicraft (1=yes)	handicraft	0.1951	0.3963
Location West Germany (region) (1=yes)	westeast	0.7701	0.4208
Industry	industry		
<i>Energy/Watersupply/Waste/Mining</i>		0.0194	0.1379
<i>Manufacturing</i>		0.5389	0.4985
<i>Wholesale, automobile trade and repair service</i>		0.0369	0.1886
<i>Retail sector</i>		0.0375	0.1899
<i>Traffic sector and storage</i>		0.0405	0.1970
<i>Finance sector and insurance industry</i>		0.0719	0.2583
<i>Hospitality industry and other services</i>		0.0280	0.1648
<i>Health care sector/education</i>		0.1498	0.3569
<i>Economic, scientific, freelance work services</i>		0.0773	0.2670
No of cases		96,009	

LIAB QM2 2012; 2014; IAB Establishment Panel 2008, 2012; Private sector; Establishments >10 employees; Own calculations.

The qualification of a person is an important factor when receiving a promotion. The higher the education level is, the more likely the promotion is to be to a leading position. The variable used in our models is a combination of school

degrees and vocational training. The following levels can be differentiated in the data: secondary/intermediate school diploma without vocational training (reference in our models), secondary/intermediate school diploma with vocational training, higher secondary school diploma (Abitur) without vocational training, higher secondary school diploma (Abitur) with vocational training, the degree of a university of applied sciences and a general university degree.

The period of employment increases the probability of being promoted to a higher position in that firm. To control for seniority, the duration of the employment, measured by the logarithm of the days of employment within the firm, in the relevant establishment is included.

In Germany, women still have the main responsibility for the care of children or elderly individuals. For this reason, many women work part-time.<sup>9</sup> As mentioned in Chapter 2, leading positions usually require long hours of part-time employment, which is seen as one major obstacle to women's career advancement. Therefore, it is important to include information on whether a person is working full-time or part-time.

A further control variable is the place of residence. There are still differences between the (self-) perception of women in Western and Eastern Germany even 30 years after reunification. Women in the eastern part of Germany still tend to work longer hours and hold management positions more often (Kohaut & Möller, 2022). Unfortunately, information on marital status and the number of children is not available in the dataset we use.

Women's characteristics, as well as the features of a firm, influence the probability of reaching a leading position. Different characteristics are controlled that are known from other empirical studies that promote or hinder women in their careers. One phenomenon that impedes women in management is described in the literature as the glass cliff (Ryan et al., 2016). Various empirical studies show that women are more likely to reach management positions in economically difficult situations (Billing & Alvesson, 2014; Metz & Kulik, 2014) because advancing to a management position is associated with a greater risk of failure. To capture the economic situation of an establishment, a variable that equals 1 is included if the annual profit is positive. As a more indirect indicator of the situation in the firm, labour turnover is included as a measure of employment stability within the firm. Labour turnover is defined as the sum of hires and exits divided by the average number of employees in the first six months of 2012. The assumption is that employment is less stable in firms in economic difficulties. Therefore, labour turnover is a proxy for the economic situation of the establishment.

9 In 2020 66% of all part time workers were mothers, whereas just 7% were fathers (Destatis, 2022).

In Germany, industrial relations still play an important role in many companies, especially in larger firms. Collective bargaining agreements at the industry level and works councils at the firm level influence the working conditions for employees. Works councils have far-reaching rights, and one task is to prevent inequality and promote gender equality within the establishment (Ellguth et al., 2017). To this end, information on whether an establishment is bound by a collective bargaining agreement and whether a works council exists is included in the estimation.

Empirical studies show that more women work in smaller establishments, and they reach top positions in these firms more often (Kohaut & Möller, 2022; Busch & Holst, 2012). Therefore, the establishment's size is included and operationalised as the log of the number of employees working in the establishment, as well as the share of women in the establishment. Women also tend to have less power than men and are usually responsible for fewer subordinates. To capture this factor, the manager-to-employee ratio, as the relation of the number of leading positions to the number of employees within the establishment, is included in the models.

Empirical research shows that family-friendly measures in establishments and female careers are closely related (Bächmann, 2020). These measures support employees in their struggle to balance work and family. As women tend to have the main burden for family-related responsibilities, family-friendly policies might also help women to manage their working hours and hence make it easier to climb up the ladder. Furthermore, employers who are committed to family-friendly policies might also be open to women in management positions. A variable summarising different family-friendly programs is included.

An industry variable is included in the model because the share of women in management positions differs between industry sectors (Kohaut & Möller, 2022). As there is some evidence that the share of women in management positions on the organisational level is higher in the eastern part of Germany (Kohaut & Möller, 2022), the location of the establishment (Eastern or Western Germany) was also controlled for. Furthermore, several establishment characteristics we controlled for to capture different business models.

Table 3 gives a summary of the mean values and standard deviations of all variables.

## Findings

As mentioned above, two different probit models are estimated: First, the influence of the introduction of a promotion program is analysed (1) on the probability that a woman reaches a leading position controlling for individual and firm characteristics. Second, the same model is applied and includes the existence of a promotion program as a dependent variable (2). Table 4 presents the estimation results.

These models show that women working in firms that introduced promotion programs between 2008 and 2012 have a higher probability of reaching a leading

position (Column (1)). The coefficient for the introduction variable is positive and significant but very small.

When looking at the second model (Column (2)) in which the existence of promotion programs is controlled for, no significant effect can be observed, although the coefficient has a positive sign. The empirical results for the other determinants are quite similar in both specifications and are largely in accordance with expectations.

**Table 4. Probability for the Advancement Into a Leading Position**

Variables	dF/dx	Robust std.err.		dF/dx	Robust std.err.	
	(1)			(2)		
Introduction of promotion program for women from 2008 to 2012 (1=yes)	0.0018	0.0009	**			
Existence of a promotion program for woman in 2012 (1=yes)				0,0008	0.0008	
<i>Individual characteristics</i>						
Age	0.0005	0,0001	**	0.0005	0.0001	***
Age squared	-0.0000	0.0000	***	-0.0000	0.0000	***
Nationality: German (1=yes)	0.0006	0.0005		0.0009	0.0004	
Place of residence: West Germany (1=yes)	0.0003	0.0012		0.0010	0.0007	
<i>Educational and vocational level</i>						
<i>Secondary/intermediate school level without vocational training (=1)</i>	<i>ref.</i>			<i>ref.</i>		
<i>Secondary/intermediate school level with vocational training (=2)</i>	0.0020	0.0010	***	0.0024	0.0007	***
<i>Higher secondary school diploma (Abitur) without vocational training (=3)</i>	0.0114	0.0091	*	0.0049	0.0044	
<i>Higher secondary school diploma (Abitur) with vocational training (=4)</i>	0.0073	0.0044	**	0.0062	0.0027	***
<i>University degree of applied science (=5)</i>	0.0074	0.0059		0.0041	0.0030	
<i>General university degree (=6)</i>	0.0264	0.0120	***	0.0189	0.0067	***
Part time (1=yes)	-0.0021	0.0004	***	-0.0018	0.0029	***
Log. days of employment with the firm	0.0004	0.0002		-0.0001	0.0002	
<i>Establishment characteristics</i>						
Log. number of employees	0.0008	0.0002	**	0,0009	0.0002	***
Works council (1=yes)	-0.0001	0.0009		-0.0001	0.0007	
Collective agreement (1=yes)	0.0007	0.0007		-0.0006	0.0007	
Share of women	-0.0016	0.0014		0.0001	0.0013	

Manager-to-employee ratio	0.0210	0.0101	*	0,0172	0.0055	***
Labour turnover	0.0037	0.0020	**	0.0047	0.0015	***
Positive annual results (1=yes)	-0.0007	0.0007		-0.0002	0.0005	
Measures to support work-family-balance (1=yes)	-0.0009	0.0008		0.0009	0.0004	
Mean age of the establishments' staff	0.0000	0.0001		0.0002	0.0000	*
Non-profit organisation (1=yes)	-0.0012	0.0009		-0.0009	0.0007	
Member of chamber of handicraft (1=yes)	0.0009	0.0006	*	0.0002	0.0005	
Location West Germany (1=yes)	-0.0004	0.0016		-0.0021	0.0015	*
Industry	yes			yes		
Number of observations	96,009			141,715		
Pseudo r2	0.1571***			0.1480***		

LIAB QM2 2012; 2014; IAB Establishment Panel 2008, 2012; Private sector; Establishments >10 employees; Own calculations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The correlation coefficient indicates that woman's age shows the expected positive influence on promotion into a leading position. Additionally, the coefficient is significant. The older women are, the more likely they are to be promoted to management positions. The variable age squared is negative, indicating a nonlinear relationship. However, both coefficients are very small.

Neither nationality (German or not German) nor the place of residence (Eastern or Western Germany) has a significant effect on the probability of reaching a leading position. Coefficients are positive but not significant. German nationality does not seem to be an advantage (as the insignificant correlation coefficient indicates). There was also no evidence found that women in the eastern part of Germany had a higher chance for advancement. As the correlation is positive and significant, this result is somewhat surprising. However, this variable is just a proxy because its information is limited. It only reflects the current place of residence, which is not necessarily the location where the women were born, raised, and socialised. It is also possible that thirty years after the German reunification, the differences between east and west have faded.

As expected, education seems to influence the promotion to a leading position. The higher the educational and vocational level, the higher the probability of advancement. Women with a general university degree in Model 1 have a 2.64% higher probability and a 1.89% higher probability (Model 2) of reaching management positions compared to women with the lowest educational level.

The significant negative coefficient and negative significant correlation coefficient of the part-time variable indicate that working part-time is an obstacle for women

reaching top positions. Since the share of women working part-time is more than four times higher than that of men,<sup>10</sup> these figures illustrate that working part-time is a considerable barrier to promotion into leading positions, which mainly affects women.

In this model, seniority, measured as the duration of employment within the firm, has no significant effect on the promotion to a leading position.

Only a few variables on the establishment level have a significant effect on the probability of reaching a leading position. As the correlation figure predicts, the log number of employees representing the establishment size is significant and positive, but again very small. There is some evidence that women working in larger establishments have a slightly higher chance of advancing to management positions. This result seems to be in contrast to descriptive findings that show the share of women in leading positions is higher in smaller establishments. However, it is still plausible. The total number of leading positions is higher in large establishments and, thus, also the chance of getting a management position.

Even though the correlation figures show positive significant coefficients, both the existence of works councils and collective wage agreements are insignificant and very small. The assumption that the working conditions in firms with collective agreements of works councils create better conditions for the advancement of women cannot be confirmed. In the bivariate analysis, the share of women and promotion into leading positions shows a significant negative relation. However, this correlation does not hold when controlling several influential factors in the multivariate analysis: the coefficient is insignificant and almost zero in both models.

Unlike in the bivariate correlation, where the coefficient turns out to be negative, in the probit estimation, the coefficient of the manager-to-employee ratio is positive and significant in both models. In addition to establishment size, this variable has a significant influence. This means that women are more likely to rise to leadership positions if they have fewer subordinates and speak in favour of the assumption that women tend to have leading positions with less power or influence in the establishment.

Labour turnover and annual profit are included to test whether women reach management positions in establishments that are economically difficult. Compared to simple bivariate analyses in the probit estimation, coefficients change their signs, but only the labour turnover variable is significant. The higher the labour turnover is, and hence the lower the stability of the workforce, the higher the chance for women to enter leading positions. This result indicates evidence for the glass cliff hypothesis. However, again, the size of the coefficient is very small.

10 In Germany, about half of all women liable for social security contributions work part-time (31.12.2019), whereas the comparable figure for men is only 12% (Destatis, 2021).

Unlike the correlation, the measures to support work-family balance show no significant effect. It seems not to be relevant for the promotion to a leading position if an employer supports work-family matters.

Finally, the results for the structural variables are mixed. The mean age of the establishment's staff is negative and not significant in the bivariate correlation but positive for the second estimation (2) and significant but very low. Furthermore, for the promotion, it seems to be irrelevant whether a woman works in a profit- or a non-profit organisation. Women working in establishments that are members of a chamber of handicraft have a slightly higher chance for advancement, but only in Model 1. Last, the estimation results of Model 2 show that women working in a firm in eastern Germany have a higher chance of a promotion to a leading position.

To check the robustness of the results, we also estimated complementary log-log models. These models can be used when the probability of an event is very small or very large (Cameron & Trivedi, 2010). Since the probability of the advancement into a leading position is very small (only 0.62 per cent of the women in our sample reached a leading position between 2012 and 2014, see Table 3), this model seems to be an alternative to evaluate the above results. The estimations confirm our results; in specification (1), the introduction of a promotion program for women increases, statistically significant, the probability of the promotion to a leading position. In Model 2, the existence of a promotion program for women (2) also has a positive, but not statistically significant, effect.<sup>11</sup>

Overall, the analyses show that with the introduction of mentoring programs, women in these establishments have a higher chance of promotion, albeit at a low level.

## Conclusions

In this paper, the impact of special promotion programs for women on the probability of reaching a management position was assessed. First, the theoretical arguments on the individual level are derived via social role and expectation states theory to answer the question of why women find it difficult to rise to leadership positions. On the organisational level, the "homophily principle" that leads to state dependence is considered, which explains the persistence of male leadership. These arguments lead to the assumption that women need the opportunity to demonstrate their leadership skills. Mentoring programs can be seen as a business practice where women have the chance to signal their competence for leadership.

To this end, a comprehensive employer-employee dataset was used to control for individual and establishment characteristics. The longitudinal information in the data was exploited. Firms introducing career advancement programs for women between

11 Results can be requested from the authors.

2008 and 2012 were identified, and it was observed whether a woman came into a leading position in 2014. Probit models were estimated on the individual level.

Overall, the results are mixed. The findings in the model in which the introduction of programs for women is controlled seem to be in line with the theoretical considerations that mentoring enables women to signal their competence and willingness for leading positions and, consequently, enhances female leadership. On the other hand, looking at the existence of programs for women, there is no significant effect on the probability of reaching a leading position. This indicates that newly introduced programs work better than programs that have been in place for longer.

There are some control variables that have a significant effect on the promotion of women in leading positions. First, the age and education of women influence their advancement in leading positions, whereas working part-time seems to be an obstacle to moving up. At the organisational level, relevant factors are the size of a firm (positive) and employment stability (negative). Additionally, women have chances for promotion in firms where there are rather few subordinates per manager.

Although the results are more or less in line with the theory, some limits in the approach should also be mentioned, including data limitations. On the side of the explanatory variables, the analyses were restricted to the variables available in the dataset. Most importantly, stereotypes could not truly be modelled, and there was no information on the marital status of the women and whether or not they had care responsibilities.

Additionally, due to the data available, only one outcome, namely, the probability of reaching a management position in 2014, could be modelled. Long-term effects were not looked at because of data selectivity. There was no follow-up on the women for a longer period of time, without losing many individuals due to missing data. Another shortcoming of the analyses is that other outcomes of career enhancement programs were not studied, such as commitment or job satisfaction, as this information is not included in the data.

The measure for the introduction of promotion programs is constructed over quite a long period of time. Therefore, it is not possible to determine exactly when a program was introduced. Hence, findings are not interpreted causally.

## References

- Allen, T. D., Eby, L. T., O'Brien, K. E., and Lentz, E. (2008). The State of Mentoring Research: A Qualitative Review of Current Research Methods and Future Research Implications. *Journal of Vocational Behavior*, 73(3), 343–357. <https://doi.org/10.1016/j.jvb.2007.08.004>

- Bächmann, Ann-Christin; Frodermann, Corinna; Grunow, Daniela; Hagen, Marina; Müller, Dana (2020): Family-friendly organisational arrangements – anything but "a fuss" (over nothing)!, In: *IAB-Forum* 20th of February 2020. Retrieved 17.05.2022, from <https://www.iab-forum.de/en/family-friendly-organizational-arrangements-anything-but-a-fuss-over-nothing/>
- Bertrand, M. (2018). Coase Lecture – The Glass Ceiling. *Economica*, 85, 205–231. <https://doi.org/10.1111/ecca.12264>
- Bertrand, M. (2020). Gender in the Twenty-First Century – Richard T. Ely Lecture. *AEA Papers and Proceedings*, 110, 1–24. <https://doi.org/10.1257/pandp.20201126>
- Billing, Y. D., & Alvesson, M. (2014). Leadership: A Matter of Gender? In: S. Kumra, R. Simpson, & R. J. Burge (eds.), *The Oxford Handbook of Gender in Organizations* (pp. 200–222). Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199658213.001.0001>
- Bjerk, D. (2008). Glass Ceiling or Sticky Floors? Statistical discrimination in a dynamic model of hiring and promotion. *The Economic Journal*, 118(July), 961–982. <https://doi.org/10.1111/j.1468-0297.2008.02157.x>
- Boll, Ch. (2017). Geschlechtergleichstellung weltweit langsam. *Wirtschaftsdienst*, 11, 824–826. <https://doi.org/10.1007/s10273-017-2220-4>
- Booth, A. L., Francesconi, M., & Frank, J. (2003). A sticky floors model of promotion, pay, and gender. *European Economic Review*, 47(2), 295–322. [https://doi.org/10.1016/S0014-2921\(01\)00197-0](https://doi.org/10.1016/S0014-2921(01)00197-0)
- Bossler, M., Mosthaf, A., & Schank, T. (2020). Are female managers more likely to hire more female managers? Evidence from Germany. *International Labour Relations Review*, 73(3), 676–704. <https://doi.org/10.1177/0019793919862509>
- Brescoll, V. L. (2015). How gender stereotypes of emotion harm women Leaders. In I. Welpel, T. & Schwarzmüller (Eds.), *Selection of men and Women as leaders: Perspectives from business, research, media and politics*. Springer Gabler, Wiesbaden. [https://doi.org/10.1007/978-3-658-09469-0\\_11](https://doi.org/10.1007/978-3-658-09469-0_11)
- Busch, A., & Holst, E. (2011). Gender-specific occupational segregation, glass ceiling effects, and earnings in managerial positions: Results of a fixed effects model. *DIW Discussion Papers*, No. 1101, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin.
- Busch, A., & Holst, E. (2012). Occupational sex segregation and management-level wages in Germany: What role does firm size play? *SOEPpapers on Multidisciplinary Panel Data Research*, No. 444; Deutsches Institut für Wirtschaftsforschung (DIW), Berlin.
- Calas, M. B., Smircich, L., & Holvino, E. (2014). Theorizing Gender-and-Organization: Changing Times ... Changing Theories. In S. Kumra, R. Simpson, & R. J. Burge, (Eds.), *The Oxford Handbook of Gender in Organizations* (pp. 17–52). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199658213.001.0001>
- Cameron, A.C., & Trivedi, P.K. (2010). *Microeconometrics Using Stata*. Texas, US Stata Press.
- De Pater, I. E., Van Vianen, Annelies E. M., & Bechtoldt, Myriam N. (2010). Gender Differences in Job Challenge: A Matter of Task Allocation. *Gender, Work and Organisation*, 17(4), 433–453. <https://doi.org/10.1111/j.1468-0432.2009.00477.x>
- Destatis. (2021). Retrieved 13.01.2021, from <https://www-genesis.destatis.de/genesis/online?operation=abrufabelleBearbeiten&levelindex=3&levelid=1619602273384&auswahloperation=abrufabelleAuspraegungAuswahlen&auswahlverzeichnis=ordnungsstruktur&auswahlziel=werteabruf&code=13111-0004&auswahltext=&werteabruf=Werteabruf#abreadcrumb>

- Destatis. (2022). Pressemitteilung Nr. N 012, 7.3.2022. Retrieved 18.03.2022, from [https://www.destatis.de/DE/Presse/Pressemitteilungen/2022/03/PD22\\_N012\\_12.html](https://www.destatis.de/DE/Presse/Pressemitteilungen/2022/03/PD22_N012_12.html)
- Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, 109(3), 573–598. <https://doi.org/10.1037/0033-295X.109.3.573>
- Ellguth, P., Kohaut, S., & Möller, I. (2014). The IAB Establishment Panel – Methodological Essentials and Data Quality. *Journal for Labour Market Research*, 47(1), 27–41. <https://doi.org/10.1007/s12651-013-0151-0>
- Ellguth, P., Kohaut, S., & Möller, I. (2017). Wo schaffen es Frauen an die Spitze? Eine empirische Analyse mit Betriebsdaten. *Industrielle Beziehungen und Gender*, 2, 196–217. <https://doi.org/10.3224/indbez.v24i2.05>
- Eurofound (2018). Women in management: Underrepresented and overstretched? Publications Office of the European Union, Luxembourg. <https://doi.org/10.2806/258320>
- Heilman, M. (2015). Gender Stereotypes: Impediments to Women's Career Progress. In: I. Welpe, P. Brosi, L. Ritzenhöfer, & T. Schwarz Müller (eds.), *Auswahl von Männern und Frauen als Führungskräfte* (pp. 73–84). Wiesbaden: Springer Gabler. [https://doi.org/10.1007/978-3-658-09469-0\\_7](https://doi.org/10.1007/978-3-658-09469-0_7)
- Holst, E. (2009). Führungskräftemonitor 2001 – 2006. Forschungsreihe Band 7 des Bundesministeriums für Familie, Senioren, Frauen und Jugend, Baden-Baden. 2. Auflage.
- Holst, E., & Wiemer, A. (2010). Frauen sind in Spitzengremien der Wirtschaft unterrepräsentiert. *Wirtschaftsdienst*, 10, 692–699. <https://doi.org/10.1007/s10273-010-1137-y>
- Holst, E., & Wrohlich, K. (2019). Frauenanteile in Aufsichtsräten großer Unternehmen in Deutschland auf gutem Weg – Vorstände bleiben Männerdomänen. *DIW-Wochenbericht*, 3. [https://doi.org/10.18723/diw\\_wb:2019-3-1](https://doi.org/10.18723/diw_wb:2019-3-1)
- Jackson, J.F.L., & O'Callaghan, E.M. (2009). What Do We Know About Glass Ceiling Effects? A Taxonomy and Critical Review to Inform Higher Education Research. *Research in Higher Education*, 50, 460–482. <https://doi.org/10.1007/s11162-009-9128-9>
- Keloharju, M., Knüpfer, S., & Tag, J. (2019). What prevents women from reaching the top? IFN Working Paper No. 1111, *Harvard Business School Research Paper Series* Nr. 16–092. <http://dx.doi.org/10.2139/ssrn.2730207>
- Kirsch, A., & Wrohlich, K. (2021). Number of women on boards of large firms increasing slowly; legal requirements could provide momentum. *DIW Weekly Report*, 3+4. [https://doi.org/10.18723/diw\\_dwr:2021-3-2](https://doi.org/10.18723/diw_dwr:2021-3-2)
- Koenig, A.M., and Eagly, A. H. (2014). Evidence for the social role theory of stereotype content: observations of groups' role shape stereotypes. *Journal of Personality and Social Psychology*, 107, 371–392. <https://doi.org/10.1037/a0037215>
- Kohaut, S., & Möller, I. (2017). Führungspositionen in Betrieben und Verwaltungen: Oberste Chefetage bleibt Männerdomäne. *IAB-Kurzbericht*, 24.
- Kohaut, S., & Möller, I. (2022). Führungspositionen in Betrieben und Verwaltungen: Der Weg nach ganz oben bleibt Frauen oft versperrt. *IAB-Kurzbericht* 01. <https://doi.org/10.48720/IAB.KB.2201>
- Krishnan, H. (2009). What causes turnover among women on top management teams? *Journal of Business Research*, 62, 1181–1186. <https://doi.org/10.1016/j.jbusres.2008.09.001>

- Kulich, C., Trojanowski, G., Ryan, M.K., Haslam, S.A., Renneboog, L.D.R. (2011). Who gets the carrot and who gets the stick? Evidence of gender disparities in executive remuneration. *Strategic Management Journal*, 32, 301–321. <https://doi.org/10.1002/smj.878>
- Mai, Ch., Büttgen, M., & Schwarzingler, D. (2017). „Think-Manager-Consider-Female“: Eine Analyse stereotypischer Ansichten über weibliche Führungskräfte und die empirische Überprüfung ihrer realen Persönlichkeit anhand der Big Five und Dunklen Triade. *Schmalenbachs Zeitschrift für betriebliche Forschung*, 69, 119–152. <https://doi.org/10.1007/s41471-016-0022-9>
- Menke, K., & Klammer, U. (2020). Gender-Datenreport. Informationen zur politischen Bildung, Nr. 342. <https://www.bpb.de/izpb/307426/gender-datenreport> 21.04.2021
- Meschitti, V., & Lawton Smith, H. (2017). Does mentoring make a difference for women academics? Evidence from the literature and a guide for future research. *Journal of Research in Gender Studies*, 7(1), 166–199. <https://doi.org/10.22381/JRGS7120176>
- Metz, I., & Kulik, C. T. (2014). The Rocky Climb: Women's Advancement in Management. In: S. Kumra, R. Simpson, & R.J. Burge (eds.), *The Oxford Handbook of Gender in Organizations* (pp. 175–199). Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199658213.001.0001>
- Powell, G. N. (2014). Sex, Gender, and Leadership: What Do Four Decades of Research Tell Us? In: S. Kumra, R. Simpson, & R.J. Burge (eds.), *The Oxford Handbook of Gender in Organizations* (pp. 249–268). Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199658213.001.0001>
- Ridgeway, C. L. (2001). Gender, status and leadership. *Journal of Social Issues*, 57, 637–655. <https://doi.org/10.1111/0022-4537.00233>
- Ryan, M. K., Haslam, S. A., Morgenroth, T., Rink, F., Stoker, J., Peters, K. (2016). Getting on the top of the glass cliff: Reviewing a decade of evidence, explanations, and impact. *Leadership Quarterly*, 27(3), 446–455. <https://doi.org/10.1016/j.leaqua.2015.10.008>
- Schmidtlein, L., Seth, S., & Umkehrer, M. (2019). Linked Employer–Employee Data from the IAB: LIAB Cross-Sectional Model 2 (LIAB QM2) 1993 – 2017. *FDZ-Datenreport 06/2019 EN*. Nürnberg. DOI: 10.5164/IAB.FDZD.1905.de.v1
- Smith, N., Smith, V., & Verner, M. (2013). Why are so few females promoted into CEO and Vice President Positions? Danish Empirical Evidence, 1997–2007. *International Labour Relation Review*, 66(2), 380–408. <https://doi.org/10.1177/001979391306600204>
- van den Brink, M., & Benschop, Y. (2014). Gender in Academic Networking: The Role of Gatekeepers in Professorial Recruitment. *Journal of Management Studies*, 51(3), 460–492. <https://doi.org/10.1111/joms.12060>
- Weissenrieder, C. O., Graml, R., Hagen, T., & Ziegler, Y. (2017). Ist die gläserne Decke noch aktuell? Untersuchung wahrgenommener Aspekte der Unternehmenskultur und der geschlechtsspezifischen Unterschiede in Karrierechancen. *Gender*, 1, 115–132. <https://doi.org/10.3224/gender.v9i1.08>

Appendix

Table A1. Correlation Table

	advance	pp_intro	size	industry	nonprof	handi- craft	wc	cwa	women %	man/ empira- tio	lab turn	ann pos	staff mean age	west- east	fam- friendly	age	age sq.	nation- ality	resi- dence	educa- tion	part time	seniority	
advance	1																						
pp_intro	0.0312	1																					
size	0.0768	0.2582	1																				
industry	-0.0341	0.0397	-0.3070	1																			
nonprof	-0.0197	-0.1230	-0.0999	0.5089	1																		
handicraft	0.0258	-0.1574	0.2020	-0.0555	0.0026	1																	
wc	0.0251	0.1288	0.4805	-0.1136	0.0401	-0.0740	1																
cwa	0.0249	0.0210	0.4223	-0.1307	0.0484	0.0827	0.4856	1															
women %	-0.0493	-0.1176	-0.4637	0.6831	0.4775	-0.0581	-0.2594	-0.1664	1														
man/empl ratio	-0.0260	-0.0209	-0.5829	0.1257	-0.0398	-0.0400	-0.4822	-0.3539	0.2049	1													
lab turn	-0.0139	-0.0253	-0.1926	0.3425	0.1390	0.0329	-0.1961	-0.1083	0.3001	0.0448	1												
ann pos	0.0110	0.1369	0.1241	-0.2011	-0.3119	0.0377	-0.0207	-0.0315	-0.1448	-0.0029	-0.1043	1											
staff mean age	0.0234	0.1090	0.3516	-0.1803	-0.2476	0.0066	0.2065	0.2055	-0.2726	-0.1650	-0.0561	0.1541	1										
westeast	0.0210	0.1371	0.3982	-0.0225	0.0662	-0.0343	0.3869	0.2236	-0.1384	-0.3193	-0.1253	0.0237	0.1404	1									
famfriendly	-0.0479	-0.0472	-0.2120	0.0773	0.0572	-0.0382	-0.0650	-0.0616	0.1315	0.0813	0.0463	-0.0536	-0.1051	-0.0921	1								
age	-0.0487	-0.0502	-0.2175	0.0783	0.0575	-0.0385	-0.0700	-0.0665	0.1329	0.0850	0.0492	-0.0557	-0.1086	-0.0965	0.9921	1							
age sq.	-0.0036	0.0650	-0.1360	-0.0958	-0.1219	-0.0091	0.0564	0.0716	-0.0330	0.0764	-0.1058	-0.0287	-0.0650	-0.1326	0.2035	0.2036	1						
nationality	-0.0024	0.0055	-0.0202	0.0777	0.0250	0.0012	-0.0198	-0.0187	0.0091	0.0273	-0.0523	-0.0099	-0.0998	-0.0027	0.0158	0.0180	0.0009	1					
residence	0.0214	0.1111	0.3355	-0.1717	-0.2413	-0.0085	0.1999	0.1975	-0.2614	-0.1588	-0.0540	0.1544	0.9727	0.1356	-0.0999	-0.1035	-0.0614	-0.1019	1				
education	0.0762	0.1013	0.1351	0.0250	-0.0025	-0.0376	0.0929	0.0320	-0.1028	-0.0332	-0.0347	-0.0061	-0.0186	0.0940	-0.1847	-0.1905	-0.0520	0.0145	-0.0265	1			
part time	-0.0341	0.0477	-0.0427	0.1738	0.1046	-0.0183	0.0073	0.0136	0.1819	0.0116	0.0604	-0.0236	0.0564	0.0319	0.1564	0.1339	0.0320	0.0154	0.0645	-0.0806	1		
seniority	-0.0233	0.0423	0.0909	-0.0924	-0.0059	-0.0262	0.1357	0.0955	-0.0845	-0.0721	-0.1181	0.0006	0.0255	0.0634	0.4426	0.4215	0.1076	0.0541	0.0356	-0.2386	-0.1032	1	

**Table A2. Correlation of Promotion Programs (pp)**

	pp
advance	0.0581
size	0.6637
industry	-0.1969
nonprof	-0.1492
handicraft	0.1061
wc	0.2478
cwa	0.2381
women %	-0.3471
man/empl ratio	-0.2365
lab turn	-0.1884
ann pos	0.1295
staff mean age	0.2170
westeast	0.2344
famfriendly	-0.1384
age	-0.1420
age sq.	0.0025
nationality	0.0043
residence	0.2083
education	0.1077
part time	-0.0245
seniority	0.0954