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**WORKPLACE SEX COMPOSITION
AND APPRECIATION AT WORK**

by

Olle Folke and Johanna Rickne

SAMMANFATTNING AV SOFI WORKING PAPER 5/2023

Mer uppskattning från kollegor på kvinnodominerade arbetsplatser

Anställda på arbetsplatser med fler kvinnor uppger att de oftare får uppskattning för något de gjort på jobbet. Analys av detaljerade enkätdata kopplade till registerdata tyder på ett kausalt samband där en högre andel kvinnor påverkar det sociala klimatet positivt.

Viktiga organisationsteoretiska teorier beskriver hur uppskattning på jobbet leder till bättre produktivitet och välbefinnande. Att få positiv feedback utgör ett motmedel mot stress och dålig hälsa, samtidigt som ett positivt socialt sammanhang ökar känslan av meningsfullhet på jobbet (Siegrist 1996, Ryan and Deci 2000).

Vi undersöker självupplevd uppskattning med hjälp av data från arbetsmiljöundersökningen, Arbetsmiljöverkets återkommande undersökning av arbetsvillkoren på den svenska arbetsmarknaden (1995–2019, N=81 580). Vi mäter könssammansättningen på varje respondents arbetsplats genom att koppla enkätdata till registerdata från Statistiska centralbyrån.

Både kvinnor och män anger betydligt högre nivåer av självupplevd uppskattning på arbetsplatser där andelen kvinnor är högre. På arbetsplatser med mer än 90 procent kvinnor uppger tre gånger så många att de får uppskattning varje dag, jämfört med mansdominerade arbetsplatser där mer än 90 procent är män (21% jämfört med 7%). Andelen som uppger att de sällan eller aldrig får uppskattning är också lägre när andelen kvinnor är hög (5% jämfört med 14%).

Flera analyser tyder på ett kausalt samband där fler kvinnor på arbetsplatsen förbättrar stämningen. Sambandet mellan könssammansättning och uppskattning återfinns när vi jämför arbetsplatser inom en viss bransch eller yrke. Det återfinns också när vi jämför ett och samma företag över tid eller när vi jämför olika arbetsplatser som tillhör samma företag vid samma tidpunkt.

Uppskattning på jobbet samvarierar starkt med medarbetares välbefinnande. Personer som känner sig mer uppskattade känner sig nöjdare med jobbet, upplever färre obehagskänslor när de går till jobbet och det är mindre sannolikt att de slutar på sina jobb på grund av hälsoskäl.

Workplace Sex Composition and Appreciation at Work

Olle Folke and Johanna Rickne*

Abstract

We study appreciation of one's work using nationally representative survey data from Sweden linked with employer–employee data. The level of appreciation from colleagues rises sharply with the share of women in the workplace. This strong pattern holds for women and men workers, as well as for subordinates and managers. More appreciation from colleagues is associated with higher levels of job satisfaction and other indicators of worker well-being. These results demonstrate the benefits of workplace gender diversity and inclusion, and suggest new directions for research on gender inequality in the labor market.

Keywords: gender equality, appreciation at work, diversity, work conditions.

* Folke: Uppsala University, Gamla torget 6, 751 20 Uppsala, Sweden (olle.folke@statsvet.su.se); Rickne: Swedish Institute for Social Research, Nottingham University, Stockholm School of Economics, CEPR, Stockholm University, S-106 91 Stockholm, Sweden (Johanna.rickne@sofi.su.se). The authors thank Lene Holm Pedersen, Luise Görge, and Ilaria D'Angelis for helpful comments. We gratefully acknowledge financial support from the Swedish Research Council, The Wallenberg Foundation, and the Swedish Research Council for Health, Working Life, and Welfare.

Introduction

If women are from Venus and men from Mars, Venus is a more caring place. Women are taught from an early age to care for others and support them emotionally (Eagly 1987). This underpins the so-called “great divide” between women’s and men’s personalities: women are more *communal* and care more for others, while men are more *agentic* by being assertive, self-centered, and aggressive (Bakan 1966; Eagly and Karau 2002; Hsu et al. 2021). A large literature studies gender gaps in agentic behaviors and how they influence the labor market (Croson and Gneezy 2009; Buser et al. 2021, recently reviewed by Niederle 2017). Less is known about gender gaps in communal behaviors in the workplace, with recent research on non-promotable tasks being an important exception (Babcock et al. 2017, 2022).

We study the communal behavior of expressing appreciation for colleagues’ work. This paper is the first to provide an epidemiological description of this interpersonal work condition in a national labor market.¹ Collegial appreciation of one’s work constitutes the type of positive reinforcement that is at the heart of workhorse psychology models created to understand well-being at work.² It helps create a reward structure that reduces the potentially negative consequences of a high-effort environment (Siegrist 1996). It also reinforces the types of supportive social relationships that makes one’s work feel meaningful (Ryan and Deci 2000).

We find that appreciation from colleagues rises sharply with the proportion of women in a workplace. This finding is based on linking nationally representative survey data to administrative data on the gender breakdown in every survey respondent’s workplace. We detect a strong relationship between appreciation and female colleagues for both women and men. The average level of appreciation is 0.5 standard deviations higher in workplaces with more than 90% women compared to those with fewer than 10% women. In these women-dominated workplaces, three times as many respondents self-report receiving appreciation “every day” (21% vs. 7%), and just one-third as many say they receive appreciation “rarely or never” (5% vs. 14%).

Even if our analysis is descriptive rather than causal, several findings point to a causal interpretation. About half of the statistical relationship between appreciation and the share of women remains when we analyze experiences of appreciation within workplaces over time. Roughly half also remains when we compare levels of appreciation between workplaces belonging to the same firm in the

¹ Nationally representative descriptions are unusual for any interpersonal work environment trait. For a recent example, see Jonsdottir et al. (2022). The main correlation shown in this paper previously formed part of an index variable based on several aspects of the interpersonal work environment, which was used as a control variable in Folke and Rickne’s (2022) study of sexual harassment (see Appendix Figure A5).

² We translate the Swedish term *uppskattning* as *appreciation*. Just like the concept of *appreciation* in English, the Swedish word includes informal and formal types of recognition at work, and may also include positive reinforcement that is not directly linked to a person’s job performance (for a discussion of these two concepts, see <https://www.hi5.team/blog/difference-recognition-appreciation-work>).

same year, such as stores in the same supermarket chain. The relationship is not specific to certain industrial sectors or occupations with more (or fewer) women.

An important caveat to our analysis is that there is a risk that our survey question on appreciation from colleagues could also capture appreciation from people not employed in the workplace, such as customers, clients, or patients. However, we demonstrate that our results are, if anything, stronger in a sub-sample of respondents who self-report having zero contact with these groups in their daily work. We also show that people in workplaces with more women self-report more personal support from colleagues—a survey question that is not subject to this potential measurement error.

We discuss three theoretical mechanisms that might link the share of women in the workplace to higher levels of appreciation. An obvious mechanism would of course be that women workers behave more communally in the workplace than men (e.g., Babcock et al. 2017). Another might be that a workplace's gender composition affects the behavior of all workers by altering its workplace culture (Kanter 1977; Gutek and Morash 1982). A third mechanism might be that workplaces with more women have some other trait, such as a strong social mission or high status, that attracts more or fewer communal workers of one or both genders.

Extending the analysis to appreciation expressed by one's manager reveals weak relationships in the same direction as our main results. People with a female manager self-report about 0.05–0.10 standard deviations more appreciation than those with a male manager. These relationships are symmetrical by gender and do not indicate a gender-congruity effect in which women managers are more appreciative of women subordinates, and vice versa.

We end the paper by demonstrating strong correlations between appreciation from colleagues and worker well-being in our data. People who feel more appreciated self-report higher job satisfaction, experience fewer feelings of unease when they go to work, and are less likely to consider quitting their job for health reasons. These correlations are of similar sizes in sub-samples of women and men. The results support the substantive importance of our main results and indicate that women and men have similar-sized preferences for appreciation at work.

Our paper demonstrates new economic and social benefits of gender diversity in the labor market. The results suggest that employing women enhances the quality of the interpersonal work environment. This implies that hiring more women might constitute a lower-cost alternative to large-scale worker training programs to help reduce the turnover costs associated with disrespectful interactions (Alan et al. 2023).³ They also indicate that increased diversity might reduce costs related to stress and ill health

³ Text analysis of over a million reviews on Glassdoor, which publishes anonymous employee reviews of workplaces, found that disrespectful interactions are a top factor in workers' negative perceptions of workplace culture, which features more prominently than negative views on economic compensation in workers' descriptions of why they left their jobs (Sull et al. 2022a, 2022b).

by raising workers' perceived rewards for their efforts and increasing their relatedness to others in the workplace (Ryan and Deci 2000; Siegrist 1996).

The findings advance our understanding of gender gaps in non-monetary work conditions. This literature has described how women tend to hold jobs with more time–space flexibility and which are more meaningful (e.g., Goldin 2014; Maestas et al. 2023; Burbano et al. forthcoming). It has also described variation in *interpersonal work environments*—how people behave toward each other in the workplace, and mainly negative behaviors such as sexual harassment (Folke and Rickne 2022; Alan et al. 2022; Adams-Prassl et al. 2023). We concentrate on positive interpersonal behaviors and show that workers in workplaces with more women benefit from much higher levels of appreciation from their colleagues.

The results provide broader insights into the relationship between work conditions and gender inequality in wages and promotions. Our findings indicate that women invest more time in making others feel appreciated for their work, which echoes Babcock et al.'s (2017) discussion of women's communal behaviors in taking on “non-promotable tasks.” Exhibiting appreciation of colleagues provides value to the employer in a similar way, in this case by creating a workplace environment characterized by positive social relationships and positive reinforcement of people's work efforts.

Despite the positive impact of appreciation toward others at work on the organization, previous research suggests that that showing appreciation might not facilitate promotions—and may even make women less likely to be promoted (Nandkeolyar et al. 2022). Our results suggest that raising employers' valuations of communal behaviors at work might offer an additional avenue toward career equality. This type of change might also sidestep the potential backlash associated with the alternative advice of enhancing women's career prospects by encouraging them to “lean in” by engaging in agentic behaviors (Rudman and Glick 2001).⁴

This paper should be of interest to at least two other disciplines beyond economics. First, we contribute to the social psychology literature on how stereotypical behaviors for women and men affect the interpersonal work environment (e.g., Gutek and Cohen 1987; Glick et al. 2018). Second, we advance the management literature on positive practices in the workplace by studying how gender inclusivity contributes to positive interpersonal treatment (e.g., Cameron et al. 2011; Seppala and Cameron 2015).

⁴ We do not argue that agentic behaviors like competitiveness are mutually exclusive with communal behaviors like appreciation and care for others. A competitive work environment may raise productivity without negatively affecting the interpersonal work environment (as argued by Buser et al. 2021).

Data and Variables

We measure appreciation at work using in the nationally representative Swedish Work Environment Survey, which the government administers every other year to track work conditions.⁵ We pool 13 biannual cross-sections for 1995–2019 and use two survey questions. The first asks whether “your manager shows appreciation for something you have done at work,”⁶ and the second asks if “other people show appreciation for something you have done at work (for example colleagues, patients, customers, clients).”⁷ Responses are scored from (1) not at all to (5) every day.

In the main analysis we use answers to the question on appreciation from “others” to create the variable *Appreciation from colleagues*. This source of appreciation should be the main component in the responses, given that “colleagues” is the first group mentioned in the examples and because the wording excludes appreciation from managers by referring to the first question. Several empirical tests support this interpretation. Most importantly, we restrict the sample to respondents who report having no contact in their work “with groups like patients, customers, and clients” (see Figure 1).

To obtain information on the gender composition of survey respondents’ workplaces, we link the survey data to administrative data at the individual-year level via anonymized personal identification (ID) codes. This administrative data includes all Swedish permanent residents. Variables include basic demographic traits as well as information on earnings from tax records.

We define an individual’s workplace as the unique combination of the firm and establishment ID codes of their primary source of labor or business income in a calendar year. This combination captures a single building or street address where a firm has operations, such as a specific Walmart store. We calculate the proportion of women in this unit after removing the respondent, using data on binary sex at birth from birth records. Appendix Figure A1 displays the distribution of this variable.

Although our survey data is a repeated cross-section of workers, many workplaces have numerous responses. This allows us to establish that changes in the share of women in a workplace over time are associated with changes in collegial appreciation. Since larger firms are more likely to have many responses over time, and these workplaces have less variation over time in the share of women, this reduces precision more than the sample size might suggest when we rely on within-workplace variation.

Additional variables from the administrative data include age, (global) region of birth, household composition (parenthood and civil status), education level, and workplace size. With few exceptions,

⁵ For more information about this survey, see <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/labour-market/work-environment/the-work-environment-survey/>.

⁶ In Swedish: Händer det att din chef visar uppskattning för något du gjort?

⁷ In Swedish: Händer det att andra personer visar uppskattning för något du gjort (t ex arbetskamrater, patienter, kunder, klienter)?

these are objective measurements from administrative data with very few missing values.⁸ Data on industrial sector comes from tax records and applies to the survey respondent's main job in the survey year. Data on occupation comes from the mandatory Swedish Salary Statistics survey, which is available for all our survey respondents. We also use this source for data on wages in our sensitivity analyses, noting that the wage variable has a substantial proportion of missing values.⁹

Additional variables from the survey are as follows. We create a dummy for *Lack of external contact at work*, which takes a value of 1 for respondents whose work does not involve contact with outside groups. We include a dummy variable for having a *Female manager* based on a direct question about this. We classify a respondent as a manager if they report that their job involves *leading or delegating the work of others*; we define them as a subordinate if they report that this is not the case.

The extended analysis of worker well-being uses three additional survey questions. *Job satisfaction* is reported using a 5-step Likert scale ranging from *Very dissatisfied* to *Very satisfied*, and *Unease when going to work* is a 5-step Likert scale ranging from *Not at all, rarely in the last 12 months*, to *Every day*. We recalculate both of these ordinal variables as Z-scores. *Leave considerations* is a dummy for an affirmative answer to the question: "In the last year, did you consider leaving your job for health reasons?" Appendix Table A1 lists all survey questions in our analysis along with our coding choices.

Pooling the survey data generates 96,680 responses about collegial appreciation. Restricting this sample by respondent age (18–64) and workplace size (five or more employees) removes approximately 10% of the sample and leaves 87,294 observations. Further removing missing data on any of the demographic variables, workplace/firm ID codes, or occupation or industry codes removes another 10%. The final analysis sample contains 81,550 observations.

Appendix Table A2 compares traits in the survey sample with those of the full Swedish labor force restricted to the same age interval and workplace sizes. The sample is also representative with respect to the distribution of workplace sizes and the workplace share of women. It is also highly representative on most socio-demographic traits except region of birth: people born outside of Europe are under-represented (2% in the analysis sample and 6% in the population). We use Statistics Sweden's sample weights as analytical weights throughout the paper.

⁸ The main exception is the *Education* variable, based on immigrants' self-reported level of education obtained in their country of origin.

⁹ Occupation is available for all respondents. Wage data is available after 1997 for all respondents working in large and medium-sized firms, and a random sample of respondents who work in small firms.

Descriptive Statistics

Responses about appreciation from colleagues have a normal distribution across the question's five categories. Similar proportions fall into the bottom category of *Never or rarely* receiving appreciation and the top category of receiving it *Every day* (11% and 10%, respectively). There are also similar proportions of respondents in the three middle categories, in which respondents receive appreciation *a couple of days per month* (31%), *one day per week* (25%), or *a couple of days per week* (23%). The mean of the ordinal variable is 2.99, which corresponds to receiving appreciation *one day per week*, and the standard deviation is 1.17.

Women's average level of receiving appreciation from colleagues is 0.22 standard deviations higher than that of men. Beyond gender, averages vary little across categories of education, birth region, and age, but small workplaces have a higher average than larger ones (details in Appendix Table A2). Comparing levels of appreciation over time shows no apparent time trend. Over the 13 years in our sample, the highest and lowest yearly values differ by only 0.12 standard deviations.

Results

Figure 1 displays how appreciation from colleagues varies depending on the share of women in the respondent's workplace. We standardize the *Appreciation* variable to have a mean of 0 and a standard deviation of 1. The figure shows binned averages of this standardized variable by the workplace share of women. The relationship between appreciation and the share of women employees is strong and positive for both women and men. There is no sign of a gender-congruency effect in which women benefit more from female colleagues and men more from male colleagues. The graph on the left shows that in the full sample of respondents, the level of self-reported appreciation from colleagues is about 0.6 standard deviations higher in workplaces with 100% women compared to those with 0%.

The right side of Figure 1 replicates the relationship using the sub-sample of respondents whose job involves no interactions with people not employed in their workplace. The whole distribution of responses shifts downward in this sub-sample, which demonstrates people other than colleagues offer a significant amount of appreciation. Yet since the slope in this sample is the same as in the full sample, this supports our interpretation that differences in appreciation from *colleagues*, rather than from the other groups mentioned in the survey, explain why self-reports differ across workplaces with different shares of women.

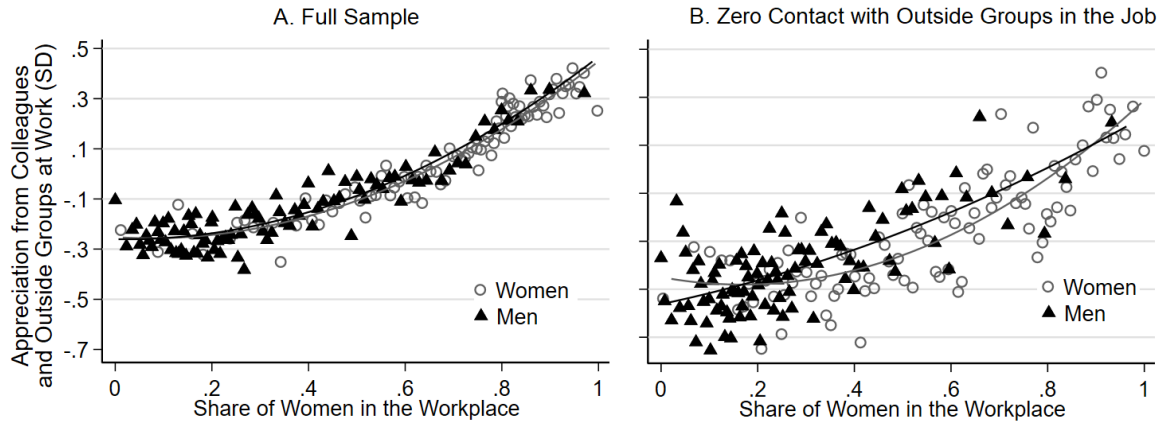


Figure 1: Appreciation at Work and the Share of Women in the Workplace.

Notes: The figure shows binned averages of a standardized categorical variable for self-reported appreciation by non-managers in the workplace. Each sub-sample of men and women is split into 100 equally sized bins of the X-variable. A workplace is defined as a unique combination of plant and organizational ID codes, and we calculate the share of women in each workplace using population-wide register data. In the right-hand-side graph, the dataset is restricted to survey respondents who self-report having no contact with “groups like patients, customers, and clients” in their jobs. The data consists of 13 pooled cross-sections of the Swedish Work Environment Survey (1995–2019), N(Women left graph): 43,727; N(Men left graph): 37,853; N(Women right graph): 6,822; N(Men right graph): 5,198.

Critique of our analysis might be based on the self-reported nature of appreciation at work. *Social desirability* bias or *demand bias* would affect answers if respondents in workplaces with more women feel socially obliged to present the interpersonal environment in their workplace in a more positive light, or feel that the surveyor desires this result. Both behaviors are unlikely in our case due to the nature of the survey data. Social desirability bias is unlikely because the survey is completely anonymous and the employer is never informed that an employee was sampled. Demand bias is equally unlikely because the topic of appreciation has very low salience among more than 100 survey questions.

Column 1 replicates the bivariate relationship of 0.6 standard deviations from the graphical analysis. The specification in Column 2 controls for traits of the respondent and their workplace using dummies for respondent sex at birth, age, region of birth, education, and workplace size. The constant size of the coefficient of interest rules out the possible concern that our main relationship is driven by differences across these demographic groups in interpretations of interpersonal behavior at work. An extended analysis holds constant the respondent’s wage, which addresses the potential issue of *justification bias*, in which people self-report a nicer work environment to justify their employment in low-wage workplaces that also have more women (results in Panel B, Appendix Table A3).

The next two columns add fixed effects for workplaces (Column 3) and for the combination of firm and year (Column 4). The relationship between appreciation from colleagues and the share of women remains sizeable at 0.3–0.5 standard deviations in these specifications. Changes in the share of women within workplaces over time are associated with sizeable shifts in self-reported appreciation. There is also a sizeable association between the share of women in the workforce and the level of appreciation

when only comparing different workplaces that belong to the same firm in the same year (such as different Walmart stores).

Splitting the sample by sex at birth indicates that men's results are very similar to those in the full sample across all specifications. Women's results are similar for three out of four specifications. The coefficient drops to near zero and loses statistical significance in the specification with workplace fixed effects. One potential reason for this might be women's greater likelihood of working in larger workplaces where the independent variable varies less.

Table 1: Regression Estimates for Collegial Appreciation and the Share of Women in the Workplace.

DV: Collegial Appreciation (SD)	(1)	(2)	(3)	(4)
Sample: Full Sample				
Share of Women	0.60*** (0.01)	0.64*** (0.02)	0.29** (0.12)	0.48*** (0.04)
Observations	81,734	81,734	51,752	50,979
Sample: Women				
Share of Women	0.73*** (0.03)	0.77*** (0.03)	0.05 (0.18)	0.52*** (0.06)
	43,718	43,718	24,761	28,865
Sample: Men				
Share of Women	0.51*** (0.03)	0.59*** (0.03)	0.47** (0.21)	0.56*** (0.07)
	38,016	38,016	20,221	17,470
Sample: Subordinates				
Share of Women	0.57*** (0.03)	0.63*** (0.03)	1.03*** (0.27)	0.70*** (0.08)
	25,250	25,250	11,042	11,825
Sample: Supervisors				
Share of Women	0.62*** (0.02)	0.66*** (0.02)	0.37** (0.15)	0.42*** (0.05)
	56,391	56,391	32,551	34,014
Year Fixed Effects	x	x	x	x
Control Variables		x	x	x
Workplace Fixed Effects			x	
Firm-Year Fixed Effects				x

Notes: The table reports estimates of the coefficient on the share of women in regressions in which the dependent variable is *Appreciation from colleagues* in standard deviations. Control variables are four dummies for age intervals, three dummies for (global) region of birth, four dummies for household composition (parenthood and civil status), four dummies for education level, and five dummies for workplace size. Table A2 lists the exact categorizations for each variable. Standard errors clustered at the workplace level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Splitting the sample into supervisors and subordinates generates a similar level of consistency in the results. People at both lower and higher rungs of the career ladder report substantially more appreciation from colleagues in workplaces with more women. This implies that potential improvements to the collegial corporate culture from hiring more women accrue to both higher and lower levels of the workforce.

Two sets of sensitivity analyses that re-run our analysis in the non-contact sample and includes wages as a control variable (Table A3, Panels A and B) demonstrate that the results remain robust, but with some exceptions. The specification with workplace fixed effects has a similar-sized coefficient on the share of women and an even larger coefficient in the sample with non-contact jobs. But the precision is relatively low and the estimates do not reach the 5% level of statistical significance.

Comparison of industries and occupations

There are strong gender norms associated with industries and occupations that prescribe particular behaviors to workers and influence organizational cultures. They might also mediate the relationship between workplace sex composition and collegial appreciation. Our main result might therefore derive primarily from variation (between workplaces or within firms) in sectors or occupations with certain traits, which would have important policy implications. For example, changing the gender composition of workplaces in male-dominated industries or occupations might not increase collegial appreciation.

We split our sample in three ways to analyze this variation. First, we split the sample into public or private workplaces, and the main results from Table 1 largely replicate in each of these groups (results in Appendix Table A3, Panels C and D). Second, we split the sample by 2-digit industry codes and third, we split it by two-digit occupation codes. Dropping codes with fewer than 1,000 respondents leaves 22 industries (86% of the sample) and 18 occupations (97% of the sample). The relatively small remaining samples preclude reliable estimations from the specifications with workplace or firm-year fixed effects.

We instead run the specification with control variables (Column 2, Table 1) in each sub-sample. The results, displayed in Figure 2, indicate sizeable relationships between collegial appreciation and the workplace share of women in most industry and occupation categories. We organize these estimates on the x-axis by the share of women workers in the 2-year industry category; the vertical lines depict 95% confidence intervals. The estimates vary in size and precision, but most are statistically significant at the 5% level and nearly all are significant at the 10% level. Most coefficient sizes are around 0.4. Interestingly, both women-dominated and male-dominated industries can be found among the larger estimates. These include male-dominated sectors like construction and manufacturing, gender-balanced industries like financial services, and female-dominated ones like education. Appendix Tables A4 and A5 list all estimates.

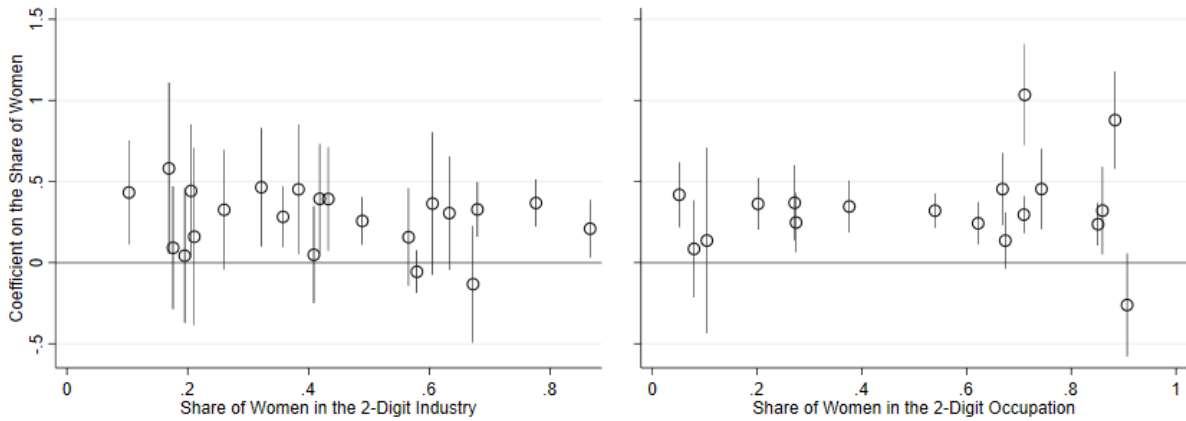


Figure 2: Relationship between Appreciation from Colleagues and the Share of Women in the Occupation within Industries (Left) and Occupations (Right).

Notes: The table reports split-sample regression results for 2-digit industries and 2-digit occupations. The dependent variable is *Appreciation from colleagues* in standard deviations, and the markers denote the point estimate on the share of women in the workplace. Control variables are four dummies for age intervals, three dummies for (global) region of birth, four dummies for household composition (parenthood and civil status), four dummies for education level, and five dummies for workplace size. Standard errors are clustered at the workplace level, and vertical lines denote 95% confidence intervals.

Collegial support and conflicts

We have interpreted responses about receiving appreciation for one's work from non-managers as evidence that appreciation from *colleagues* varies strongly according to the share of women in the workplace. In addition to the previous sensitivity analysis in Figure 1, we reflect further on this point by analyzing two survey questions that specifically ask about behaviors among colleagues. One question asks if the respondent has “opportunities to get support and encouragement from colleagues when work feels hard”, and the other asks if they are “involved in any conflict with colleagues at work”.¹⁰ We standardize the Likert response scales for these two questions and re-run the regression specifications from Table 1 (Table A1 lists the exact response scales for each question).

The results establish that support from colleagues has the same positive relationship with the workplace share of women as in our main analysis of appreciation from colleagues. Going from 0% to 100% women is associated with a 0.30–0.40 standard deviation higher level of collegial support (detailed results in Appendix Table A6). This result supports our interpretation that the main results reflect a more communal work environment among colleagues in workplaces with more women.

There is a noteworthy difference between the results for support from colleagues and our main results. The analysis of appreciation from colleagues revealed similar-sized relationships for women and men respondents, while the relationship between collegial support and the share of women in the workplace is more than twice as strong for women than for men. A plausible explanation might be that support during difficult times is a behavior more tightly linked to homosocial friendship relations

¹⁰ In Swedish: Har du möjlighet att få stöd och uppmuntran från arbetskamrater, när arbetet känns besvärligt?

compared to showing appreciation for someone's work. At face value, the results imply that both women and men receive more appreciation for their work when a larger proportion of their colleagues are women, and while both also benefit from more support from colleagues, women do so to a greater extent than men.

We find no relationship between the share of women and self-reported conflicts with colleagues. Some results even indicate that men self-report more conflicts at work in workplaces with a higher share of women. This might seem contradictory if we believe that appreciation, support, and conflicts are related social behaviors, but intuitive if we consider the higher rates of sexual harassment against men in women-dominated workplaces documented in recent research (Folke and Rickne 2022). Harassment is closely related to conflicts among colleagues, both by forming part of the conflict itself and because the harassing behavior triggers conflict between colleagues (Raver and Gelfand 2005). And while harassment and conflicts are important aspects of the interpersonal work environment, they are very rare relative to appreciation¹¹ and support from colleagues. This explains how men in women-dominated workplaces might experience higher levels of collegial appreciation at the same time that a smaller subset experiences more harassment victimization and conflicts.

Appreciation from the supervisor

If women colleagues are more appreciative of their co-workers, we might expect the same of women supervisors. There is some evidence of this in our data, but the relationship is weaker than that for collegial appreciation. Using the same sequence of regression specifications as in Table 1, we regress the level of self-reported appreciation from the survey respondent's supervisor on a dummy variable indicating whether that supervisor is a woman. The results show that average manager-to-subordinate appreciation is 0.05–0.1 standard deviations higher when the manager is a woman. This pattern exists in the full sample and when splitting the data by sex at birth.

Why do we not find a stronger gender gap in appreciation from managers? One explanation might be related to promotions. Women might behave more communally and agreeably in the workplace, but behaving this way might not be conducive to promotion even if it benefits the firm (following the discussion in, e.g., Babcock et al. 2017). Evidence from several academic disciplines shows that agreeable people have lower incomes and are viewed as less suitable for promotion; agreeable women receive the largest "penalty" for this trait (Mueller and Plug 2006; Buser et al. 2021; Nandkeolyar et al. 2022). If showing appreciation for others is not conducive to being promoted, a gender gap in this behavior among people at the lower levels of the organization will be attenuated within the smaller subset of people who have moved up to a managerial rank.

¹¹ Only 5% of respondents self-reported having had conflicts with colleagues more frequently than "at some point in the last 12 months."

Table 2: Manager Gender and Manager-to-Employee Appreciation.

DV: Manager-to-Employee Appreciation (SD)	(1)	(2)	(3)	(4)
Sample: Full Sample				
Woman manager	0.01 (0.01)	0.02** (0.01)	0.07*** (0.02)	0.04*** (0.01)
Observations	62,198	62,198	37,473	38,637
Sample: Women				
Woman manager	0.03* (0.01)	0.04*** (0.01)	0.11*** (0.02)	0.09*** (0.02)
	33,878	33,878	18,048	22,236
Sample: Men				
Woman manager	0.08*** (0.02)	0.07*** (0.02)	0.06** (0.03)	0.05* (0.03)
	28,320	28,320	14,184	12,758
Year Fixed Effects	x	x	x	
Control Variables		x		
Workplace Fixed Effects			x	
Firm-Year Fixed Effects				x

Notes: The table reports estimates of the coefficient on a dummy variable for having a woman manager in a regression where the dependent variable is *manager-to-employee appreciation* in standard deviations. Control variables are four dummies for age intervals, three dummies for (global) region of birth, four dummies for household composition (parenthood and civil status), four dummies for education level, and five dummies for workplace size. Table A2 lists the exact categorizations for each variable. Standard errors clustered at the workplace level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Consequences of collegial appreciation

Appreciation from colleagues should be positively associated with worker well-being. Fundamental theories in psychology describe how a sense of feeling connected to and cared for by others is central to human life. For example, Self-determination Theory (Ryan and Deci 2000) describes how this type of connectedness is one of three central social-contextual conditions that enhance people's intrinsic motivation, self-regulation, and well-being (for specific applications to the world of work, see e.g., Van der Broeck et al. 2010). Similarly, the Effort–Reward Imbalance model describes how esteem from colleagues is an important component of reducing stress brought on by a demanding job (Siegrist 1996; Siegrist and Li 2016). Previous empirical analysis bears out the expected correlations between appreciation and various measurements of well-being and stress (Stocker et al. 2010).

Figure 2 displays relationships between collegial appreciation and three measures of worker well-being. We regress each well-being measurement on collegial appreciation in standard deviations and plot the coefficient on appreciation together with a 95% confidence interval. The four markers in each graph come from different regression specifications; their respective sets of control variables are listed in the legend below the graphs. The upper row of graphs shows the results for women and the lower row for men.

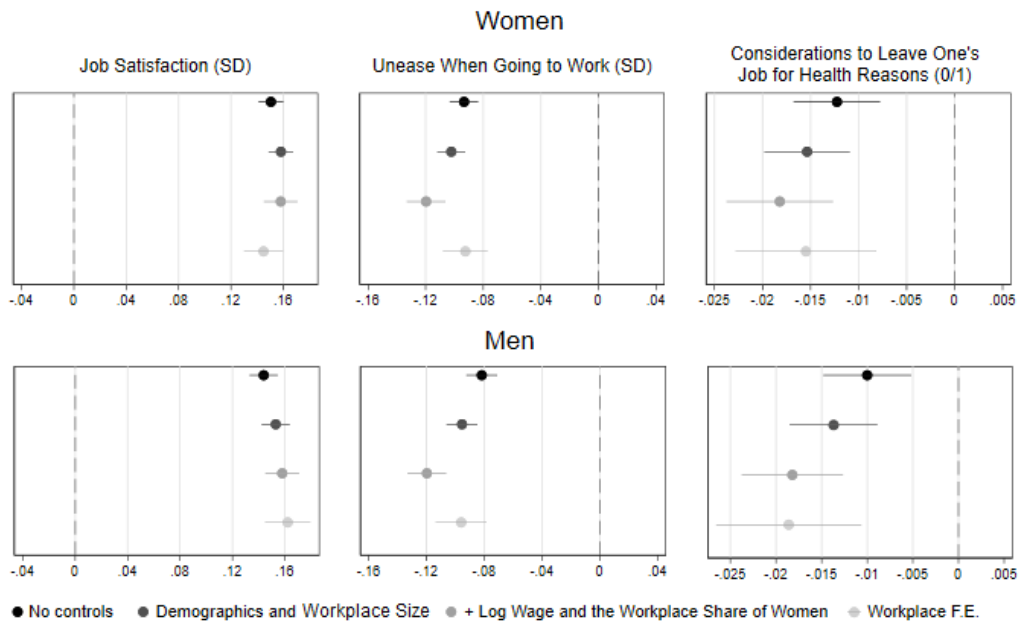


Figure 2. Relationships between Collegial Appreciation and Worker Well-being.

Notes: The figure shows the estimated coefficients from regressions in which the dependent variables are three measurements of self-reported well-being at work and the independent variable is self-reported appreciation from colleagues in standard deviations. All regressions include year fixed effects. Table A1 describes the coding of these variables. Horizontal lines represent 95% confidence intervals. The data comes from 13 pooled cross-sections of the Swedish Work Environment Survey. Bivariate regressions are reported as black dots. Gray and light gray dots represent estimates from adding the control variables listed in the legend. Demographic controls are four dummies for marital and parental status, four dummies for age categories, two dummies for having a secondary or tertiary education, two dummies for being born in a different European country or outside Europe, and three dummies for workplace size. For the full estimation output, see Appendix Table A7.

More appreciation from colleagues is associated with higher self-reported well-being at work among both women and men. A 1-standard-deviation higher level of collegial appreciation is associated with a 0.15-standard-deviation higher level of self-reported job satisfaction and a 0.1-standard-deviation lower level of feelings of *Unease when going to work*. It is also associated with a lower probability of self-reported *Considerations of leaving one's job for health reasons in the last 12 months*. Such leave considerations drop by about 10–15% when self-reported collegial appreciation increases by one standard deviation (1.5 to 2.0 percentage points relative to a variable mean of 0.21).

Discussion

We have shown that people employed in workplaces with a larger share of women experience more appreciation for their work from colleagues. This result comes from nationally representative survey data on experiences of appreciation and an exact continuous measurement of the share of women in each respondent's workplace. The analysis showed strong correlations between the share of women in a workplace and experienced appreciation within the same workplace over time and between different workplaces belonging to the same firm in the same year. Extending the analysis to discuss potential impacts of appreciation showed that appreciation correlates positively with several self-reported measurements of well-being.

There are several potential reasons why workers in workplaces with more women self-report more appreciation. One is, of course, that women colleagues express more appreciation than male colleagues, an interpretation that aligns with a large literature on gender gaps in expectations of communal behavior or agreeableness (Eagly et al. 2020, Hsu et al. 2021). Another reason might be that women and men both behave differently when the share of women is high. This could happen when expected behaviors associated with women spill over to workplace or occupational cultures.

If women workers are more appreciative of their colleagues, hiring more women will improve the interpersonal work climate. If women's presence in workplaces or occupations affects the behavior of both women and men via spillovers on culture, hiring more women in, say, a male-dominated finance firm would likely lack an effect on appreciation in the short term. In this case, the benefits of gender inclusivity would be long-term. Hiring more women would slowly affect workplace culture or, alternatively, many finance firms hiring more women would shift the occupational stereotype in a worker-friendly direction in the long run. Notably, these positive impacts would exist in the current social situation of strong socialization on communal traits by gender, but would not necessarily extend to a future situation in which improved gender equality might soften these expectations.

Broadening the discussion further, recent research has discussed how women's inclusion in the paid labor force affects economic growth via an improved allocation of human capital (Hsieh et al. 2019). Our results suggest an additional channel. More women in the labor force may increase productivity via, for example, improved job satisfaction and reduced turnover as the workplace becomes a more positive and appreciative place. Such potential links between gender equality, positive organizational environments, and firm outcomes may be relevant directions for future research in the lab, with observational data, or at the macro level.

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Appendix: Workplace Sex Composition and Appreciation at Work

Table A1: Coding and Summary Statistics for Work Environment Survey Questions.

Variables	Coding	Mean (SD)
Appreciation from colleagues	Z-score variable based on the Likert response scale for the question: Does it happen that other people show appreciation for something you have done at work (for example colleagues, patients, customers, clients)? 1 = Not at all, rarely in the last 3 months 2 = A couple of days per month (1 day of 10) 3 = One day per week (1 day of 5) 4 = A couple of days per week (1 day of 2) 5 = Every day	2.99 (1.17) N= 81,580
Manager-to-employee appreciation	Z-score variable based on the Likert response scale for the question: Does it happen that your manager shows appreciation for something you have done? [same categories as collegial appreciation]	2.17 (1.13) N=80,760
Lack of external contact at work	Binary indicator (coding below) based on the question: Does your work involve interactions with people who are not employed at your workplace? (such as patients, customers, clients)? 1 = Not at all 0 = A little (perhaps 1/10 of the time); About ¼ of the time; Half of the time; About ¾ of the time; Almost all the time	0.17 (0.37) N=73,600
Support from Colleagues	Z-score variable based on the Likert response scale for the question: Do you have opportunities to get support and encouragement from colleagues when work feels hard? 1 = Never 2 = Most of the time not 3 = Most of the time 4 = Always	3.19 (0.72) N=80,699
Conflicts with Colleagues	Z-score variable based on the Likert response scale for the question: Are you involved in any conflict with colleagues at work? 1 = Not at all, rarely in the last 12 months 2 = At some point in the last 12 months 3 = A couple of times in the last 3 months 4 = A couple of days per month (1 day out of 10) 5 = One day per week (1 day out of 5) 6 = A couple of days per week (1 day out of 2) 7 = Every day	1.56 (0.99) N=81,221
Female supervisor	Is your closest manager male or female? 1 = Female 0 = Male	0.40 N=62,522
Supervisor	Does your job involve leading or delegating the work of others? 1 = Yes; 0 = No	0.31 N=81,487
Job satisfaction	Z-score variable based on the Likert response scale for the question: I am, generally speaking... 1 = very dissatisfied with my job 2 = dissatisfied with my job 3 = neither satisfied nor dissatisfied with my job 4 = satisfied with my job 5 = very satisfied with my job	4.01 (1.01) N=81,153
Unease when going to work	Z-score variable based on the Likert response scale for the question: Do you feel unease when going to work? [same categories as collegial appreciation]	1.72 (1.04) N=80,810
Leave considerations	In the last year, have you considered changing jobs or becoming self-employed for health reasons? 1 = Yes; 0 = No	0.21 (0.41) N=63,040

Notes: For variables that are standardized in the empirical analysis, the table shows means based on the underlying ordinal variable.

Table A2: Summary Statistics: Analysis Sample vs. the Population.

	Coding	Survey sample		Employed Population (18–65) Share
		Average appreciation from colleagues	Share	
Share of women in the workplace	Share of women after excluding the respondent			
0–25%		2.76	0.27	0.34
26–50%		2.88	0.21	0.20
51–75%		3.03	0.23	0.21
76–100%		3.31	0.29	0.25
Sex at birth				
Women		2.88	0.54	0.50
Man		3.10	0.46	0.50
Education level				
Primary	3 binary indicators, one for each education level	2.90	0.12	0.13
Secondary		3.01	0.47	0.49
Tertiary		2.98	0.41	0.38
Age				
16–35	3 binary indicators, one for each age bracket	3.11	0.28	0.36
36–50		2.93	0.40	0.36
51–64		2.92	0.33	0.27
Family composition				
Married/partner with children	4 binary indicators, one for each combination of civil and parental status. Children include any child still living in the household, regardless of age. Partner refers to cohabitants. Single includes divorcees or widows/widowers.	2.94	0.59	0.52
Married/partner without children		3.03	0.05	0.07
Single with children		3.02	0.14	0.15
Single, no children		3.08	0.21	0.26
Birth region				
Sweden	3 binary indicators, one for each birth region	2.98	0.92	0.87
Europe (excl. Sweden)		3.02	0.06	0.07
Outside of Europe		3.09	0.02	0.06
Workplace size				
5–10	4 binary indicators, one for each size bracket	3.12	0.10	0.11
11–25		3.05	0.17	0.17
26–100		2.98	0.31	0.29
101+		2.93	0.42	0.43
Observations		81,550		51,037,101

Table A3: Sensitivity Analysis.

DV: Collegial Appreciation (SD)	(1)	(2)	(3)	(4)
A. Sample: Non-Contact Jobs				
Share of Women	0.69*** (0.05) 12,017	0.69*** (0.05) 12,017	0.64 (0.56) 5,517	0.60*** (0.19) 4,667
B. Controlling for the log wage				
Share of Women	0.65*** (0.02) 40,777	0.69*** (0.02) 40,777	0.29 (0.19) 27,615	0.40*** (0.05) 33,397
C. Sample: Public Sector				
Share of Women	0.70*** (0.03) 34,535	0.72*** (0.03) 34,535	0.17 (0.17) 25,173	0.50*** (0.04) 32,630
D. Sample: Private Sector				
Share of Women	0.59*** (0.02) 47,016	0.57*** (0.02) 47,016	0.31* (0.16) 25,810	0.45*** (0.10) 18,030
Year Fixed Effects	x	x	x	
Control Variables		x		
Workplace Fixed Effects			x	
Firm-Year Fixed Effects				x

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table A4: Bivariate Relationships within 2-digit Industrial Sectors.

Code	Name	Estimate	Std. Error	Share Women
45	Construction	0.44	0.16	0.10
60	Land transport; transport via pipelines	0.09	0.19	0.18
20	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.81	0.34	0.18
28	Manufacture of fabricated metal products, except machinery and equipment	0.04	0.21	0.19
29	Manufacture of machinery and equipment n.e.c.	0.44	0.21	0.21
34	Manufacture of motor vehicles, trailers and semi-trailers	0.16	0.28	0.21
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	0.34	0.19	0.26
72	Computer and related activities	0.46	0.19	0.32
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	0.28	0.10	0.36
15	Manufacture of food products and beverages	0.45	0.20	0.38
70	Real estate activities	0.05	0.15	0.41
63	Supporting and auxiliary transport activities; activities of travel agencies	0.39	0.17	0.42
64	Post and telecommunications	0.39	0.16	0.43
74	Other business activities	0.26	0.08	0.49
92	Recreational, cultural and sporting activities	0.16	0.15	0.57
75	Public administration and defense; compulsory social security	-0.06	0.07	0.57
65	Financial intermediation, except insurance and pension funding	0.36	0.22	0.61
91	Activities of membership organizations n.e.c.	0.31	0.18	0.63
55	Hotels and restaurants	-0.13	0.18	0.67
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	0.33	0.09	0.68
80	Education	0.36	0.07	0.78
85	Health and social work	0.21	0.09	0.87

Table A5: Bivariate Relationships within 2-digit Occupations

Code	Name	Estimate	Std. Error	Share Women
12	Corporate managers	0.35	0.38	0.08
21	Physical, mathematical and engineering science professionals	0.25	0.27	0.09
22	Life science and health professionals	1.03	0.71	0.16
23	Technical professionals	0.45	0.67	0.11
24	Other professionals (business, legal, social science, public service, administration etc.)	0.24	0.62	0.07
31	Physical and engineering science associate professionals	0.36	0.20	0.08
32	Life science and health professionals	0.88	0.88	0.15
33	Teaching associate professionals	-0.26	0.91	0.16
34	Other associate professionals	0.32	0.54	0.05
41	Office clerks	0.30	0.71	0.06
42	Customer services clerks	0.32	0.86	0.14
51	Personal and protective service workers	0.24	0.85	0.07
52	Models, salespersons and demonstrators	0.14	0.67	0.09
71	Extraction and building trades workers	0.42	0.05	0.10
81	Stationary-plant and related operators	0.14	0.10	0.29
82	Machine operators and assemblers	0.37	0.27	0.12
83	Drivers and mobile-plant operators	0.09	0.08	0.15
91	Sales and services elementary occupations	0.45	0.74	0.13

Table A6: Workplace Share of Women, Support from Colleagues, and Conflicts with Colleagues.

DV: Collegial Support (SD)	(1)	(2)	(3)	(4)
Sample: Full Sample				
Share of Women	0.33*** (0.01)	0.37*** (0.01)	0.29** (0.11)	0.38*** (0.04)
Observations	80,640	80,640	50,854	50,145
Sample: Women				
Share of Women	0.26*** (0.02)	0.30*** (0.02)	0.31* (0.17)	0.30*** (0.05)
	43,201	43,201	24,392	28,496
Sample: Men				
Share of Women	0.11*** (0.02)	0.13*** (0.02)	0.17 (0.20)	0.16** (0.07)
	37,439	37,439	19,765	17,039
DV: Collegial Conflicts (SD)				
Sample: Full Sample				
Share of Women	0.06*** (0.02)	0.06*** (0.02)	0.11 (0.13)	-0.02 (0.04)
	81,192	81,192	51,296	50,544
Sample: Women				
Share of Women	0.04 (0.03)	0.05* (0.03)	0.07 (0.19)	0.02 (0.06)
	43,490	43,490	24,591	28,703
Sample: Men				
Share of Women	0.26*** (0.03)	0.27*** (0.03)	0.13 (0.22)	0.13 (0.08)
	37,702	37,702	19,970	17,211
Year Fixed Effects	x	x	x	
Control Variables		x		
Workplace Fixed Effects			x	
Firm-Year Fixed Effects				x

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Analysis of Well-being at Work.

Sample: Women	(1)	(2)	(3)	(4)
DV: Job Satisfaction (SD)				
Appreciation from Colleagues (SD)	0.144*** (0.005) 37,648	0.154*** (0.005) 37,648	0.159*** (0.007) 23,466	0.162*** (0.009) 37,648
DV: Unease When Going to Work (SD)				
Appreciation from Colleagues (SD)	0.150*** (0.005)	0.158*** (0.005)	0.159*** (0.007)	0.145*** (0.008)
Observations	43,475	43,475	23,466	43,475
DV: Considering Switching Jobs for Health Reasons (1/0)				
Appreciation from Colleagues (SD)	-0.082*** (0.005) 37,496	-0.097*** (0.005) 37,496	-0.121*** (0.007) 23,408	-0.096*** (0.009) 37,496
Sample: Men				
DV: Job Satisfaction (SD)				
Appreciation from Colleagues (SD)	-0.093*** (0.005) 43,285	-0.103*** (0.005) 43,285	-0.121*** (0.007) 23,408	-0.092*** (0.008) 43,285
DV: Unease When Going to Work (SD)				
Appreciation from Colleagues (SD)	-0.010*** (0.002)	-0.015*** (0.002)	-0.018*** (0.003)	-0.019*** (0.004)
Observations	29,084	29,084	22,186	29,084
DV: Considering Switching Jobs for Health Reasons (1/0)				
Appreciation from Colleagues (SD)	-0.012*** (0.002) 33,941	-0.016*** (0.002) 33,941	-0.018*** (0.003) 22,186	-0.015*** (0.004) 33,941
Year Fixed Effects	x	x	x	x
Demographic Controls and Workplace Sizes		x	x	
Wage and Workplace Share of Women			x	
Workplace Fixed Effects				x

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1



Figure A1: Distribution of the Share of Women in the Workplace.