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Tailored to Women, Provided to Men? Gendered Occupational Inequality in Access to Flexible Working-Time Arrangements

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Abstract

Numerous policy-makers and social scientists promote flexible working as a means to reconcile work and family life, often explicitly targeting women. Accordingly, one might expect that flexible working-time arrangements are more prevalent in occupations with a high share of female employees. Yet, previous evidence indicates the opposite. To address this puzzle, we investigate the occupational opportunity structures for flexible working. A devaluation argument proposes that employers perceive female-typed work as being of lower value, thus inhibiting the provision of flexible working-time arrangements in female-dominated occupations. We evaluate this argument against alternative explanations, namely differences in the ability to bargain for flexible working and in structural or practical barriers to flexible working. Descriptive results based on German panel data (GSOEP, 2003–2017) enriched with occupational-level information confirm that female-dominated occupations provide the least access to flexible work. Linear probability models with yearly fixed-effects indicate that power resources and structural barriers account for differences in flexible working between male-dominated and integrated occupations; yet an unexplained disadvantage for female-dominated occupations remains. Moreover, this disadvantage has grown between 2003 and 2017. We interpret this result as support of a cultural devaluation of female-dominated occupations in access to flexible working-time arrangements. Our findings highlight that the empirical reality of gendered occupational opportunity structures contradicts the gendered policy discourse on flexible work.

Keywords Flexible working · Gender · Occupational gender segregation · Devaluation · Germany

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1 Introduction

Flexible working gives employees control over when and sometimes where they work (Karasek, 1979; Kelly and Moen, 2007). Employees' control over their time can be seen as a workers' right that shifts power from employers to employees and can thus also be seen as an end in itself. Additionally, flexible working is often discussed and promoted in the context of reconciling employment and the time demands of private care work. It is thereby implicitly and often explicitly "tailored to women" to whom care work is ascribed. Prominent social scientists and policymakers call for providing female employees more schedule control to increase women's labor force participation (Goldin, 2014; Eurofound, 2017; Kelly et al., 2011).

Most previous scholarship on unequal access to flexible working focused on individual determinants or on international comparisons of welfare state regimes moderating differences in access (overview in: Chung 2020a). Gender differences, however, are neither the mere result of individual (micro-level) choices and preferences, nor purely shaped by macro-level institutions. They are also linked to opportunity structures at the meso-level. Occupations—as historically distinct forms of organizing work—are a central institution in labor markets and are strongly segregated by gender (Charles and Grusky, 2004; Steinmetz, 2012). Occupations transport stereotypes and provide opportunities and constraints to individuals working in them. Consequently, working-hour norms are embedded in occupational contexts (Weeden and Grusky, 2005; Williams et al., 2013), which likely affect whether firms provide flexible working-time arrangements and whether employees demand and use them. Therein, Chung (2019b) pointed to a puzzle characterizing flexible working in many European countries: while access to flexibility is only moderately unequal between men and women on the individual level, occupations dominated by women are almost half as likely to provide flexible working-time arrangements compared to integrated or male-dominated occupations. This suggests a gendered occupational opportunity structure in access to flexible working that is at odds with a policy discourse that "tailors" flexible working to women to reduce work-family conflict.

This study responds to this puzzling lack of flexible working in female-dominated occupations by assessing potential explanations of individual-level and occupational differences through cross-sectional and longitudinal analysis. Drawing on previous research demonstrating wage disadvantages in female-dominated occupations (England, 1992), we argue that these occupations are also "devalued" in terms of access to flexible working-time arrangements. A devaluation of female-dominated occupations in terms of access to flexible work may stem from gender stereotypes that are attached not only to individuals but also to occupations, and these limit employers' responsiveness to demands for flexible work. This argument is tested against alternative explanations, namely differences in power resources and structural barriers that inhibit access to flexible working-time arrangements. The empirical analysis builds on the German Socio-Economic Panel (GSOEP) from 2003 to 2017 combined with data on occupational characteristics from the German Mikrozensus, the European Social Survey (ESS) as well as the German General Social Survey (ALLBUS). The results indicate that while occupational differences in power resources and structural barriers can account for higher access to flexible working-time arrangements in integrated compared to male-dominated occupations, the lower access in female-dominated occupations remains unexplained. Moreover, this disadvantage for female-dominated occupations even grew

between 2003 and 2017, indicating that female-dominated occupations did not benefit from the increasing proliferation of flexible working-time arrangements to the same extent as other occupations did.

Our study contributes two new insights to the literature. First, we extend the theoretical argument of devaluation to the provision of flexible working-time arrangements and provide empirical evidence for it. Highlighting meso-level explanations, we indicate that a devaluation of female-dominated occupations shapes the availability of flexible working-time arrangements. Second, our findings challenge popular assumptions in the policy discourse regarding the association of flexible work and gender as well as theories of compensating differentials (Filer, 1985), which assume that lower pay in female-dominated occupations is compensated for by higher flexibility.

2 Theoretical Background

Flexible working-time is often framed as a remedy against women's barriers to employment. Working-time flexibility is defined as the ability for employees to exert a certain degree of control over when they work (Lott and Chung, 2016). This is different from part-time work, which may still have rigidly fixed hours, and distinct from employers demanding irregular hours. Working-time flexibility ideally provides employees with clear rights (for instance institutionalized working time accounts). Such control over working-time helps employees to reconcile paid work and other responsibilities, such as care work. Especially after childbirth care work is still primarily ascribed to women (Grunow et al., 2012; Kühhirt, 2012), therefore flexible work may be beneficial for women and their (re)integration into the labor market. Some evidence suggests that flexible working is an effective measure to reconcile employment and care work (Abendroth, 2022; Russell et al., 2009; Wanger and Zapf, 2022; Hegewisch and Gornick, 2011). At the same time the discursive association of flexibility and femininity—also referred to as “flexibility stigma” (Williams et al., 2013)—leads to lower uptake among men (Atkinson and Hall, 2009; Hennekam et al., 2023). This suggests that flexible working is more accessible for women compared to men and per aggregation, should be more common within female-dominated occupations compared to integrated or male-dominated occupations.

Yet, this conjecture is contested by several studies. On the individual level, several cross-country studies show no gender difference or even disadvantages for women in access to flexible working (Lyness et al., 2012; Berg et al., 2004; Ortega, 2009; Plantenga and Remery, 2010; Präg and Mills, 2014). These gender differences tend to be smaller in occupations, in which women are numerically dominant (Stier and Yaish, 2014). Yet, more importantly, at the occupational level, these female-dominated occupations provide generally lower access to flexible working for both genders (Chung, 2019b). We take this puzzling finding as the starting point and accordingly posit a negative relationship between occupational gender compositions and the availability of flexible working:

H.1 Female-dominated occupations provide less flexible working-time arrangements than integrated and male-dominated occupations.

The remainder of this section develops a framework to disentangle this counter-intuitive relationship. We first explore potential explanations that attribute the lack of flexible working to compositional differences rather than gender itself. These are, on the one hand, occupational differences in individual and collective bargaining power, and, on the other hand, occupational differences in structural barriers to flexible working. Subsequently, we

turn to gender role expectations as potential explanations for a remaining negative association. Finally, we argue that female-dominated occupations are devalued and thus have less access to flexible working-time arrangements.

2.1 Bargaining for Flexible Working-Time Arrangements

While generally all employees might demand flexible working-time arrangements, only employees with sufficient power resources can successfully bargain for them (Korpi, 2006). In Germany, minimum standards for some aspects of working-time, such as annual leave and maximal hours, are legally defined but this is not the case for flexible working. This leaves the actual implementation to individual or collective agreements between firms and employees. The success of employees in these negotiations hence depends on both their individual and collective ability to voice their demands and their bargaining power to realize them.

Workers' individual bargaining power vis-à-vis their employer is a function of their productivity and their potential to leave the firm for better outside options. Even barring direct negotiations firms might have an interest in improving working conditions as a non-pecuniary incentive for productivity and in order to retain especially valued employees in the firm (Jacobi, 2022). Since an employee's productivity is difficult to measure, scholars usually focus on several observable dimensions capturing productivity relating to the concept of human capital (Mincer and Polachek, 1974): education and vocational training as well as general labor market experience and firm-specific human capital in the form of tenure at the current firm. These factors are indicative of bargaining power and have been shown to positively affect the provision of flexible working (Chung, 2020a). Simultaneously, some of these forms of capital are scarcer among employees in female-dominated occupations. For instance, the share of part-time positions is substantially higher not only among women on the individual level but also within female-dominated occupations in Germany (Bächmann et al., 2022), leading to less accumulated full-time work experience. Additionally, vocational training for female-dominated occupations is much more often organized as school-based training, whereas apprenticeships predominated for integrated and male-dominated occupations (Krüger, 2003), leading to compositional differences in tenure between their workers. Thus, occupational differences in these resources might account for a relationship between gendered occupations and the availability of flexible working-time arrangements.

Beyond individual-level power resources, access to collective bargaining is a central power resource. Historically, the German "dual system" (Thelen, 1991) delegated issues of work organization and working-time arrangements to firm-level negotiations via works councils, whereas wages were largely negotiated on the aggregate level via tariffs. This divide became less relevant over time (Hassel, 1999, 2014), with currently firm-level as well as aggregate-level mobilization of power resources playing a significant role in negotiating working-time arrangements. At the collective bargaining level unions are the primary agents, which is mirrored by union members also often running firm-level works councils. Hence, the effectiveness of both avenues of employee influence strongly depends on union density. Since unions are to this day more prevalent among male-dominated occupations (cf. Murphy & Oesch, 2016), variation across occupations in union density might partly account for the association between an occupation's share of female employees and the access to flexible working-time arrangements.

H.2. Disparities in individual-level and collective bargaining power account for the penalty of female-dominated occupations in access to flexible-working time arrangements.

2.2 Barriers to Flexible Working-Time Arrangements

In addition to bargaining power, structural barriers specific to certain occupations could impair the provision of and access to flexible-time working arrangements. Female-dominated occupations may face more of these barriers. These barriers include factors such as the prevalence of part-time work, the size of the firm, and the occupational task profiles.

Part-time work is, in many cases, already a solution to work-life conflicts. Therefore, it can substitute lacking flexible working-time arrangements, for instance, when denied access to flexibility pushes employees into part-time arrangements (Chung, 2019b, p. 113). Similarly, part-time work is generally associated with fewer power resources, hence it could not only be seen as a barrier to flexible working but also be relevant through its impact on bargaining power—the demands of part-time employees might carry less weight than those of their full-time colleagues. Particularly in Germany women more often than men work in part-time positions (Schmeißer et al., 2012) and part-time work is more prevalent in female-dominated than in male-dominated occupations (Bächmann et al., 2022). Hence, the trade-off between part-time work and flexible working-time arrangements might result in lower access to the latter among female-dominated occupations. However, as part-time work could also leave more room for flexible scheduling, evidence for a relationship between working hours and access to flexible working-time arrangements is weak (Glauber, 2011; Chung, 2019a).

Previous studies also established that larger firms are more likely to provide flexible working hours (Zapf, 2016; Jacobi, 2022; Chung, 2020). Plausible mechanisms are that larger firms are more likely to formalize their work organization, face lower relative administrative costs when introducing flexible working policies, and a larger workforce may create more opportunities for individual flexibility. Female-dominated occupations are concentrated to a non-negligible degree in smaller firms, which makes disparities in average firm size another likely explanation for gendered occupational differences.

H.3. Differences in structural constraints, namely smaller part-time work and firm size, account for the penalty of female-dominated occupations in access to flexible working-time arrangements.

Some tasks performed in a job may impose additional costs of giving up fixed schedules. For example, occupations typically performing tasks that require in-person contact, such as nursing or personal services, require more coordination of appointments and hence provide fewer low-cost opportunities to grant employees control over their schedules (Gerstel and Clawson, 2014; Goldin, 2014). As occupations with a high share of care work related tasks are often also more female-dominated (Levanon and Grusky, 2016), the link between tasks and feasibility of flexible scheduling is not gender-neutral. Similarly, supervisory positions and managing tasks allow a certain discretion in scheduling work, making them more likely to have access to flexible working-time arrangements. Simultaneously, these positions are more often held by men. Hence, tasks typically performed by members of an occupation may account for gendered occupational differences.

H.4. Differences in occupational task profiles account for the penalty of female-dominated occupations in access to flexible working-time arrangements.

2.3 Gendered Expectations

Gender stereotypes encompass several dimensions and shape the allocation of resources. Most prominently linked to flexible working-time arrangements is the stereotypical ascription of care work to women, which becomes especially salient in different-sex couples after childbirth (Grunow et al., 2012; Kühhirt, 2012). Yet, gendered expectations encompass further dimensions that might to some extent account for lower flexibility in female-dominated occupations.

Gender stereotypes also encapsulate a privileged position for men in the labor market (Ridgeway, 2009). Stereotypical beliefs of men's primacy in the labor market might impair women's access to flexible working-time arrangements via two mechanisms: On the side of employees, internalized gender norms may lead to women being less assertive and having a less pronounced sense of entitlement when making claims in the workplace (Luekemann and Abendroth, 2018). This mechanism might be reinforced as women who display masculine agentic traits are punished for violating prescriptions of feminine niceness (Rudman and Glick, 2001). Accordingly, women might be less likely to demand and bargain for flexible working-time arrangements, despite the gendered discourse ascribing them a higher demand. On the side of employers, claims made by women may be evaluated differently compared to men's due to discriminating beliefs (Sauer et al., 2021) or the assumption that women use flexibility to make time for care work while men use it to maximize productivity (Chung, 2020b). This might be exacerbated if decision-making positions are more often held by men, who are more responsive to claims made by other men (cf. Peters et al., 2023). In line with this, some but not all studies indicate that women have less access to flexible working-time arrangements on the individual level (Lyness et al., 2012; Präg and Mills, 2014; Plantenga and Remery, 2010), which could accumulate within occupations to a negative relationship between an occupation's share of female employees and flexible working.

H.5. Women's individual-level lower access to flexible working-time arrangements accounts for the penalty of female-dominated occupations in access to flexible working-time arrangements.

Finally, gendered expectations also manifest at the level of occupations, amongst others as a cultural devaluation of female-dominated occupations. Occupations strongly differ in their gender compositions and this has led to the development of gendered stereotypes emerging also on the occupational level, with gendered perceptions of occupations, their typical worker, and typical tasks (e.g., He et al., 2019). Based on the observation that female-dominated occupations often pay worse, England (1992) proposed an argument of gendered expectations biasing employers' perceptions of rewards in "male" and "female" occupations: beyond lower status assigned to individual female workers, employers also ascribe a lower *value* to the work done in occupations with a high share of women. This devaluation drives employers to offer fewer benefits and to respond less to employees' demands (Wilkinson et al., 2014). Although most evidence on this phenomenon pertains to wages (Levanon et al., 2009; Busch, 2018; Harris, 2022; Murphy and Oesch, 2016), perceptions of lower value in female-typed work may also diminish non-monetary benefits, as shown by lower access in female-dominated occupations to employer-provided health insurance and retirement plans in the U.S. (Hodges, 2020). Likewise, employers may provide fewer flexible working-time options or be less responsive to requests from employees in female-dominated occupations. While gender stereotypes in male-dominated occupations may also entail an "ideal worker" norm of

full-time commitment that limits flexibility (Williams, 2013), the devaluation hypothesis suggests that female-dominated occupations still offer fewer flexible time arrangements, even after adjusting for other occupational differences.

H.6. Even after adjusting for all previous accounts for occupational differences that drive access to flexible working-time arrangements, female-dominated occupations still provide lower work-time flexibility than integrated or male-dominated occupations.

2.4 The Current Study

Our study is situated in Germany. The German labor market is structured along the lines of highly credentialized occupations (e.g., Müller and Shavit, 1998) and characterized by comparatively high gender segregation (Charles and Grusky, 2004), providing a valuable scenario for examining occupational inequalities. Flexible working-time arrangements became more readily available in Germany over the past decades, a trend that is driven by de-industrialization, changes in regulations as well as relatively low unemployment (Jacobi, 2022).

Against this backdrop, we assess the puzzling observation that female-dominated occupations have lower access to flexible working-time arrangements. If a disadvantage for female occupations persists after we adjust for the mechanisms outlined in our hypotheses, we take such residual association as an indirect test of the devaluation argument. This approach is—similar to studies on the gender wage gap—susceptible to omitted variable bias, but also to over-control. The latter would occur if a control variable already captures gendered stereotypes, which might especially apply to occupational tasks. While for instance, an adjustment for the extent of “caring” tasks proxies a need for in-person contact that is a barrier to flexible schedules, “caring” is also historically ascribed to women, rendering cultural perceptions of the tasks strongly intertwined with gender stereotypes. Stereotypes about care work also often depict it as altruistically motivated or “in the nature of women”, which might render employers to perceive workers as less susceptible to external work incentives, such as wages or access to flexible working-time arrangements (England et al., 2002). Therein, the devaluation of female-dominated occupations is hardly completely separable from “care penalties” (Folbre et al., 2021), which has to be kept in mind when adjusting for occupational tasks.

To further test our argument, we also adopt a longitudinal perspective. Previous research often turned to longitudinal data to gauge devaluation in terms of wages via occupational-level fixed effects (e.g., Levanon et al., 2009; Busch, 2018) or instrumental variable approaches (Harris, 2022) to address potential biases from omitted variables. However, these approaches heavily rely on changes in the numerical representation of women across time, with the assumption being that a cultural devaluation occurs quickly after the gender composition of an occupation changes. Yet, cultural inertia maintains the influence of stereotypes on behavior even after changes in occupational gender composition (cf. Busch, 2018), impairing the detection of short-term effects of changes in women’s representation within occupations. Nevertheless, changes in the overall ubiquity of flexible working provide another perspective to gauge the devaluation argument. We utilize longitudinal data to investigate how occupational gender compositions (as an indicator for occupational gender stereotypes) account for divergent adoption of flexible working over time. The overall increase may not be evenly distributed and devalued occupations may have benefited less.

- Nowadays, there are a number of different types of working hours available. Which of the following possibilities is most applicable to your work?
1. Fixed daily working hours.
 2. Business fixed, partly changing working hours per day.
 3. No formally fixed working hours, decide my own working hours.
 4. Flexitime within a working hours account and a certain degree of self-determination of daily working hours within this account.

Fig. 1 Survey instrument used to measure working-time arrangements

3 Data

Our primary data source is the German Socio-Economic Panel (GSOEP), an annual representative household panel survey of the German residential population launched in 1984. Data on flexible working is available bi-annually from 2003 to 2011 and annually from 2012 to 2017. We restrict the sample to employed adults aged 18–65 years and exclude special sub-samples, such as the 2016 refugee sample, for which no data on working-time arrangements is available. Additionally, we supplement the individual-level GSOEP data with information on the occupational level from three further data sources, namely, the German Mikrozensus (a repeated cross-sectional mandatory survey of one percent of the households residing in Germany), the European Social Survey (ESS) and German General Social Survey (ALLBUS).

3.1 Dependent Variable: Flexible Working-Time Arrangements

The availability of flexible working-time arrangements was measured by asking respondents to characterize their working-time arrangement by choosing one of four mutually exclusive options (Fig. 1). The first category does not grant employees discretion over their working hours. The second category is employer-oriented flexibility, which includes seasonally or even daily adjusted working hours by the employer (cf. Langner, 2018). Lott (2020) argues that employees with employer-driven flexibility perceive not only a lack of schedule control but experience additional schedule uncertainty. We therefore do not consider this option as self-regulated working-time flexibility and code these responses as no flexible working. For our main analysis, we combine respondents who decide their own hours (category 3) and respondents using a “working hours account” (category 4)—more commonly referred to as “flexitime” (Lott, 2020; separate analysis for the two categories in Figs. 5 and 6 in the Appendix). Within the “flexitime” arrangement, overtime is accounted for and can be used with a certain degree of discretion by the employee. The advantage for employees is that their working time and its management are institutionalized. The combination of “working-time autonomy” and “flexitime” into one category likely captures a variety of arrangements, but is sufficiently delineated from schedules determined by the employer, and can thus be interpreted as an arrangement granting workers some degree of control.

3.2 Independent Variables

Occupational Gender Composition

Occupational gender compositions are taken from the Mikrozensus and are calculated across 143 distinct categories from the 3-digit KldB2010 classification.¹ To account for a non-linear association with flexible working, we categorize occupations according to their share of women in 2003, with a percentage of women below 33.3 percent denoting male-dominated and above 66.6 percent denoting female-dominated occupations (alternative cut-offs do not change the conclusion substantially). Using the share of women in an occupation from 2003 is theoretically motivated by the stickiness of occupational cultures. We use female-dominated occupations as the reference category to assess devaluation vis-à-vis male-dominated and integrated occupations.

Variables Measuring Power Resources

To operationalize workers' individual power resources, we use data on education, labor market experience, and tenure from the GSOEP. Education distinguishes tertiary education, vocational certificates or other secondary education, and primary education. For individual labor market experience, we use separate measures of years worked full-time and years worked part-time as it is not evident how the value of part-time experience translates to full-time experience. We include tenure in the current job (years) as a proxy of firm-specific human capital.

We measure collective power resources by the occupation's degree of unionization. Union membership was surveyed in the GSOEP in the years 2003, 2007, 2011, and 2015, in the ALLBUS biannually between 2002 and 2018, and in the ESS biannually between 2002 and 2019. To increase the precision of the estimates, we combine these data sources and predict occupation-specific shares of union memberships over time.²

Variables Measuring Structural Constraints

The structural constraints of working hours are again based on the individual-level GSOEP data. We control for whether a respondent works marginal part-time (<20 h per week), part-time (<35 h per week), or full-time (35 or more hours per week). We consider the size of the firm respondents work for by distinguishing four categories: less than 20, 20 to 199, 200 to 1999, and 2000 or more employees.

Additionally, we operationalize occupational-level task profiles using data from the German Mikrozensus. Therein, respondents are asked to pick the task most common in their work out of 24 options. We aggregate this information at the occupational level to obtain the share of respondents predominantly performing each task per occupation. Tasks are grouped into four broader categories that correspond meaningfully to differences in the necessity to perform the task at a fixed time (Table 2 in the Appendix).³ For example in

¹ To harmonize KldB1992 and 2010, we use a dual coding of occupations in 2012 and calculate sex-specific relative distributions of KldB2010-codes for each KldB1992-code. The resulting transition table allows us to reweight all observed KldB1992-codes into KldB2010-codes for any data prior to 2012. In contrast to deterministic transition tables, this approach accounts for ambiguous reclassifications, even more so if these are sex-specific (Blau et al., 2013).

² We appended all three data sources, defined four-year intervals (2002–2005, 2006–2009, 2010–2013, 2014–2019), and predicted union membership rates for each occupation across the year intervals from a cross-classified mixed model for union membership by year and 3-digit KldB2010 occupations. Similarly obtained estimates for the occupational share of female employees in these data correlate strongly with the observed gender compositions in the Mikrozensus ($r = 0.848$), which corroborates our approach.

³ Our choice of operationalization does not substantially affect these results, even in a specification with a very fine-grained measure of tasks, substantial gaps remain (Model (7) of Table 3 in the Appendix).

2017 the task profile for electrical engineering was: 50 percent manual, 29 percent managing, 20 percent development and design, and less than 1 percent education and care. As discussed in the theory section, these tasks already carry gendered connotations that should kept in mind when interpreting the findings.

4 Methodological Approach

To test whether, in line with previous studies, we find a penalty for female-dominated occupations with respect to the availability of flexible working-time arrangements in Germany, we first offer a detailed description of the bivariate association between the gender share of an occupation and the provision of flexible working-time arrangements. To this end, we estimate a locally weighted linear regression of the occupational share of flexitime and working-time autonomy on the occupational share of female employees (weighting for sampling probability and size of the occupations).

Corresponding to our hypotheses, we then estimate linear probability models with clustered standard errors at the individual-level, and yearly fixed effects (γ_t) that can be described as:

$$\begin{aligned}
 \text{flex. work}_{i,t} = & \alpha + \beta_1 \text{male-dom. occ}_{o,t} + \beta_2 \text{integrated occ}_{o,t} + \gamma_t & (\text{base-line-model}) \\
 & + \beta_3 \text{edu}_{i,t} + \beta_4 \text{tenure}_{i,t} + \beta_5 \text{exp. ft}_{i,t} + \beta_6 \text{exp. pt}_{i,t} + \beta_7 \text{union}_{o,t} & (\text{power resources}) \\
 & + \beta_8 \text{parttime}_{i,t} + \beta_9 \text{firm size}_{i,t} & (\text{constraints}) \\
 & + \beta_{10} \text{share manual}_{o,t} + \beta_{11} \text{share management}_{o,t} + \beta_{12} \text{share care}_{o,t} & (\text{task constraints}) \\
 & + \beta_{14} \text{sex}_i & (\text{individual sex}) \\
 & + \epsilon_{i,t} & (\text{error-term})
 \end{aligned}$$

The subscript i denotes individual-level characteristics, o denotes occupational-level characteristics, t denotes survey years, and γ_t represents yearly fixed-effects. Each line represents the step-wise structure of controlling for further variables. The first model estimates the unadjusted association of flexible working-time arrangements with occupational gender compositions, the second adjusts for power resources, the third and fourth add constraints as control variables. The models with tasks control for three of the four task shares, the task share of development and design hence is the reference category. The fifth row gives an estimate adjusted for individual gender. Our analysis is tailored to the question of whether female occupations are devalued in terms of working-time flexibility. Hence, we are interested in the coefficients β_1 and β_2 , which indicate the differences between female-dominated occupations in comparison to male-dominated and integrated occupations, respectively. As outlined in the theory section, our approach aims to account for discrepancies between gendered occupations via plausible mechanisms. If this fails, we will take a residual association between gender-typed occupations and flexible working-time arrangements as an indication of a devaluation of female-dominated occupations. The approach additionally allows to explore the extent to which each set of controls accounts for the relationship.

Finally, we adopt a longitudinal perspective to explore which occupations benefited most from the increase in flexible working-time arrangements. We estimate the same models as above but add an interaction term between gender composition and survey year to identify changes in the effect over time.

5 Results

5.1 Descriptive Statistics

Figure 2 shows the bivariate association between occupational gender composition and the provision of flexible working-time arrangements across the full distribution using a locally weighted regression for the first and last year in our data (2003 and 2017). The relationship follows an inverted U-shape pattern and drops off more sharply on the right (female-dominated occupations) than on the left (male-dominated occupations), indicating a penalty for female-dominated occupations.

Figure 2 also depicts the two most common occupations per gender category in 2003. Therein, we can make two observations: First, occupations within each gendered category vary substantially. While, for instance, about 40 percent of the predominantly female “office clerks and secretaries” have access to flexible working-time arrangements, occupations in “sales” are also female-dominated, but less than 20 percent of their employees have access to flexible working-time arrangements. Second, “office

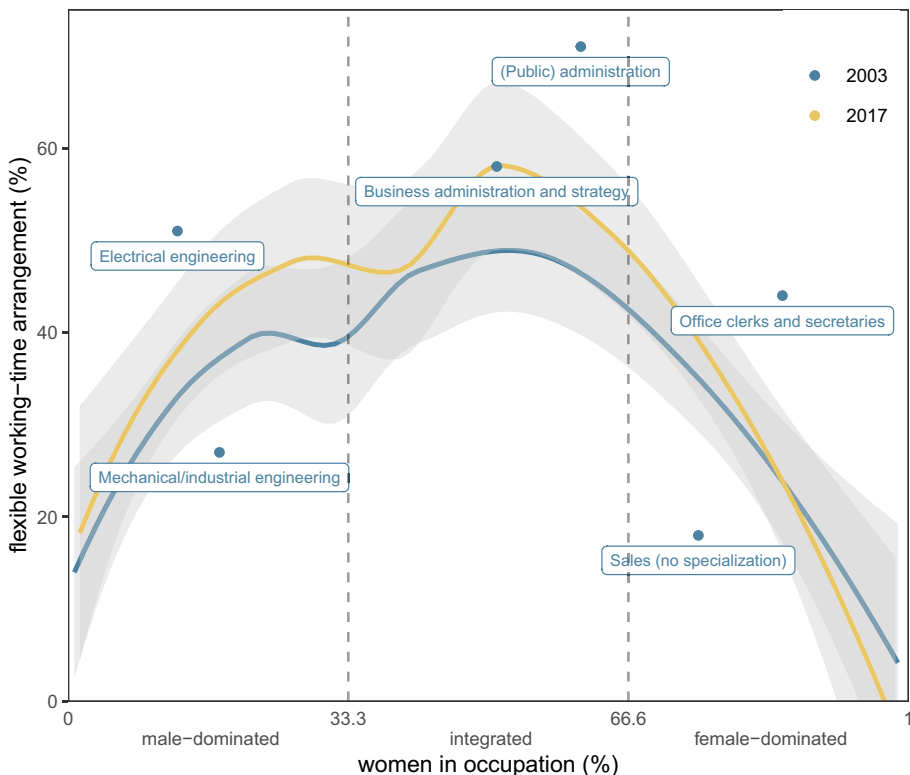


Fig. 2 Occupational availability of flexible working-time arrangements by the share of female employees. *Note:* The lines represent locally weighted regressions for the years 2003 and 2017. Results are weighted for the number of respondents in an occupation and their sampling probabilities. For each gendered category (male, female and integrated occupations) the two most common occupations in the data in 2003 are annotated *Source:* GSOEP (2003–2017), Mikrozensus (2003–2017). (Color figure online)

Table 1 Descriptive statistics by gender-typed occupation

Characteristic	Male-dominated Mean or % (SD)	Integrated Mean or % (SD)	Female-dominated Mean or % (SD)
Flexible working-time	37%	47%	26%
Share of women in respondent's occupation	0.14 (0.10)	0.54 (0.12)	0.83 (0.08)
Individual respondent's sex (1 = female)	14%	51%	82%
Power resources			
<i>Education (CASMIN)</i>			
Low/intermediate qualification	40%	23%	31%
Secondary/vocational	39%	44%	53%
Tertiary	21%	33%	16%
Work experience part-time (years)	0.34 (0.68)	0.83 (1.02)	1.30 (1.11)
Work experience full-time (years)	2.67 (0.96)	2.39 (1.05)	2.11 (1.08)
Tenure at firm (years)	2.08 (1.00)	2.10 (1.03)	1.85 (0.99)
% union members	19%	16%	10%
Structural constraints			
<i>Firm size</i>			
< 20	24%	21%	33%
≥ 20 < 200	28%	26%	28%
≥ 200 < 2000	22%	23%	20%
≥ 2000	27%	29%	19%
<i>Weekly work hours</i>			
Full-time	92%	76%	54%
Part-time	5.1%	16%	28%
Marginal	3.0%	8.2%	19%
<i>Tasks</i>			
Manual	59%	16%	13%
Management	25%	54%	46%
Education and care	7%	23%	39%
Development and design	9%	8%	1%
N = 209,141	88,344	65,729	55,068

Source: GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002–2019); own estimations

clerks and secretaries” have more access than the male-dominated “mechanical and industrial engineers”. But despite the variation within each gender category, the six exemplary occupations underline the overall pattern: the most flexible working is found in integrated occupations, followed by male-dominated and then female-dominated occupations.

Additionally, by comparing the bivariate relationship between 2003 and 2017, we observe that the availability of flexible working improved almost across the entire distribution between 2003 and 2017. The largest gains took place in integrated and male-dominated occupations, underscoring the disadvantaged position of female-dominated occupations.

A first indication of explanations of this inequality is given by Table 1, which provides descriptive characteristics of our analytical sample separated by the categorized gendered occupations. Bargaining power is unequally distributed across all indicators. Qualification

levels are highest in integrated occupations and lowest in male-dominated ones. Female-dominated occupations are disadvantaged in terms of accumulated full-time work experience, firm-specific experience, and union density, indicating lower bargaining power for them. Similarly, structural constraints are also not gender-neutral. In female-dominated occupations, the average firm size is smaller compared to male-dominated or integrated occupations. We further argued that part-time work might be a solution to work-family conflict leading to less working hours flexibility in part-time positions. Part-time jobs are most prevalent in female-dominated occupations, while male-dominated occupations have the highest share of full-time jobs. Tasks that require more in-person contact are more common in female-dominated occupations. Especially, education and care are more often the defining features of jobs in female-dominated compared to male-dominated occupations.

5.2 Are Female Occupations Devalued in Access to Working-Time Flexibility?

To test whether these disparities in resources and barriers account for lower flexibility in female-dominated occupations, we first estimate models across all pooled survey waves (2003–2017). The estimates of interest testing our central hypotheses are presented in Fig. 3. The first row gives the baseline estimate of the gap from female-dominated occupations to male-dominated ($\hat{\beta}_1$) and integrated ($\hat{\beta}_2$) occupations respectively, only adjusted for yearly fixed-effects. We find a substantial and statistically significant penalty for female-dominated occupations: in male-dominated occupations, the share of employees with flexible hours is 11 percentage points, in integrated occupations even 21 percentage points, higher than in female-dominated occupations. This finding supports our first hypothesis (H.1) stating that female-dominated occupations provide less working-time flexibility than integrated and male-dominated occupations.

The second row in Fig. 3 adjusts the differences between gendered occupations for their individual and collective power resources. This tests whether differences in power resources explain the female-dominated occupations' penalty (hypothesis H.2). Comparing the first and second model reveals that power resources moderately account for the differences between gendered occupations: The gap in comparison to integrated occupations is substantially reduced, while the gap to male-dominated occupations even becomes slightly larger. Going back to the descriptive statistics this finding is plausible because integrated occupations have the most power resources in all dimensions except union density,⁴ while male-dominated occupations have more average work experience but fewer educational certificates than female-dominated occupations—hence, the two effects cancel each other out and the gap remains. The model accounts for a part of the occupational inequalities, lending partial support for hypothesis H.2. However, substantial gaps for female-dominated occupations remain, which are not accounted for by differences in power resources.

The third model additionally controls for structural constraints, namely firm size and part-time employment. Both structural constraints are in fact negatively associated with flexible working-time arrangements (Model 3 of Table 3 in the Appendix) and more prevalent in female-dominated occupations. Therefore, compositional differences in part-time work and firm size should account for some of the lower access to flexible working time arrangements, which would be indicated by the regression coefficients $\hat{\beta}_1$ and $\hat{\beta}_2$ being

⁴ While the coefficient of union density is even negative in this model, it still indicates a positive association with flexible working after adjusting for tasks.



Fig. 3 Regression coefficients for access to flexible working-time arrangements in male-dominated and integrated compared to female-dominated occupations. *Note:* Coefficients (with 95 percent confidence intervals) from models with increasing sets of control variable shown; full results reported in Model (1)–(5) in Table 3 in the Appendix; x-axis depicts difference of working a male-dominated occupation (left panel) and integrated occupation (right panel) compared to working in a female-dominated occupation. *Source:* GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002–2019). Weighted estimates

closer to zero. However, this is not the case and we hardly observe any change after adjusting for constraints. Only in a separate model, where we do not account for power resources (Model 6 of Table 3 in the Appendix), we observe that constraints account for some of the disadvantages of female-dominated occupations. Overall, however, neither structural constraints nor power resources nor a combination of both *fully* account for the lower access to flexible working in female-dominated occupations.

Adjusting for task constraints significantly accounts for the differences across the gendered occupations: the coefficients of both male-dominated ($\hat{\beta}_1$) and especially integrated ($\hat{\beta}_2$) occupations become much smaller in comparison to before. As discussed above, these coefficients are net of the effect of tasks, which not only accounts for task-specific barriers to flexible working but may to some extent take out a cultural devaluation of care tasks that is closely linked to the devaluation of women's work. As the latter can be considered as an over-control, accounting for differences in tasks as structural constraints represent a lower bound of the remaining disadvantage of female-dominated occupations.

Finally, the bottom row of Fig. 3 reveals that the lower access to flexible working-time arrangements in female-dominated occupations is not a mere artifact of women's individual-level impaired access. While the coefficient for the individual level indicates that women's access to flexible working is 4.1 percentage points lower compared to men's (Model 5 of Table 3 in the Appendix), the differences on the occupational level is even larger: workers in female-dominated occupations have an 8 percentage points lower likelihood of access to flexible working compared to male-dominated and integrated occupations.

Note that due to the choice of female-dominated occupations as a reference category, differences between male-dominated and integrated occupations do not immediately become apparent. While the first row of Fig. 3 indicates a difference in favor of integrated occupations of ($\hat{\beta}_2 - \hat{\beta}_1 =$) 10 percentage points, this gap is substantially reduced after accounting for occupational differences in power resources. Moreover, considering all indicators that were expected to account for occupational-level differences in flexible working-time arrangements, the difference between male-dominated and integrated occupations is virtually accounted for

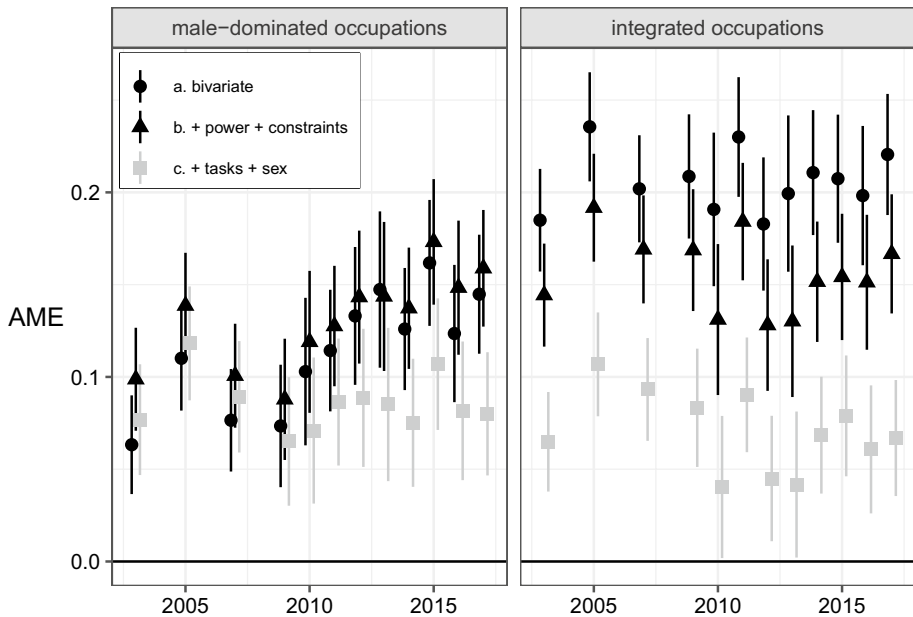


Fig. 4 Regression coefficients for access to flexible working-time arrangements in male-dominated and integrated compared to female-dominated occupations, by year. *Note:* Year-specific coefficients (with 95 percent confidence intervals) from interacting gendered occupations and year-indicator with increasing sets of control variable shown; x-axis depicts difference of working a male-dominated occupation (left panel) and integrated occupation (right panel) compared to working in a female-dominated one (reference category). Model b (c) is analogue to third (last) estimate from Fig. 3. *Source:* GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002–2019). Weighted estimates.

($\hat{\beta}_2 - \hat{\beta}_1 < 0.01$ in the last row of Fig. 3). Thus, the proposed explanations account for the difference between male-dominated and integrated occupations, which corroborates their relevance for occupational access to flexible working. Only the penalty of female-dominated occupations remains, which we take as evidence for hypothesis H.6 and for a cultural devaluation that impairs access to flexible working-time arrangements among them.

To further assess the disadvantage of female-dominated occupations, we investigate how the occupational-level differences developed over the 15 years of our analytical time period. Given that we observe a secular trend towards more flexible working that is driven by policy-makers promoting flexible working and ostensibly targeting women, we investigate whether the impaired access to flexible working in female-dominated occupations indeed decreased over time; or alternatively, whether cultural devaluation led to workers in female-dominated occupations not equally benefiting from the increase in flexible working. In order to respond to this, we apply the same methodological approach as above and add an interaction term for the occupational differences and the calendar year.

Figure 4 displays the estimated advantage of male-dominated occupations (left panel) and of integrated occupations (right panel) by year. The gap between female-dominated and integrated occupations estimated by the bivariate model (circle markers) does not change substantially over time and neither do the gaps estimated by the model including power resources and structural constraints (arrow-shaped markers) or the model additionally controlling for tasks (grey markers). There is hence no evidence that female-dominated

occupations became increasingly devalued, nor that they caught up in comparison to integrated occupations. The disadvantage of female-dominated compared to male-dominated occupations on the other hand did increase over time. Male-dominated occupations saw the largest increase in the availability of flexible working-time arrangements between 2003 and 2017 (circle markers; see also Fig. 2). This increase is not explained by male-dominated occupations gaining power resources or losing constraints (arrow-shaped markers). Only when adjusting for occupational tasks we do no longer observe an increase in the difference between male- and female-dominated occupations (grey markers). Hence, the task profiles of female- or male-dominated occupations must have changed over time. In line with an expansion of flexible working-time arrangements, male-dominated occupations saw a decline in manual tasks that inhibit flexibility and an increase in managing and development tasks that facilitate flexibility (see Fig. 7 and Table 3 in the Appendix). By contrast, female-dominated occupations (and to some extent integrated occupations) shifted towards more education and caring tasks at the expense of managing tasks, and this shift in the task profile predicts impaired provision of flexible working-time arrangements.

Summarizing the longitudinal evidence, the increase in the availability of flexitime made access to flexibility more unequal between gendered occupations. This increased disadvantage is not easily explained with power resources or constraints. While changing task profiles accounts for an increase in the advantage of male-dominated occupations over time, occupational tasks are still highly intertwined with gender stereotypes. Hence, the finding could also reflect a cultural devaluation of the increasing prevalence of education and care tasks among these occupations, as a specific manifestation of the cultural devaluation of female-dominated occupations. Notably, changes in the task profiles only account for the change over time in the difference between female- and male-dominated occupations, but a substantial unexplained gap remains.

6 Discussion

Giving employees control over when they work is not only an end in its own right but also often framed as a solution to modern conundrums of work and family reconciliation. In this regard, a puzzle of flexible working being “tailored to women but provided to men” emerged at the occupational level. We illuminated this puzzle by investigating the relationship between respondents’ self-reported working-time arrangements and their occupations’ gender composition using data from Germany covering the years 2003 to 2017. Our results show that flexible working-time arrangements are less common in female-dominated occupations. Even after accounting for several compositional differences (including occupational tasks), we find that female-dominated occupations are at a substantial disadvantage versus integrated and male-dominated occupations by 8 and 9 percentage points respectively. While male-dominated occupations also lag behind integrated ones, we were able to account for these via the compositional differences in power resources and structural constraints.

We make two broader contributions. First, we extend the theoretical argument of devaluation theory to the provision of flexible-working time arrangements. In contrast to previous research that largely focused on individual-level gender inequalities in flexible working and on country-level characteristics shaping gender inequalities, we focus on occupations as a meso-level that determines the provision of flexible working. Descriptively, we show that a disadvantage for female-typed occupations also exists in the case of flexible working-time arrangements in Germany and instead of narrowing, the gap has grown over time

in comparison to male-dominated occupations. The gap is neither due to structural barriers nor power resources, providing strong evidence for a cultural devaluation of female-dominated occupations leading to less access to flexible working-time arrangements. Possible mechanisms include employers providing fewer benefits and being less responsive to claims from employees in female-dominated occupations (Wilkinson et al., 2014). Employers may also ascribe a lower value to female-typed work or perceive less need for external incentives if, for example, care work is perceived as intrinsically motivated.

Second, our finding challenges popular assumptions in the policy discourse and in narratives on the expansion of flexible working-time arrangements. The re-organization of work left behind female-dominated occupations despite the claimed intentions of policy-makers and employers. As shown, the growth of flexible working in the past decades benefited male-dominated occupations the most, leading to the assessment that the stated goal has been clearly missed. Moreover, some have argued that working-time flexibility compensates for lower wages in female-dominated occupations (Filer, 1985). Existing evidence for non-pecuniary benefits compensating for lower wages is at best mixed (e.g., Wuestenenk and Begall, 2022; Glass, 1990). Our results further contradict the compensating differential perspective and reinforce the devaluation argument.

Our results come with some limitations. First, the self-reports by employees on the use of flexible working do not directly inform us about the availability of flexible working. Employees might not know about the policies in place or be hesitant to utilize them; both would lead to under-reporting of flexible working. While we do not expect systematic bias across gendered occupations, future research would benefit from improved measures allowing to distinguish between provision and uptake of flexible working. Second, while our study focused on the occupational level, the availability of flexible working-time arrangements is, to a large extent, decided on the firm level. Future research should investigate variation across firms to elucidate whether lower access to flexible working-time arrangements is indeed a characteristic of female-dominated occupations or, rather, women's impaired access occurs largely among female-dominated firms (Hamjediers and Peters, 2024). Third, our residual approach of assessing the devaluation of female-dominated occupations is prone to potential omitted variable bias or over-control. While we argue that cultural inertia of occupational stereotypes undermines an assessment via short-term changes in occupational gender composition and carefully interpret the relationship between occupational gender compositions and occupational tasks, research that develops more direct tests of the devaluation of female-dominated occupations would be a valuable supplement.

Our findings warrant some reflection on broader implications. The gendered nature of the flexibility discourse should not be blindly replicated, and there are many reasons to be skeptical about the effects of flexible working on gender inequality (Chung, 2022). Empirically, women still do the majority of care work and also more often work in caring occupations. It is generally questionable that more access to flexible working will have a large impact on this division of labor. Some findings of positive effects on gender equality in care work exist (Chung and Booker, 2023), but men have also been found to use their flexibility for care work only under certain circumstances and mostly reinvest their flexibility in paid work (Lott and Chung, 2016). The use of flexible working is gendered. Even though flexible working is often framed as a measure to reconcile work and family life, employers often provide it to increase productivity and thus create an area of tension between the norms of an ideal worker and an ideal parent. Despite these well-founded doubts about the benefits of flexible working for gender equality, control over schedules through new forms of work organization is an important dimension of individual life chances and social inequality in its own right.

Appendix

See Figs. 5, 6, 7 and Tables 2, 3.

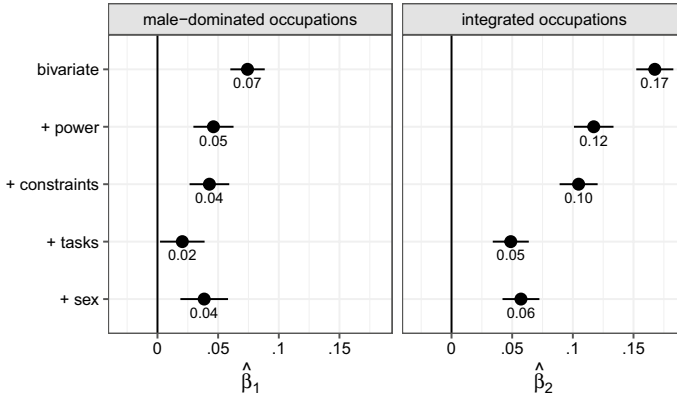


Fig. 5 Regression coefficients comparing access to **flexitime** in female-dominated occupations to male-dominated and integrated occupations. *Note:* Analogous to Fig. 3, OLS regression coefficients on the availability of flexitime of male and integrated occupations versus female occupations (reference category). The bars indicate 95 per cent confidence intervals. *Source:* GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002–2019). Weighted estimates

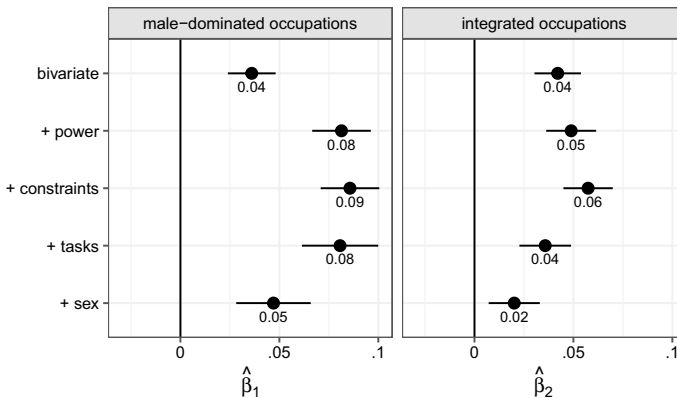


Fig. 6 Regression coefficients comparing access to **working-time autonomy** in female-dominated occupations to male-dominated and integrated occupations. *Note:* Analogous to Fig. 3, OLS regression coefficients on the availability of working-time autonomy of male and integrated occupations versus female occupations (reference category). The bars indicate 95 per cent confidence intervals. *Source:* GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002–2019). Weighted estimates

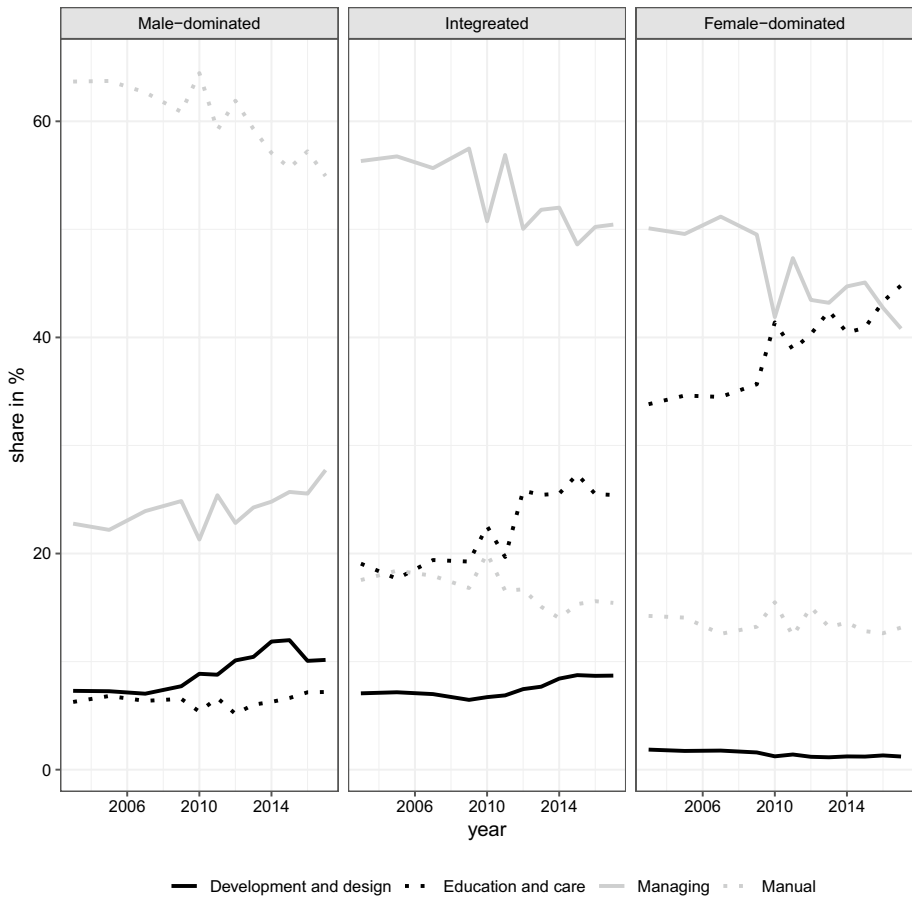


Fig. 7 Averages of task shares of respondents in the analytic sample in male-dominated, integrated and female-dominated occupations by survey year. The occupational characteristics were estimated from the Mikrozensus. GSOEP v36, weighted

Table 2 Classification of occupational tasks

Task	Coding
Operating machines	Manual
Farming	Manual
Mining	Manual
Constructing	Manual
Selling/buying	Managing
Reparating	Manual
Executing writing/calculating/IT-tasks	Managing
Checking by guidelines	Managing
Creating products/plans/programs	Development and design
Advertising/PR	Development and design
Managing	Managing
Hosting/food preparation	Education and care
Executing/judging laws/orders	Managing
Educating	Education and care
Consulting	Managing
(Health)care/cosmetics	Education and care
Entertaining (arts/journalists)	Development and design
Driving/loading/handling of logistics	Manual
Cleaning	Manual
Securing/protecting	Education and care
Research/development	Development and design

Table 3 OLS Regressions of flexible working-time arrangements

Models of Fig. 3							Robustness checks	
(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Bivariate	+ Power	+ Constraints	+ Tasks	+ Sex	– Power	Tasks fine grained		
Occupational gender comp.: <i>Ref.: Female-dominated</i>								
Male-dominated	0.110** (0.009)	0.129** (0.010)	0.101** (0.011)	0.086** (0.012)	0.077** (0.009)	0.081** (0.016)		
Integrated	0.210** (0.009)	0.162** (0.009)	0.085** (0.009)	0.077** (0.009)	0.181** (0.009)	0.049** (0.011)		
Education (CASMIN): <i>Ref.: Low/intermediate</i>								
Secondary/vocational	0.164** (0.009)	0.160** (0.008)	0.117** (0.008)	0.118** (0.008)		0.092** (0.008)		
Tertiary	0.389** (0.010)	0.377** (0.010)	0.335** (0.010)	0.334** (0.010)		0.293** (0.011)		
Tenure at firm (log)	0.044** (0.004)	0.034** (0.004)	0.025** (0.004)	0.025** (0.004)		0.020** (0.004)		
Work experience full-time (log)	0.016** (0.004)	0.020** (0.004)	0.021** (0.004)	0.020** (0.004)		0.019** (0.003)		
Work experience part-time (log)	–0.014** (0.004)	–0.007 (0.005)	–0.002 (0.004)	0.004 (0.004)		–0.004 (0.004)		
% union members	–0.053** (0.005)	–0.062** (0.005)	–0.022** (0.004)	–0.023** (0.004)		–0.015** (0.005)		
Weekly work hours: <i>Ref.: Full-time</i>								
Part-time		–0.050** (0.010)	–0.046** (0.009)	–0.041** (0.009)	–0.077** (0.009)	–0.038** (0.009)		

Table 3 (continued)

	Models of Fig. 3					Robustness checks	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Bivariate	+ Power	+ Constraints	+ Tasks	+ Sex	– Power	Tasks fine grained
Marginal			0.043** (0.011)	0.057** (0.011)	0.061** (0.011)	–0.022* (0.010)	0.058** (0.011)
Firm size:							
Ref.: < 20			–0.032** (0.009)	–0.028** (0.008)	–0.028** (0.008)	–0.033** (0.009)	–0.026** (0.008)
≥ 20, < 200			0.082** (0.010)	0.060** (0.010)	0.060** (0.010)	0.093** (0.011)	0.044** (0.009)
≥ 200, < 2000			0.110** (0.010)	0.071** (0.010)	0.071** (0.010)	0.132** (0.011)	0.068** (0.009)
≥ 2000							
Occupational tasks:							
Ref.: Development and design							
Manual				–0.005** (0.000)	–0.005** (0.000)		
Management				–0.002** (0.000)	–0.002** (0.000)		
Education and care				–0.006** (0.000)	–0.006** (0.000)		
Sex (1 = female)					–0.041** (0.009)		
Constant	0.232** (0.008)	0.071** (0.013)	0.069** (0.014)	0.424** (0.032)	0.446** (0.033)	0.228** (0.010)	0.445** (0.070)

Table 3 (continued)

Models of Fig. 3							Robustness checks	
(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Bivariate	+ Power	+ Constraints	+ Tasks	+ Sex	– Power	Tasks fine grained		
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes		
Occ. tasks fine-grained						Yes		
R ²	0.031	0.133	0.148	0.234	0.235	0.277		
N	196,222	196,222	196,222	196,222	196,222	196,222		

Source: GSOEP (2003–2017), Mikrozensus (2003–2017), ALLBUS (2002–2018), ESS(2002-2019), Weighted estimates

OLS regression coefficients shown with individual-level clustered standard errors in parentheses. Levels of significance: * $p < 0.05$, ** $p < 0.01$

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Data availability The data used to produce the findings are available to researchers through the Statistisches Bundesamt (Mikrozensus), the Deutsche Institut für Wirtschaftsforschung (GSOEP), GESIS (ALLBUS) and the European Social Survey respectively.

Declarations

Conflict of interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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