Workplace Amenities and the Gender Pay Gap*

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Abstract

We study the role of amenities in explaining the gender wage gap by linking Danish firm-level data on amenity provision to administrative earnings records. We supplement this with an incentive-compatible preference elicitation survey measuring workers' willingness to pay for specific job attributes. We first document gender differences in hours, scheduling, and commuting distance. We show that many of these gender differences expand after parenthood. We show that after parenthood, women move toward firms with lower wage premia, but these shifts largely disappear once we control for firm-level amenities. We then estimate willingness to pay for amenities using an incentivized hypothetical preference elicitation survey. We find that women strongly dislike evening and on-call work and value proximity to home and schedule flexibility for family reasons. This means that the gender gap in compensation is 38% smaller when we include the value to workers of amenities related to temporal and spacial flexibility, relative to when we only measure monetary earnings.

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1 Introduction

Despite decades of gains in women's labor-force participation and education, a stubborn gender wage gap remains. Recent research shows that women place higher value on job amenities such as flexible hours, predictable schedules, and working close to home (Mas and Pallais (2017), Wiswall and Zafar (2017), and Le Barbanchon et al. (2020)). However, we know less about how these amenities are distributed across jobs and how they contribute to gender differences in compensation. In this paper, we link firm-level data from Denmark on specific amenity offerings with incentive-compatible elicitations of Danish workers' willingness to pay for those amenities. This allows us to decompose gender gaps in total compensation into wage and non-wage components.

We first document gender differences in amenities related to temporal and spacial flexibility using rich survey data from the Labor Force Survey (henceforth, LFS) in Denmark linked with administrative data on job earnings and location. Next, we document the evolution of these differences around parenthood, using administrative data on the date of first childbirth for all survey respondents. As noted by Goldin (2014), the time demands of children may be incompatible with some work arrangements. Compensating differentials may create a wedge between the pay of women and men if women trade off monetary compensation for valuable amenities that increase their non-market productivity, such as a short commute to work or a flexible work schedule (Bütikofer et al. (2023); Le Barbanchon et al. (2020); Borghorst et al. (2024)). We find that in addition to an expansion of the wage gap around parenthood, there is a reduction in women's propensity to work long hours, do evening work, to work in jobs with variable schedules and irregular hours, and an expansion in women's propensity to work close to home.[1] For men, changes in these characteristics around parenthood are muted and in some cases, opposite signed.

Next, we turn to understanding how these amenities affect relative wages. As the Rosen (1986) model of compensating differentials would predict, women may seek firms that offer these amenities, but perhaps offer lower pay. We first quantify "low-pay" firms using the Abowd et al. (1999) decomposition (hereafter AKM). This method estimates firm-fixed effects in a regression of wages on firm and individual fixed effects, isolating the relative improvement in wages a person with a given skill set can expect by moving to a particular firm.[2] When controlling for amenities in our survey data, the fall in firm pay premia upon

[1] We also see that women are *less* likely to work at home after having children, but we note that this data is pre-Covid and the rate of home-work as well as the type of work done at home has changed substantially since 2019, the last year of our survey data on work amenities.

[2] We also include in the regressions select time-varying controls such as age.

motherhood is reduced almost to zero, suggesting that a substantial part of the decline in average pay at firms where women work after motherhood is explained by the value these firms provide to women on other dimensions. Second, we study the evolution of the Sorkin (2018) revealed preference metric of firm type, called PageRank. When using a PageRank ranking of firms according to the movements of men, we see that women sort away from those firms most preferred by men when they become mothers. However, this relationship completely disappears when we control for firm-level amenities.

Unobservable factors affect worker flows, meaning that we cannot infer the value of amenities to workers or the role of amenities in total compensation from observed worker movements without additional structural assumptions. To answer the question motivating this paper—what is the role of amenities in explaining the gender wage gap—we conduct an incentivized hypothetical choice preference elicitation survey. Using a nationally representative pool of nearly one thousand participants, we estimate how much individuals are willing to trade-off in earnings in order to access additional amenities. Participants are incentivized to truthfully reveal their preferences because they are told that they will receive links to jobs that fit their preferences based on their responses to 30 hypothetical job comparison vignettes.

We compare preference estimates from worker flows to those from our survey that holds job attributes fixed and find that the two approaches deliver different conclusions about gender differences in job preferences. Estimates based on observed job moves suggest small gender gaps and low willingness to pay for non-wage features, but these patterns reflect omitted job attributes and firm-side constraints that shape which jobs workers can access. The survey isolates worker demand and reveals larger gender differences in preferences. When we incorporate the value of these non-wage job attributes into compensation, the gender gap falls from 21% in earnings to 13% in total compensation, a reduction of about 38%.

Our paper contributes to the recently expanding literature on the role of amenities in attracting workers to particular jobs. Much of this literature has taken a structural approach, including Taber and Vejlin (2020), Morchio and Moser (2024), Lavetti and Schmutte (2018), Berger et al. (2023), Bonhomme and Jolivet (2009), Lehmann (2023), Lamadon et al. (2022), Sorkin (2018), among others. Most relevant to our own work is Morchio and Moser (2024), which focuses on job attributes and the gender wage gap in the formal sector in Brazil using administrative data. The administrative data includes the amenities part-time work, whether a worker reports being fired for unjust reasons, parental leave length, and the risk of dying in work accidents. Morchio and Moser (2024)

document some sorting around these specific attributes, but most of their focus is on inferring the role of compensating differentials using the structure of worker sorting and firms pay. Our focus differs both in the types of amenities studied—our data include measures of amenities that are hypothesized to be especially important for women with children—and in how we estimate the value of specific workplace attributes to derive a compensation measure that includes these amenities. In contrast, Morchio and Moser (2024) infer compensating differentials associated with amenities based on worker sorting, finding that these differentials explain about half of the gender pay gap. Our results are consistent with this—for the specific amenities we are able to measure, women have substantially higher willingness to pay. Accounting for the value of these amenities leads to a 38% smaller gap in compensation by gender, relative to the gender wage gap.

Contemporaneous and non-structural work on the importance of compensating differentials in the labor market includes Humlum et al. (2025) and Caldwell et al. (2025). These papers use surveys to explicitly estimate the relationship between worker's expectations of amenities and pay at various firms and their preferences for amenities at those firms in Denmark and Germany, respectively. The papers come to different conclusions. Humlum et al. (2025) finds strong evidence of compensating differentials, and that variation in pay across firms for the same worker overstates the variation in utility of that worker by 50%.[3] This is consistent with our results in the same country. In contrast, Caldwell et al. (2025) finds a weak relationship between amenities and pay and finds no evidence of compensating differentials. Finally, Audoly et al. (2024) uses vacancy data from Norway to quantify the pay and non-pay content of job ads and finds that non-pay attributes explain a substantial portion of employer attractiveness to potential applicants. This complements the work of Fluchtmann et al. (2024) who find gender differences in searching for jobs with shorter hours, a short commute, and which are family friendly. Our paper focuses on which specific amenities women value relative to men, and links this to data on the distribution of these amenities in the labor market, which may be driven by the production technology rather than worker preferences.

We also contribute to the literature estimating worker preferences using hypothetical choices (or "vignettes").[4] In a large, US-based study, Maestas et al. (2023) document worker preferences for job amenities using a hypothetical choices study similar to our setting. Maestas et al. (2023) find a small overall role for amenities they measure in explaining

[3] In related work, Fredriksson et al. (2025) study how exogenous shocks to outside options affect a worker's mobility and their ability to bargain for a wage increase at their present firm.

[4] Notable alternative approaches include structural methods, discussed below, and the approach by Anelli and Koenig (2021), which uses bunching around thresholds for workplace injury compensation.

the gender gap in compensation. However, the amenities they study do not include those which we find are especially valuable to women (avoiding on-call work and evening work in particular, as well as the ability to vary work time for family reasons).[5] Before this larger work in the US, Eriksson and Kristensen (2014) use this vignette method in Denmark and provide a summary of its history in the marketing literature. Eriksson and Kristensen (2014) include health insurance, a home pc with internet, job training, and flexible hours in their vignettes, but do not focus on gender differences in the preference for flexibility or on the link between trends in the administrative data in terms of worker-firm sorting and the amenities offered at the firm. While many hypothetical job choice studies are unincentivized, our setting incentivizes truthful reporting of preferences in a methodology similar to Kessler et al. (2019)—participants are giving information about job vacancies aligned with their preferences based on their choices in the study. Our results echo the results of Mas and Pallais (2017), who focus specifically on the preferences of workers for avoiding employer-induced hours irregularity/unpredictability in a field study with workers applying to telemarketing jobs. Using worker flows across jobs in Swedish administrative data linked to the characteristics of jobs measured at the occupation level, Hotz et al. (2017) also emphasize the importance of predictability to women around the time that they become mothers.[6] Finally, our results complement work using vignette studies focused on other important aspects of women's preferences for workplace attributes, including Schuh (2024), Nagler et al. (2023), Folke and Rickne (2023), and Collis and Van Effenterre (2025) who emphasize workplace composition, performance pressure, and avoiding jobs with hostile workplace environments. Based on Folke and Rickne (2023), Hampole et al. (2024), Collis and Van Effenterre (2025) and Humlum et al. (2025), the work environment is an important dis-amenity, but unfortunately we do not have data on this job characteristic in the LFS. Based on this literature, incorporating some measure of workplace culture into our calculations would likely further reduce the gender gap in total compensation.

[5]Their attributes do include "setting one's schedule" but we find that this attribute does not seem to be differentially important to men and women, despite its apparent correlation with the attributes that we find to be important. One reason for this may be that women do not especially value being able to set their own schedule, beyond being able to adjust work time as needed. Our research highlights the importance of stating amenities in ways that are interpreted similarly by workers/study participants and researchers.

[6]Other notable work on the value of workplace flexibility to employees includes He et al. (2021) and Wiswall and Zafar (2017). Using a field experiment in Chinese job ads, He et al. (2021) find evidence that workers value workplace flexibility. In a hypothetical choice experiment using US college students, Wiswall and Zafar (2017) find that female students have a higher willingness to pay for job stability and flexibility compared to male students. Our setting narrows the jobs attributes most important to workers and we connect these attributes to firms in a matched administrative data setting to understand how these relate to other measures of firm preferences and sorting around motherhood.

Finally, our results also contribute to the literature on the role of firms in explaining gender differences in pay. Card et al. (2015) document the role of firms in explaining the gender pay gap through the lens of a Oaxaca-Blinder decomposition. Tannenbaum et al. (2025) later does this in the US and with a focus on motherhood. Both papers find that women sort into lower pay firms and that women at a given firm are paid less than men, conditional on their own skill as measured by an AKM wage decomposition. Our results suggest that firm quality is multi-dimensional, and that high pay does not always signal high productivity, desirable firms. Indeed, we see that women and men's preference for firm types begin to differ, especially after childbirth, such that women begin sorting away from high paying firms that have measurably worse amenities on several dimensions. Thus, our results contribute to the pay premium literature by broadening the definition of firm quality.

The paper proceeds as follows. In section 2, we provide an overview of the institutional setting. We then detail our data sources in section 3 and methodology in section 4. Section 5 presents observational evidence through event studies around parenthood that amenities may play a role in the gender pay gap. Section 6 shows our results and section 7 concludes.

2 Institutional Setting

The study focuses on the labor market in Denmark, a country with high female labor force participation and relatively small employment losses around childbirth. Over our sample period (2008–2019), the average labor force participation rate for Danish mothers with children at home was 79%, compared to 84% for fathers in the same situation.[7][8] Our empirical strategy relies on survey information about job attributes that is only observed for employed individuals. The high employment rates for both genders, and the comparatively small decline in female employment around motherhood, suggest that selection into employment is less severe than in many other OECD countries.[9]

During the period we study, the statutory parental leave system is stable. The most

[7] Statistics Denmark, Statistikbanken, https://www.dst.dk/da/Statistik/emner/arbejde-og-indkomst.

[8] Although 2008 marks the beginning of the financial crisis and a temporary rise in unemployment, the labor market recovered from around 2011 onward. Unemployment rates stabilized and began to decline from mid-2011. To absorb residual business-cycle variation, all specifications include year fixed effects.

[9] Employment around motherhood is plotted in Appendix Figure **??**. As discussed by Kleven et al. (2024), there is about a 13 percent employment "motherhood penalty" in Denmark in slightly earlier cohorts, a pattern we replicate in our data. For comparison, Kleven et al. (2024) report employment motherhood penalties of 50% in South Korea, 25% in the United States, and almost 40% in Austria.

recent reform before our period took place on March 27, 2002, extending parental leave to 52 weeks. Of this, 4 weeks before birth and 14 weeks after birth are earmarked for the mother, while 2 weeks (within the first 14 weeks after birth) are reserved for the father. The remaining 32 weeks, offered at a reduced benefit rate, can in principle be shared between parents but are predominantly taken by mothers; Lassen (2023) report that mothers extended their leave by about 5 weeks following this reform. The parental leave scheme then remains unchanged until July 1, 2022, when a reform equalizes earmarked leave to 2+9 weeks for each parent. Firms may top up statutory benefits, and many private-sector employers do so while drawing reimbursements from centralized parental leave funds. Some firms offer even more generous arrangements to highly productive employees.

Despite high employment, gender differences remain on the intensive margin. Women work approximately four hours fewer per week than men on average and are more likely to work part time: 27% of women work part time compared to 9% of men.[10] Danish labor markets also display substantial gender-based sorting across industries, occupations, and firms. Gallen et al. (2019) document that although the gender pay gap has narrowed over the past 30 years, a gap of around 20% remains among recent cohorts, roughly half of which cannot be explained by hours, occupation, or education/field of study and is instead attributed to differential impacts of parenthood on men and women.

Workplaces in Scandinavia are often characterized by high levels of trust and autonomy, relatively flat organizational structures, and a strong emphasis on work–life balance.[11] These features reflect, in part, the historical expansion of the female workforce. Women in Denmark entered the labor market in large numbers in the 1970s, coinciding with the rapid expansion of the public sector (Rosen, 1997). Denmark now ranks high on work–life balance indicators, with a negotiated 37-hour workweek, five weeks of paid holiday per year, and relatively high leisure time for working individuals.[12] At the same time, Danish employed women still perform the majority of housework and childcare at home (Bonke and Christensen, 2018), suggesting that they may particularly value amenities that facilitate combining paid work and family responsibilities.

[10]Statistics Denmark, AKU, https://www.dst.dk/da/Statistik/dokumentation/metode/aku-arbejdskraftsundersoegelsen.

[11]Earlier research shows that such organizational practices do not necessarily reduce gender wage gaps; see Datta Gupta and Eriksson (2012) and Zimmermann (2021).

[12]OECD Better Life Index, https://www.oecdbetterlifeindex.org.

3 Data

We combine administrative matched employer–employee registers, repeated cross-sectional Labor Force Survey (LFS) data, and a separate preference elicitation survey. The registers provide near-universe coverage of employment relationships and firm identifiers, the LFS supplies detailed information on job amenities, and the survey experiment is used to estimate workers' willingness to pay (WTP) for these amenities. We now describe each data source in turn.

3.1 Matched Employer–Employee Data

The administrative data are drawn from the eIncome Register of Statistics Denmark, combined with the Business Register and the Population Register. The eIncome Register is based on information reported to the Danish Ministry of Taxation and covers all in Denmark aged 16–65 between 2008 and 2019. It contains, for each employment spell, monthly contractual hours worked, employment duration, firm and establishment identifiers, and exact start and end dates of employment.

Using a unique person identifier harmonized across all registers, we link these data to information on the distance between workers' home and workplace, age, gender, date of birth of the first child, occupation (from union records), and education. The administrative data further allow us to construct firm-level measures of wage premia and worker mobility patterns, from which we derive firm rankings as described in Section 4.

Similar administrative registers have been used extensively in recent work on the Danish gender pay gap (e.g., Kleven et al., 2019a; Gallen et al., 2019; Gallen, 2023; Borghorst et al., 2024). Our contribution is to link these administrative records, via the unique person identifier, to the amenities information reported in the Danish LFS.

3.2 Labor Force Survey

The Labor Force Survey (LFS) is a nationally representative repeated cross-section conducted by Statistics Denmark. We compile all available survey waves from 2008–2019. Each yearly LFS surveys around 50,000 individuals in the 15–74 age range.[13] Respondents enter the sample throughout the year and are interviewed four times on a quarterly basis. In each interview, they report their labor market status and detailed information about their job during a specified reference week.

[13]The minimum number of responses per year is about 46,000 and the maximum is about 53,000.

The core questionnaire includes questions on current employment status, usual and actual hours worked, whether hours are full time or part time, and the timing of work (e.g., evenings, weekends, shifts). It also asks whether work can be performed from home, whether start and end times are fixed, and whether the employer expects workers to be on call. In addition, in some years the LFS fielded ad hoc supplements on topics such as the possibility to vary work time for family reasons, whether the employer or worker decides work hours, whether the worker decides the content of their tasks, and whether work must be performed under time pressure. These supplementary questions are available only in one to three years, depending on the variable, and are asked of a smaller subsample. Given their potential importance for understanding mothers' preferences over amenities, we include them in our analysis wherever possible.

The LFS does not directly identify firms. To link workers to firms, we use a monthly wage register (BFL) that records the employer paying the wage. For each LFS reference week, we identify the month containing that week and assign the firm from which the worker received wages in that month. If wages are received from multiple employers, we select the employer paying the highest wage, consistent with the LFS instructions that questions refer to the main job. If the reference week straddles two calendar months, we assign it to the earlier month. In the rare case that a respondent changes firms during the reference week, we assume that responses refer to the employer at the beginning of the week.

Table 1 and Table 2 report summary statistics for the key variables in our analysis, combining the LFS with the matched employer–employee registers. Many workplace characteristics captured in the LFS relate to the family-friendliness of the work environment. For example, one variable available in every wave asks whether start and end times are fixed or flexible. About 39.2% of women report variable start and end times, compared to nearly 45% of men. Another measure of irregularity is the absolute difference between usual and actual hours worked, where women exhibit substantially greater regularity than men. Women are also about ten percentage points less likely than men to report being expected to work during their free time. During our (pre-COVID) period, roughly 30% of workers report being able to work from home. The LFS also allows us to identify a "long-hours" indicator—working more than 45 hours per week—that cannot be observed in administrative data due to the contractual cap at 37 hours. We find that about 7% of workers fall into this category, with men almost twice as likely as women to work very long hours. Finally, the combined data show sizable gender differences in commuting distance: men commute on average 28 km to work, while women travel about 19 km.

3.3 Preference Elicitation Survey

To estimate workers' valuation of amenities, we field an incentivized hypothetical choice experiment with a sample of Danish workers drawn via the European survey firm Bilendi in the Fall of 2024. The full questionnaire is reproduced in Appendix D.1. Respondents are initially screened on employment status, since some of the job attributes in the experiment are defined relative to their current wage.[14]

In the first part of the survey, we collect background information on respondents' current jobs, including the same amenity dimensions measured in the LFS. Summary statistics for these characteristics are reported in Table 3. Consistent with the patterns in the LFS (Section 3.2), women in the survey sample are less likely than men to have control over their working hours, to work long hours, and to work during their free time, and they are less likely to work far away from home. Table 3 also shows that the sample is broadly representative of Danish workers: education distributions are similar across genders, with women somewhat more likely to hold a Master's degree and less likely to have vocational training than men. Most respondents work in professional occupations, with men more concentrated in managerial positions and women more often in clerical support and service jobs.

In the second part of the survey, we implement the choice experiment. Participants are informed that, based on their responses, we will later generate individualized recommendations for current job vacancies.[15] This feature provides a real, though indirect, incentive to reveal true preferences even though the choices are hypothetical. Respondents are then shown 30 pairs of job profiles and, for each pair, asked to choose the job (labeled a or b) they would prefer.

Each job profile varies a set of amenities chosen to align closely with the LFS measures. Specifically, we randomize: whether the worker chooses working hours; whether start and end times are variable; whether weekly hours vary; whether the job has long hours (longer than full-time), full-time hours, or part-time hours; whether work time can be varied for family reasons; whether the job includes evening work; whether the worker is expected to

[14] Recall from Section 2 that employment rates are very high for both Danish men and women, including mothers and fathers.

[15] Each respondent evaluates 30 job contrasts. For each individual, we identify three vacancies among current Danish job postings in the same occupation that match the worker's preferred attributes, defined as those amenities with estimated coefficients significant at the 10% level in the preference elicitation. If no amenity coefficients are statistically significant, we select three well-paying vacancies in the individual's occupation. Recommendations were sent to respondents approximately three months after the survey. More than 50% of respondents indicated that they wished to receive these recommendations, despite being currently employed.

be available to work during free time (on call); whether it is possible to work from home; whether the pace of the job involves working under time pressure; whether the workplace is near (< 15 km) or far (> 30 km) from home; whether the worker decides the content of their tasks; and the salary level, expressed as a percentage of current pay. All amenity attributes are randomly drawn for each profile with equal probability over their support, and the wage attribute is randomly drawn between 100% and 120% of the respondent's current wage.

4 Methodology

This section describes the empirical methods and the construction of the main variables. Based on a simple conceptual setting (Section 4.1), we first outline our approaches to measuring willingness to pay (WTP) for amenities (Section 4.2), using both a survey and administrative data with amenities and revealed-preference measures of job value. To operationalize the latter, we then describe the measurement of firm rankings (Section 4.3).

4.1 Conceptual Overview

Individual i of gender g derives indirect utility from job j according to

$$V_{ij} = \gamma^g + Z'_{ij}\beta^g + \varepsilon_{ij}, \tag{1}$$

where Z_{ij} collects job characteristics, including wages and amenities, β^g is a gender-specific vector of valuations, and ε_{ij} is an idiosyncratic shock. Specifically,

$$V_{ij} = \gamma^g + \beta_w^g \ln W_{ij} + \beta_A^{g\prime} A_j + \Omega_j^g + \varepsilon_{ij},$$

where W_{ij} is the wage component, A_j is a vector of observed amenities at firm j, β_w^g and β_A^g are gender-specific valuations of wages and amenities, and Ω_j^g is a continuation value capturing unobserved components of firm j that are common across workers of gender g. While we are mainly interested in the flow utility of a job ($\gamma^g + \beta_w^g \ln W_{ij} + \beta_A^{g\prime} A_j$), we also use option values of a job Ω_j^g to estimate flow utilities (cf. Appendix B).

4.2 Measuring Willingness to Pay (WTP)

We quantify the monetary value workers place on specific amenities using an incentivized survey experiment that elicits preferences over hypothetical jobs with varying character-

istics. To put these estimates in perspective, we also construct WTP measures from the administrative data, interpreting revealed preferences from mobility patterns and firm rankings. In both the survey and administrative data, willingness to pay is estimated as the marginal rate of substitution between an amenity and wages. We emphasize, however, that the administrative-data WTP is an accounting object based on revealed-preference proxies for V_j^g and observed amenities A_j, and therefore depends on how well A_j captures the amenity bundle valued by workers. The two approaches are described in turn.

Survey Experiment Given the indirect utility specification in equation (1), the difference in utility between job a and job b in choice c for an individual of gender g can be written as

$$V_{iac} - V_{ibc} = (Z_{iac} - Z_{ibc})' \beta^g + \varepsilon_{ic},$$

where Z_{iac} and Z_{ibc} denote the job attributes observed by the participant, and β^g is a gender-specific vector of utility weights on these attributes. We estimate β^g using a linear probability model of the form

$$C_{ic} = \alpha^g + (Z_{iac} - Z_{ibc})' \beta^g + \varepsilon_{ic},$$

where the dependent variable C_{ic} is an indicator equal to one if the individual chooses job a over job b in choice c, and zero otherwise. The constant term α^g captures the average propensity to select job a that is not explained by observed characteristics.

WTP is computed in terms of a percentage of current wages by taking the ratio of the coefficient on an amenity of interest to the coefficient on the salary variable, which is presented as a percentage of a worker's current salary.[16]

The vector of characteristics Z_{ij} includes all amenity attributes observable to the survey participants: whether the worker chooses their working hours; whether start and end times are variable; whether hours vary each week; whether the job has long hours (above full-time), full-time hours, or part-time hours; whether work time can be adjusted for family reasons; whether the job includes evening work; whether the worker is expected to be available to work during free time (on call); whether it is possible to work from home; whether the job involves working under time pressure; whether the workplace is near or far from home; whether the worker decides the content of their tasks; and the wage level

[16]Because wages enter utility in logs, the compensating differential for amenity k is $\text{WTP}_k = 1 - \exp\left(-\frac{\beta_{A,k}}{\beta_w}\right)$. When the survey wage attribute is expressed as a percentage change, using the coefficient ratio $\beta_{A,k}/\beta_w$ corresponds to a first-order approximation.

as a percentage of current salary. As emphasized by Adams et al. (2025), it is important to distinguish between "employer-led" and "employee-led" flexibility. This distinction is incorporated by including interaction terms that allow the value of hours flexibility to differ depending on whether the employer or the worker sets the schedule. We also check that the results are robust to restricting to only contrasts in which the employer chooses working hours in order to assuage concerns that the contrasts in which a worker chooses working hours yet faces other schedule constraints (such as being on call) are confusing for respondents and attenuate WTP estimates.

Administrative Data We also examine how closely the WTP estimates align when using administrative data, using A_j as observed proxies for the amenity bundle. In this case, workers' utility at the firm level, V_j^g, are regressed on job pay and amenity attributes in a way that mirrors the indirect utility specification in equation (1). In the administrative data we do not observe V_j^g directly. Instead, we construct revealed-preference proxies for firm value from worker mobility (PageRank), described in section 4.3. Here we treat these proxies as observed dependent variables and return to construction details below. We then relate these proxies to firm pay premia and observed amenities in a specification that mirrors equation (1).

Let ϕ_j denote the AKM firm fixed effect at firm j, and let A_j be a vector of firm-level amenity indicators for k distinct amenities. The estimating equation is

$$V_j^g = \beta_0^g + \beta_w^g \, \phi_j + A_j' \beta_A^g + \varepsilon_j^g,$$

where V_j^g denotes the ranking of firm j for gender g, β_w^g and β_A^g are the gender-specific weights on wages and amenities (consistent with those that enter V_{ij}^g), and ε_j^g is an idiosyncratic error term. We interpret ϕ_j as a log pay premium, so changes in ϕ_j correspond to proportional changes in wages. From these estimates, we infer WTP by equating the value of a job with and without a given amenity k:

$$\beta_w^g \phi_1 + \beta_{A,k}^g = \beta_w^g \phi_2,$$

which implies

$$WTP^g = 1 - e^{-\frac{\beta_A^g}{\beta_w^g}} \tag{2}$$

As ϕ_j denotes firm premia, the interpretation of WTP is then the wage-premium-equivalent of an amenity in units of the AKM firm pay premium, holding the revealed-preference

value proxy constant.

We compute standard errors using the Delta method, including for gender-specific differences (see details provided in Appendix C.1). For robustness, we also compute a specification where we back out flow utility ($u_j = \gamma^g + \beta_w^g \ln W_{ij} + \beta_A^{g\prime} A_j$), following (Sorkin, 2018; Audoly et al., 2024) and obtain WTP using u_j instead of V_j. Appendix B outlines how we estimate u_j.

4.3 Inferring Firm Rankings in Administrative Data

A firm-level valuation index is obtained by averaging individual utility over workers at firm j by gender g:

$$V_j^g \equiv \mathbb{E}_i \left[V_{ij} \mid j, g \right] = \gamma^g + \beta_w^g \ln W_j + \beta_A^{g\prime} A_j + \Omega_j^g,$$

To operationalize these objects, two measures are employed. First, the wage premium offered by firm j, conditional on worker composition, is captured using the Abowd et al. (1999)—hereafter AKM—firm fixed effect, ϕ_j, which provides a measure of firms' log pay premia and serves as a proxy for $\ln W_j$. Second, firm popularity from the workers' perspective, V_j^g, is summarized using a PageRank- index that infers rankings from the direction of worker mobility across firms, following Sorkin (2018). These firm rankings are estimated separately for men, for women, and for the mixed-gender sample. We provide more detail on these measures below.

Firm Pay Premia - AKM Decomposition To relate observed amenities to firms' pay premia, we estimate an AKM decomposition of worker pay in the matched employer–employee data:

$$w_{it} = \alpha_i + \phi_{J(i,t)} + X_{it}'\beta + \varepsilon_{it},$$

where w_{it} denotes log earnings of worker i in year t. The term α_i is a worker fixed effect capturing time-invariant individual characteristics, $\phi_{J(i,t)}$ is a firm fixed effect for firm $J(i,t)$ employing worker i at time t, and X_{it} is a vector of time-varying covariates. We include as covariates worker age interacted with year and schooling.

The fixed effects are estimated relative to an omitted baseline, and the model is identified from wage changes of job movers. The worker effect α_i is often interpreted as a measure of ability rewarded similarly across firms, while the firm effect ϕ_j captures the wage premium that all at firm j receive. AKM firm fixed effects are identified for the connected set of

firms, and we focus on the largest connected set.[17]

Revealed Preference Values - PageRank We construct a mobility-based firm ranking following Sorkin (2018). Let M^0 denote the matrix of worker mobility across firms, where rows index destination firms and columns index origin firms. The element M^0_{kj} is the number of workers moving from firm j to firm k and M^0_{jk} is the number of workers moving from firm k to firm j. Define S^0 as a diagonal matrix with entries $S^0_{kk} = \sum_j M^0_{jk}$, the total number of moves out of firm k.

Let V^g_k denote the common value workers of gender g attach to firm k, encompassing both monetary and non-monetary aspects. When choosing a destination firm, workers consider V^g_k plus an idiosyncratic component ι, distributed type I extreme value with scale parameter 1. The total utility of a worker at firm k is therefore $V^g_k + \iota$. The probability of choosing firm k over another firm j is then

$$\frac{\exp\{V^g_k\}}{\exp\{V^g_k\} + \exp\{V^g_j\}}.$$

Using observed cross-firm mobility flows, aggregation, and vector notation, the equilibrium condition linking worker mobility to firm valuations can be written as

$$S^{0-1} M^0 \exp(V^g) = \exp(V^g),$$

where V^g is the vector with kth element V^g_k. We compute the measure $\exp(V^g_k)$ as the fixed point of this equation. In practice we work with $\widehat{V}^g_j$ and interpret it as a proxy for the firm valuation index V^g_j introduced above. The PageRank index is identified within the strongly connected set of firms, which requires that each firm in the set has both inflows and outflows of workers. We construct these rankings separately for men, women, and the pooled sample.

As robustness, we follow Bagger and Lentz (2018) to construct the poaching rate, defined as the fraction of total new hires who are hired from other firms.[18]

[17] As is standard, the largest connected set covers nearly all and firms; see Gallen et al. (2019).

[18] For firm j, let N^{EE}_j denote the number of new hires drawn from other firms and N^{UE}_j the number of hires from unemployment. The poaching rate at firm j, π_j, is

$$\pi_j = \frac{N^{EE}_j}{N^{UE}_j + N^{EE}_j}.$$

For each firm in our analysis sample, we compute the share of all hires across all years that come directly from other firms. We classify a hire as coming from unemployment if the worker did not hold a job within two weeks of the start of the new employment relationship. Following Bagger and Lentz (2018),

5 Suggestive Evidence on Willingness to Pay for Amenities

This section uses event studies around first childbirth to document how workplace amenities evolve and how these changes co-move with mothers' sorting across firms. While these patterns do not identify causal willingness-to-pay, they provide suggestive evidence that post-birth moves into lower-paying and less male-preferred firms are tied to changes in observable amenities. These findings motivate our subsequent causal analysis of willingness to pay for amenities.

Section 5.1 describes the event-study design. Section 5.2 documents how amenities evolve around parenthood, and Section 5.3 connects these amenity changes to post-birth firm sorting.

5.1 Event Study Design

We measure the evolution of men's and women's outcomes around the birth of their first child using the event-study approach of Kleven et al. (2019a) with a somewhat less restrictive specification suggested by Adams-Prassl et al. (2024).[19] For an outcome y_{it} of individual i in calendar year t, we estimate

$$y_{it} = \sum_{s=-5}^{10} \delta_s \mathbf{1}\{s = t - M_i\} + \sum_{e \in E} \sum_{a} \alpha_a^e \mathbf{1}\{a_{it} = a\}\mathbf{1}\{e_{it} = e\} + \gamma_t^e + \sum_{e \in E} \kappa_e \mathbf{1}\{e_{it} = e\} + \varepsilon_{it}, \tag{3}$$

where M_i is the year in which individual i has their first child, a_{it} denotes age, γ_t^e are calendar-year-by-education-level fixed effects, and e_{it} represents the highest completed education of individual i at time t. The coefficients of interest are the event-time coefficients δ_s, which capture the average difference in outcomes between individuals whose first child was born s years ago and individuals who have not yet had a child, net of age-by-education and year-by-education effects. We normalize $\delta_{-1} = 0$.

we recode unemployment spells shorter than 13 weeks followed by a return to the same employer as part of the original employment spell. We treat all non-employment spells as unemployment, regardless of whether the worker applies for or receives unemployment benefits.

[19] This addition addresses the concern that Kleven et al. (2019a) effectively treats childbirth timing as random over the life cycle. Thakral and Tô (2026) show that women in different age-at-first-birth cohorts follow systematically different career trajectories. Adams-Prassl et al. (2024) address this concern by adding controls for education to the Kleven et al. (2019a) specification, which captures an important dimension of cohort heterogeneity in the Danish context. This approach avoids a more general cohort parameterization, which would require additional identifying assumptions, such as the absence of pre-trends (see Thakral and Tô (2026)).

5.2 Job Amenities around Parenthood: Event-Study Evidence

Appendix Figures A1 and A2 report event-study estimates of how job amenities evolve around the birth of a woman's first child. Table 4 summarizes these event studies with a single *Post* effect which restricts the coefficients $\delta_s = Post$ for $s \geq 0$. For women, there is a 12 percentage point reduction in the probability of evening work after having children, on a base of 50 percent. After having children, the rate of working long hours halves.[20] Motherhood is strongly associated with a reduction in both earnings and commute distance in our data. For men, becoming a parent does not appear to significantly impact any of the amenities we measure, with a few small exceptions where the impacts are not economically striking: the rate of working from home rises by three percentage points and the propensity to work long hours falls by 1.6 percentage points on a base of thirteen percentage points.

The impacts of parenthood on women's amenities and dis-amenities are not driven by changing selection into work after parenthood. Our measures of labor market outcomes after becoming a parent are conditional on observing the parent working, so if there was a strong correlation between the types of women who elect not to work after having children and the job attributes of these women before motherhood, we might be concerned that the changes around parenthood reflect changes in the composition of the sample who is working, rather than changes in the job attributes these workers have. Accounting for selection into employment is unlikely to change our results for two reasons. First, employment declines upon parenthood are small. As shown in Appendix Figure A4, the event study estimates of the decline in employment are less 10 percent of a baseline employment rate over 70 percentage points. This is quite small relative to other settings Kleven et al. (2019b). Second, Appendix Figure A3 shows the women who select out of the labor force upon having children generally had less favorable pre-birth attributes. For example, women who remain employed in years 1-5 after having children live *farther* from their workplace in the year before having children as compared to women who later exit the labor force. Since the commute distance overall falls when women give birth, this composition change does not explain the event study decline in commuting distance around motherhood. More generally, for most amenities, women who later exit employment had more favorable pre-birth job attributes where the event studies show deterioration after childbirth. This pattern is inconsistent with composition driving the results. The main exception is evening work. Women who later exit employment were nearly 10 percentage

[20] We focus on the propensity to work more than 45 hours per week—uncommonly long hours in Denmark. Our result complements existing evidence from Kleven et al. (2019a) on the rise in part-time work for women after they have children.

points more likely to work evenings before childbirth.[21] Since women's employment falls by about 6-10 percentage points in years 2-10 after childbirth (Appendix Figure A4), composition can account for part—but not all—of the observed decline in evening work.

These results are consistent with a compensating differentials model in which women's (but not men's) preferences and sorting across jobs changes upon having children. However, we also note that many amenities related directly to providing childcare do not seem impacted by parenthood: women do not reduce their rate of oncall work, and are not more likely to work in jobs which allow them to vary their schedule for family reasons, and women are *less* likely to have a work-from-home job following motherhood in our data in this period. These puzzling associations may arise because mothers do not value these attributes more than non-mothers, or they may arise because workplaces bundle attributes in a way which makes it costly for mothers to get access to all of the job characteristics they value.

5.3 Job Amenities and Sorting after Motherhood

We next examine whether changes in workplace amenities co-vary with mothers' sorting into lower-paying firms and into firms that are less preferred by men. The main finding is that once we condition on firm-level amenities, the post-birth decline in firm pay premia is attenuated by more than half, and the post-birth movement toward from male-preferred firms largely disappears. Throughout, adding amenity controls is an accounting exercise: we ask whether mothers' post-birth firm moves look different once we compare firms with similar observed amenities, rather than identifying causal effects of amenities.

Figures 1 implements the event-study specification in equation (3) using outcomes related to pay and firm type. In each panel, the solid black line reports estimates from a baseline event study with event-time indicators, firm size, as well as all interactions of age fixed effects, year fixed effects, and education level.[22] The dashed blue line adds controls for workplace amenities measured at the firm level, along with the worker's own commuting distance.[23]

[21] They were also more likely to report schedule flexibility for family reasons, although the estimates for this outcome are very imprecise.

[22] We include firm size because firm size is well studied as predictive of amenities and pay. We present results without firm size in Appendix Figure A5.

[23] We compute firm-level amenity measures by averaging LFS responses within firm across all available years for each amenity (choosing working hours; variable start/end times; usual vs. actual hours; long hours; ability to vary work time for family reasons; evening work; on-call duty; working from home; time pressure; and task-content autonomy). We then include these firm averages, plus the worker's own commuting distance, as controls in the blue specifications. Because some amenities are observed only in ad hoc modules (notably in 2019), we address potential composition concerns in two ways. First, in the

Accounting for amenities reduces the measured impact of motherhood on earnings by about 15 percent and largely eliminates the post-birth decline in firm pay premia. Figure 1 shows event-study estimates for three outcomes: earnings (top row), the AKM firm pay premium of the employing firm (middle row), and firm PageRank (bottom row).[24] At five years after first birth, mothers' earnings fall by roughly 37,000 DKK in the baseline specification and 31,000 DKK when we control for amenities, a modest reduction. However, amenities account for almost all of the post-birth decline in firm pay premia. In the baseline, mothers of ten-year-olds work at firms with pay premia more than two percentage points below their pre-birth level. Once we condition on firm amenities, this gap shrinks to nearly zero (Figures 1c and 1d). This pattern indicates that a sizable share of the observed move to lower-paying firms reflects sorting toward firms that offer more favorable temporal and spatial amenities.

Turning to revealed preference measures of firm quality, in the baseline event studies (black lines), after childbirth, women sort to better firms according to men (Figure 1e).[25] Once we condition on firm-level amenities (blue lines), we see that the post-birth sorting becomes stronger, suggesting that mothers would move to even "better" firms were the amenities at those firms similar to those at "worse" firms.[26]

These results should be viewed as an accounting exercise: attenuation may reflect both observed amenities and correlated unobserved attributes.[27] Because our amenity controls are constructed from firm-level averages of LFS responses, they are measured with error;

"All amenities" columns we restrict to a balanced panel of firms observed in every administrative year, so that results are not driven by over-representation of firms present in the ad hoc-module year. Appendix Figure **??** shows that composition matters without this restriction. Second, we also report specifications that use only the subset of amenities observed in every year (hours, irregularity, work from home, and evening work) and therefore allow a much larger firm sample. Table 5 summarizes the resulting samples. To ensure that differences across firm-quality measures are not driven by differences in firm coverage, we report results for the largest common set of firms observed across measures and amenities. Firm measures are positively correlated (weighted and unweighted), as shown in Tables A1 and A2.

[24] We construct PageRank using men only so that women's post-birth job moves do not mechanically shift the measure.

[25] Appendix Figure A8 presents the events study using firms preferred by women as an outcome. Some of the relationship in that figure is mechanical, since the moves of mothers help to determine the preference ranking of firms.

[26] Using an alternative revealed-preference proxy, the poaching rate, we also see that post-motherhood sorting patterns are substantially attenuated when controlling for amenities (Appendix Figure A6).

[27] We further probe the role of specific amenities using a Gelbach decomposition which describes the impact of including amenities as controls in estimating the gender wage gap, and impact of motherhood on log earnings, the pay premium, and the PageRank revealed preference measure. Appendix Table **??** presents the results. Across these measures, the amenities which explain the largest changes in the post-motherhood effect are inconsistent. For example, evening work seems an important factor for the reduction in the gender gap in log earnings, but does not contribute to the reductions in the motherhood penalty in the firm pay-premium.

as a result, any attenuation we find is likely a lower bound on the role of amenities under richer measurement.[28] We also address two additional implementation issues. First, to mitigate composition concerns arising from amenities observed only in ad hoc modules, which disproportionately sample large firms in 2019, we report both (i) specifications using the full amenity set on a balanced panel of firms and (ii) specifications using the subset of amenities observed every year on a much larger firm sample (these are the left and right columns, respectively, of Figure 1, and Appendix Figures A5, A6, A7, and A8). Second, because firm pay premia and PageRank are generated firm-level outcomes, we complement the baseline confidence intervals with inference procedures that propagate first-stage uncertainty. We find no changes in our conclusions in this setting (cf. for firm premia Figure A7 and for PageRank Figure A8).[29] Overall, these robust patterns suggest that much of mothers' post-birth movement to lower-paying firms reflects sorting toward firms with better amenities, rather than a pure shift toward lower-quality employers.

6 The Monetary Value of Amenities

While Section 5.2 documents changes around first childbirth, gender differences in amenity exposure are also present in the cross section. Table 2 shows that women are more likely to work in jobs with predictable schedules and shorter commutes and less likely to work evenings or long hours; these gaps widen around parenthood (Figure A1). In this section, we estimate the willingness to pay for various amenities with the goal of understanding how gender gap in amenities and gender gaps in the *value* of these amenities to workers affect conclusions about gender gaps in total compensation, inclusive of amenities. We conduct an incentivized hypothetical- choice survey which varies amenities, holds other job characteristics fixed, and eliminates labor demand constraints. Comparing causal estimates from the survey with estimates from observational data (assuming a frictionless compensating differentials model without omitted amenities), highlights the importance

[28] See Bound et al. (2001) for the implications of measurement error in covariates.

[29] In our setting, the underestimated standard errors from using generated firm-level dependent variables present greater complexity than typical two-stage regressions. This relates to the well-studied problem of limited mobility bias when estimating firm pay premia effects on total wage variation (see, for example, Andrews et al. (2008); Kline et al. (2020); Bonhomme et al. (2023) and Kline (2024) for a review) and estimation error from finite-sample network statistics with potentially sparse data for PageRank and poaching rank (see, for example, Nowakowicz (2024)). We obtain second-stage standard errors through simulation-based variance estimation using firm-level estimates of the variance of firm rank measures. For firm fixed effects, we follow Kline et al. (2020)'s leave-one-out approach. We employ a novel method to construct standard errors for the network statistic PageRank based on MLE estimation techniques. This method exploits the fact that the MLE estimate for PageRank is identical to the solution obtained in Sorkin (2017), enabling derivation of standard errors through classical MLE-based methods. Additional details are provided in Appendix section C.2.

of a controlled setting for estimating the value of amenities and allows us to reject the frictionless model. Our estimates suggest a substantial role for amenities concerning spacial and temporal flexibility in the total compensation of women relative to men.

6.1 Willingness to Pay in the Survey Data

To quantify willingness to pay (WTP) for amenities, we use the incentivized hypothetical-choice survey described in Section 3.3. Respondents complete a sequence of paired job-vignette choices in which wage offers and job attributes vary across alternatives, allowing us to trace the implied wage–amenity tradeoffs. Figure 2 illustrates a typical job contrast shown to participants. Throughout, we report WTP as the wage-equivalent percentage change associated with a marginal change in a given attribute, holding the other vignette attributes fixed.

Table 6 reports WTP estimates implied by equation (4.2) separately for women and men. Overall, men and women value most job attributes similarly. The final column reports the p-value for a test of equality in WTP between women and men for each attribute. We find statistically significant and economically meaningful gender differences for several amenities, including the ability to adjust work time for family reasons, avoiding evening work, avoiding being on call ("expected to be available for work in free time"), working from home, avoiding time pressure, and working near home. For the remaining attributes, estimated WTP is similar across genders.

While our baseline estimation is an additive model of amenities and wages, we also can consider interactions between amenities. One particularly important interaction is highlighted by Adams et al. (2025): variable hours due to employer demands are a disamenity, while variable hours by choice may reflect flexibility and be an amenity for workers. First, we note that conditional on other attributes, variable hours are among the least important attributes to workers overall. Second, when we add the interaction between "Start and end times variable" and "Worker chooses working hours," Appendix Table A8 shows that though women dislike flexibility demanded by an employer more than men, this is still not a particularly important amenity, conditional on others. We also acknowledge that many of our comparisons may seem unrealistic: for example, having a job in which a worker is expected to be available for work in their free time, but simultaneously chooses working hours.[30] Appendix Table A9 presents the results of the WTP estimation restricting to only comparisons in which hours are chosen by the employer. We believe that conditional

[30] A doctor may have such hours: they choose a schedule which includes some oncall time.

on this attribute, all of the comparisons are reasonable. Our conclusions about the attributes most valuable to employees and the gender gaps in these valuations are largely unchanged when we make this restriction, though estimates for some amenities—such as the ability to vary work time for family reasons—rise slightly for both genders and the ability to work from home becomes more important for women.

We next compare the preferences of mothers to those of women without children. To make these groups comparable on observables, we restrict attention to respondents aged 27–42, which aligns the survey sample with the age window underlying the event-study analysis in Section 5.2.[31] Table A4 shows that mothers place a higher value on several dimensions of temporal control: choosing one's own hours and the ability to vary work time for family reasons—these contrasts are significant at the ten percent level. Mothers also exhibit a significantly higher willingness to pay to avoid evening work and on-call obligations. In addition, relative to non-mothers, mothers place greater value on task-content autonomy. Interestingly, we find no difference by parenthood in the willingness to pay to be able to work from home. For men, the corresponding comparison in Table A5 yields limited evidence of differential preferences: the main robust difference is that fathers are less averse to long hours than non-fathers.[32]

Taken together, the vignette evidence points to parenthood-related differences in preferences concentrated in temporal-control amenities, especially for women. At the same time, we interpret these comparisons cautiously. Because the survey is cross-sectional (fielded in 2024), these parent-non-parent differences may reflect selection into parenthood rather than preference changes induced by childbirth.

6.2 Willingness to Pay in the Administrative Data

When we compare the results of the preference elicitation survey to the value of amenities we would infer based on worker flows, we find differences in what appears valuable to workers. Regressing our PageRank measure of the value of a job on amenities at the worker level and taking the ratio of the coefficients on the log firm pay premium and amenities, as in equation (2), we obtain the results in Table 7. We estimate few differences in the preferences of women compared to men and generally smaller willingness to pay for

[31] In 2023, the average age at first birth is 31.5. Our 27–42 restriction corresponds roughly to the event-study window spanning five years before and ten years after this age. Results are similar under alternative cutoffs; Appendix Table A6 reports estimates using the full sample. We apply the same age restriction to men.

[32] In the full-age sample, we also find suggestive differences for variable start/end times and for the ability to vary work time for family reasons.

the most costly dis-amenities, such as evening work and working under time pressure.

These observational correlations—the wage changes that would rationalize the cross-firm association between revealed-preference firm values and observed amenities under a frictionless compensating-differentials interpretation—yield different conclusions compared to the preference survey. There are two main reasons for this: first, there are many omitted amenities which bias the regression; second, firms are constrained in their supply of amenities by the technology of production, so worker demand does not determine the provision of amenities in equilibrium. Our preference elicitation survey solves these problems by explicitly holding other job attributes fixed and by directly measuring worker demand.

6.3 Significance for the Gender Wage Gap

To connect heterogeneity in amenities to the gender pay gap, we next ask how differences in willingness to pay (WTP) for job characteristics shape the interpretation of observed gender wage differentials. The survey reveals substantial heterogeneity in the value of amenities that is systematically related to workers' job choices. In addition to the vignette tasks, we elicit the amenities respondents have in their current jobs. Figure 3 shows clear evidence of sorting: for each amenity, workers who currently hold jobs offering that amenity are more likely to choose jobs featuring the same amenity in the vignette comparisons. The differences are larger for the amenities valued the most on average (given by the ordering of the amenities from top—evening work—to bottom—hours vary each week).[33]

To translate gender differences in amenity exposure into a gap in total compensation, we assign each amenity a monetary value using the survey-based WTP estimates and the individual-level amenity measures from the LFS in the year 2019. The survey elicits WTP for each attribute as a percentage change in wages relative to a baseline job. We therefore convert WTP into kroner by scaling by each worker's earnings.

Formally, let Y_i denote annual earnings for worker i in the LFS, and let $a_i \in \{0, 1\}$ indicate whether worker i reports access to amenity $a \in A$ in her current job. Let $\widehat{\lambda}_a$ denote the estimated WTP for amenity a expressed as a share of wages (e.g., $\widehat{\lambda}_a = 0.02$ corresponds to a 2% wage equivalent). We define worker i's amenity-adjusted compensation as

$$\widehat{\text{Comp}}_i = Y_i \left(1 + \sum_{a \in A} \widehat{\lambda}_a \, \mathbf{1}\{a_i = 1\} \right), \tag{4}$$

[33] Due to constraints on background questions, we did not elicit whether respondents face time pressure or have discretion over task content in their current jobs.

so that each amenity contributes $\widehat{\lambda}_a Y_i$ kroner to total compensation. This is a back-of-the-envelope accounting exercise: it assigns each observed amenity a wage-equivalent value from the vignette survey and adds it to observed earnings, without attempting to net out compensating differentials already embedded in wages.

Our WTP calculations are relative to a "default" job with employer-set, fixed schedules; no on-call work, evening work, or time pressure; no working from home; and a commute longer than 15 km.

We report two versions of (4). First, we use the unconditional mean WTP for each amenity in the relevant survey sample. Second, to incorporate sorting, we allow WTP to differ by whether respondents have access to the amenity in their own current job: for each amenity a, we estimate $\widehat{\lambda}_a^{\text{access}}$ and $\widehat{\lambda}_a^{\text{no access}}$ in the vignette survey and apply $\widehat{\lambda}_a^{\text{access}}$ to LFS workers with $a_i = 1$ (and $\widehat{\lambda}_a^{\text{no access}}$ to those with $a_i = 0$).

We find that valuing amenities narrows the gender gap in workplace compensation. Figure 4 compares three measures of compensation by gender: (i) earnings; (ii) earnings plus the value of amenities using average WTP by gender, as in equation (4); and (iii) earnings plus the value of amenities using WTP that varies by whether workers report having access to the amenity in their current job (the "sorting-adjusted" measure).

In the earnings data (conditional on employment), the gender gap is 21 percentage points. When we add amenities using average WTP, the gap falls to 18 percentage points. This modest narrowing reflects both higher amenity-adjusted compensation for women and lower amenity-adjusted compensation for men, consistent with women being more likely to hold jobs with amenities that are valued in the survey and men being more exposed to disamenities.

The gap falls further, to 13 percentage points, when we allow WTP to differ by realized amenity exposure. This adjustment captures the empirical regularity that workers in jobs with a given amenity tend to value that amenity more (Figure 3), consistent with sorting in compensating-differentials models such as Rosen (1986). Under this sorting-adjusted valuation, the implied gender gap in total compensation is 38% smaller than the earnings gap, driven primarily by a larger increase in women's amenity-adjusted compensation.

7 Conclusion

This paper explores the relationship between job amenities and gender differences in pay arising due to childbirth. It also explores how amenities affect firm preferences of women

and men. Firm preference is measured either by the AKM firm pay premium or by worker-mobility based measures of firm quality based on revealed preference such as the PageRank or the poaching rate. The motivation is to uncover whether a preference for amenities drives differing firm choices of men and women after birth, and how this preference relates to the motherhood penalty. Do mothers accept lower pay after childbirth in return for more family-friendly amenities which enable them to better balance family life and a career? To answer this question, we merge unique survey data on temporal and spatial job flexibility measures to the matched employer-employee administrative data and explore how amenities evolve around the birth of a woman's first child.

We find that impact of children on mothers' earnings is attenuated when controlling for amenities. Second, we find that amenities attenuates the firm pay premium decline after childbirth. Amenities also explain why women avoid firms that do not have the types of amenities that women value after becoming mothers. While these movements are potentially indicative of compensating differentials, they do not necessarily imply that women value these amenities in particular—amenities may be bundled and various forces, including discrimination, may constrain the ability of women to sort into those jobs that they prefer. In order to estimate the value of amenities to workers, we measure the tradeoff workers are willing to make between job characteristics and wages using an incentivized hypothetical preference elicitation survey. Women are found to prefer jobs in which they do not have to be on call or work evening hours, but there does not seem to be a strong preference for avoiding hours variability *per se*. Accounting for the amenities we measure in the data, the gender gap in compensation is reduced by 38%, to 13 percentage points.

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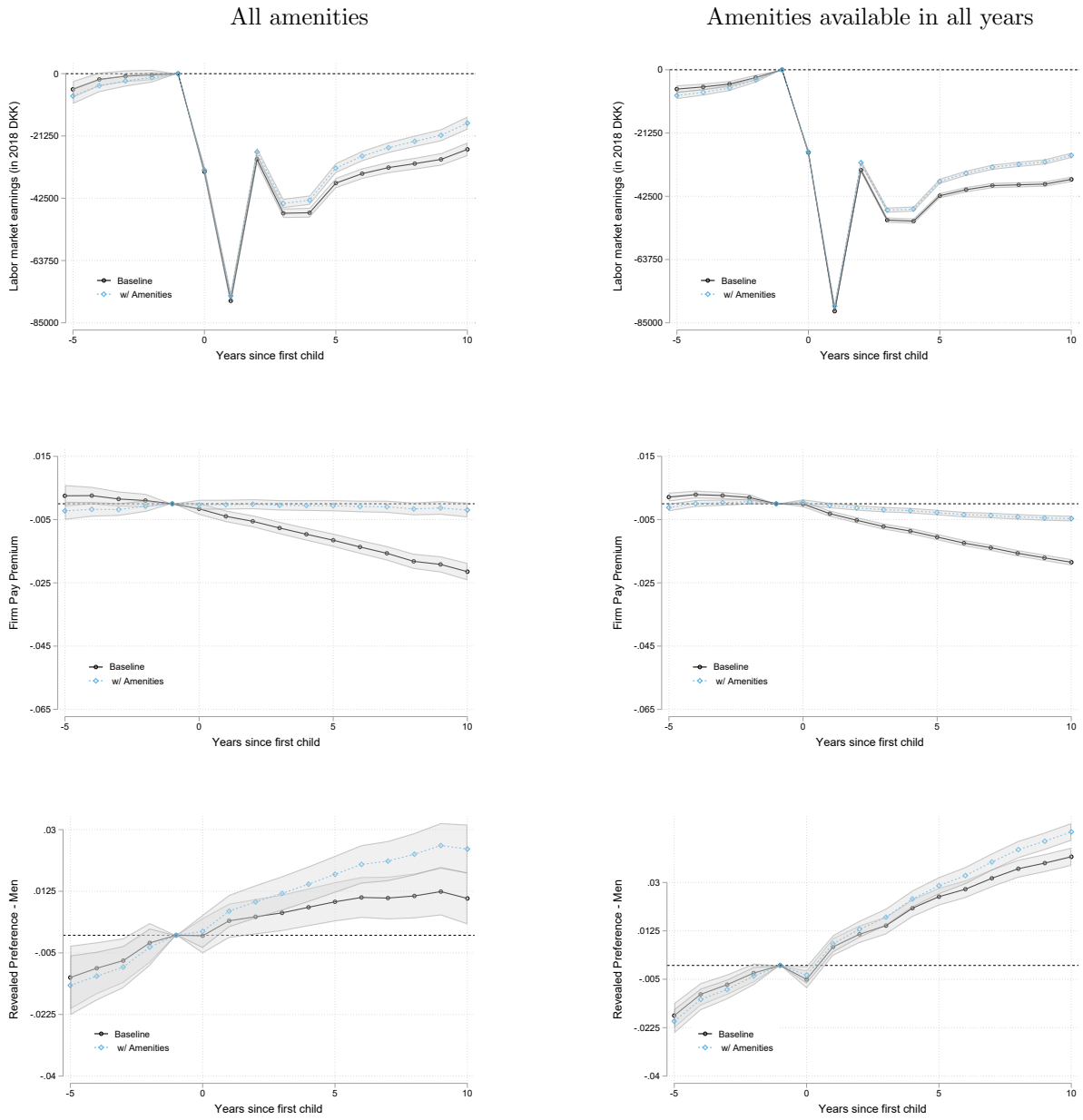
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Figures

Figure 1: Accounting for Firm-Level Amenities in Measures of Pay and Firm Quality



Notes: This figure shows the relationship between years since first birth and measures of pay (first row), the firm-level pay premium (second row), and firm PageRank, based on male employee movements (third row). The solid black line is the result of a regression including only event-year, age and calendar year interacted with education fixed effects, as well as a control for firm size (employee headcount). The dashed blue line adds to the regression firm averages of the amenities available in the LFS and administrative data. The left-hand-side includes all amenities in these regressions, including those only asked about in one ad-hoc survey. Since some of these questions are asked only in one year, firms present in that year would be differentially selected into the sample and trends may reflect changes in the composition of firms. To alleviate this concern, we restrict to a balanced set of firms which appear in the BFL data in every year in the sample period. The right-hand-side includes a much larger set of firms and a smaller subset of amenities—those measured in every year—in the regressions. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These standard errors are computed taking the measured firm premia as constants.

Figure 2: Sample Survey Contrasts

	Job A	Job B
Timetal	Deltid - 20 timer om ugen	Fuldtid - 37 timer om ugen
Kontrol over timer	Fastsætter din egen tidsplan	Din arbejdsgiver fastsætter din tidsplan
Arbejde hjemmefra	Ja, medarbejdere kan arbejde hjemme fra nogle dage	Ingen
Mødetid på arbejde	Dine start- / sluttider for arbejdet er variable	Du skal arbejde på bestemte, fastsatte tidspunkter
Brug for at arbejde om aftenen	Aldrig	Ja, ofte
Timetal er regelmæssige	Timerne varierer fra uge til uge	Timerne varierer fra uge til uge
Tempo	Tidspres	Afslappet
Uafhængighed	Dine arbejdsopgaver og arbejdsgange er defineret af din arbejdsgiver	Du vælger selv, hvordan du udfører dit arbejde
Familietid	Det er vanskeligt at tilpasse arbejdstiden af personlige/familiemæssige årsager	Det er vanskeligt at tilpasse arbejdstiden af personlige/familiemæssige årsager
Tilkaldevagt	Du kan blive kontaktet når du har fri for at blive kaldt på arbejde næste dag	Du er ikke på vagt
Afstand	Arbejdspladsen ligger mere end 30 km væk fra din bopæl	Arbejdspladsen ligger inden for 15 km fra din bopæl
Løn	16 % mere end din nuværende månedsløn	14 % mere end din nuværende månedsløn

Hvilket job foretrækker du?

◉ A
○ B

(a) Example of job contrast from survey

	Job A	Job B
Hourly figures	Part-time - 20 hours per week	Full time - 37 hours per week
Control over hours	Set your own schedule	Your employer sets your schedule
Work from home	Yes, employees can work from home from some days	No
Meeting time at work	Your start/end times for work are variable	You must work at specific, fixed times
Need to work on the evening	Never	Yes, often
Hours are regular	Hours vary from week to week	Hours vary from week to week
Pace	Time pressure	Relaxed
Independence	Your work tasks and workflows are defined by your employer	You choose how you do your work
Family time	It is difficult to adjust working hours personal/family reasons You can be	It is difficult to adjust working hours for personal/family reasons
On-call duty	contacted when you are free to be called at work the next day	You are not on duty
Distance	The workplace is more than 30 km away from yours residence	The workplace is within 15 km of your place of residence
Pay	16% more than your current monthly salary	14% more than your current monthly salary

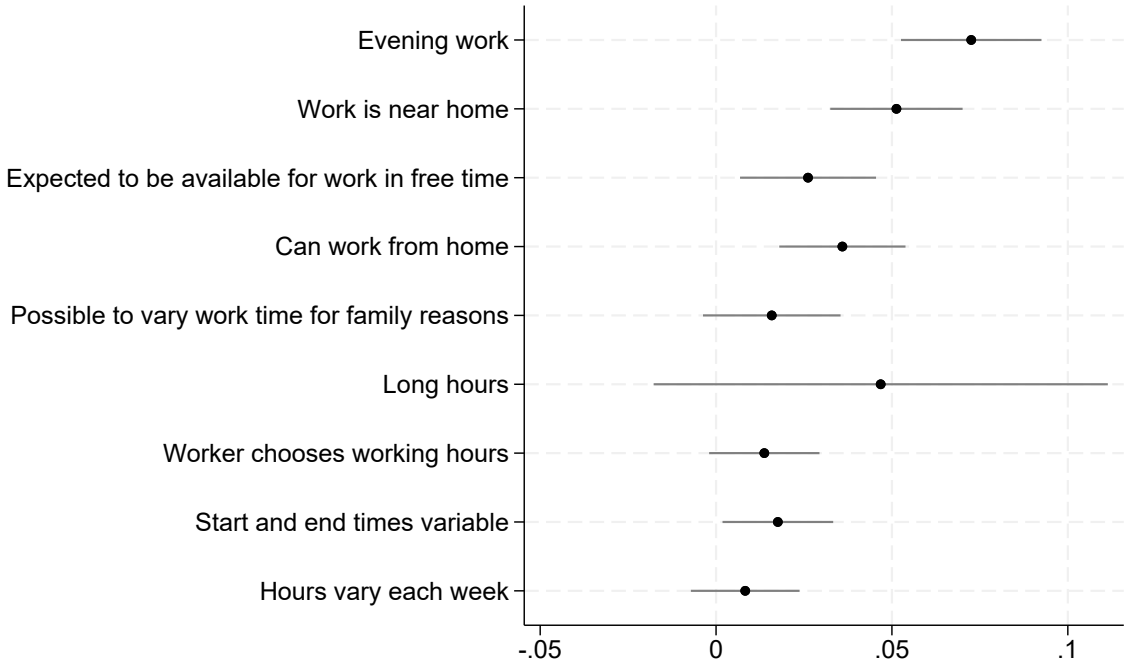
Which job do you prefer?

◉ A
○ B

(b) Example of job contrast from survey: English translation

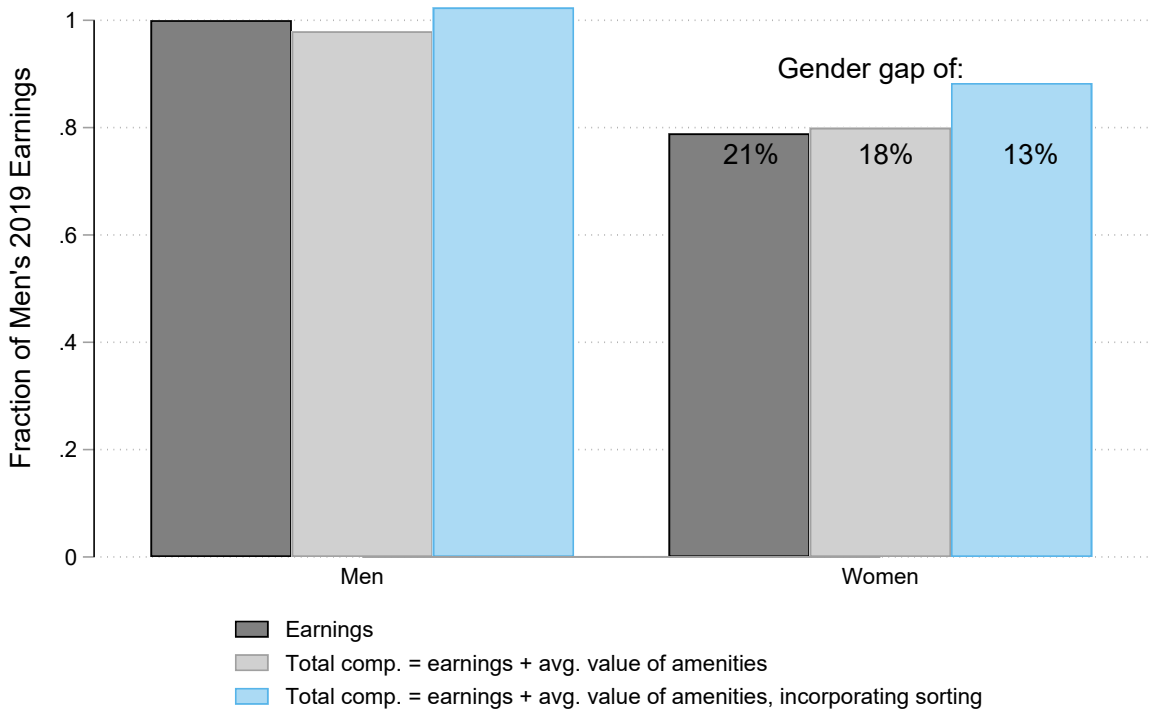
Notes: The figure presents an example job contrast as shown to survey respondents in the original Danish (top panel), alongside the corresponding English translation obtained using Google Translate (bottom panel).

Figure 3: Coefficient on Interaction between Own Job Characteristic and Valuation of the Characteristic in Survey



Notes: The figure plots coefficients on interactions between having a given amenity in the respondent's current job (all surveyed individuals are employed) and choosing a job profile with that amenity in the hypothetical choice experiment, as in equation (4.2). All interactions are estimated jointly in a single regression. Gray bars indicate 95% confidence intervals, with standard errors clustered at the individual level.

Figure 4: Gender Pay Gap Accounting for Value of Amenities



Notes: The figure shows men's and women's average baseline earnings (dark gray bars) and two measures of average compensation that augment earnings with the value of amenities. The first compensation measure (light gray bars) adds amenity values using average willingness-to-pay (WTP) estimates from the survey, allowing heterogeneity in valuations by gender only. The second measure (blue bars) uses WTP estimates based solely on survey respondents who currently hold a job with the amenity in question, again by gender. Labels above the bars for women report the corresponding gender gap in each compensation measure, defined as one minus the ratio of women's to men's compensation, in percent. Earnings and amenity incidences are taken from administrative data for 2019 linked to the 2019 LFS, including the ad hoc module, covering all amenities for which WTP estimates are available from the preference elicitation survey.

Tables

Table 1: Summary Statistics: Demographics and Occupation

	All	Female	Male
Demographics			
Age	43.705	43.908	43.511
	(12.091)	(12.104)	(12.075)
Age at first birth	29.209	28.331	30.114
	(4.753)	(4.489)	(4.847)
High school or less	0.207	0.182	0.231
Vocational training	0.341	0.305	0.375
Short or medium term higher education	0.251	0.310	0.194
Long term higher education	0.146	0.151	0.141
Occupation			
Managers	0.046	0.029	0.063
Professionals	0.289	0.350	0.231
Technicians and associate professionals	0.114	0.119	0.110
Clerical support workers	0.087	0.118	0.056
Services and sales workers	0.151	0.200	0.105
Skilled agricultural, forestry and fishery workers	0.004	0.002	0.006
Craft and related trades workers	0.078	0.011	0.142
Plant and machine operators, and assemblers	0.052	0.018	0.083
Elementary occupations	0.083	0.071	0.095
Armed forces occupations	0.008	0.001	0.013

Note: This table presents means of demographic and occupational variables for the full sample and by gender. Standard deviations are in parentheses for non-binary variables. Statistics are for the final year of our LFS survey data (2019).

Table 2: Summary Statistics: Work Characteristics (LFS and Administrative Data)

	All	Female	Male
Expected flexibility in working times	0.442	0.407	0.510
	[12827]	[8533]	[4294]
Expected to be available for work in free time	0.548	0.526	0.592
	[12828]	[8539]	[4289]
Work under time pressure	0.365	0.352	0.392
	[12853]	[8557]	[4296]
Possible to vary work time for family reasons	0.825	0.803	0.868
	[12866]	[8563]	[4303]
Decide order of tasks	0.772	0.756	0.802
	[12824]	[8539]	[4285]
Decide content of tasks	0.618	0.592	0.670
	[12824]	[8539]	[4285]
Worker chooses working hours	0.657	0.680	0.581
	[18850]	[14488]	[4362]
Actual hours above 45/week	0.077	0.062	0.109
	[35223]	[23990]	[11233]
Can work from home	0.274	0.255	0.315
	[35298]	[24050]	[11248]
Start and end times variable	0.377	0.345	0.440
	[32507]	[21682]	[10825]
Evening work	0.434	0.432	0.438
	[35298]	[24050]	[11248]
Distance between work and home (km)	23.292	18.999	27.343
	(37.173)	(30.056)	(42.421)
Absolute difference between usual and actual hours	3.647	3.514	3.911
	(6.263)	(6.150)	(6.474)
Monthly labor market earnings (2018 DKK)	34755.181	30509.694	38699.567
	(28677.867)	(16757.605)	(35962.585)
	[2244495]	[1080988]	[1163507]

Note: This table presents means of work-characteristic variables for the full sample and by gender. Standard deviations are in parentheses for non-binary variables and counts are in brackets for survey-based measures and earnings. Statistics are for the final year of our LFS survey data (2019). LFS questions are available only for a subset of the total population, in particular for items in the Ad Hoc modules; see Table 8 for question coverage by year.

Table 3: Summary Statistics: Vignette Survey

	All	Women	Men
Demographics			
Age	40.461	39.794	41.433
	(0.278)	(0.363)	(0.428)
High school or less	0.104	0.095	0.118
Vocational training	0.256	0.243	0.273
Short or Medium-term higher education	0.434	0.432	0.436
Long-term higher education	0.206	0.230	0.172
Occupation			
Managers	0.075	0.057	0.101
Professionals	0.370	0.399	0.328
Technicians and Associate Professionals	0.126	0.106	0.155
Clerical Support Workers	0.154	0.184	0.111
Services and Sales Workers	0.137	0.162	0.101
Skilled Agricultural, Forestry and Fishery Workers	0.009	0.010	0.007
Craft and Related Trades Workers	0.039	0.014	0.076
Plant and Machine Operators, and Assemblers	0.023	0.012	0.039
Elementary Occupations	0.061	0.052	0.074
Armed Forces Occupations	0.005	0.003	0.007
Work Characteristics			
Evening work	0.323	0.304	0.350
Work is near home	0.612	0.655	0.549
Expected to be available for work in free time	0.230	0.186	0.296
Can work from home	0.467	0.446	0.498
Possible to vary work time for family reasons	0.717	0.679	0.773
Long hours	0.039	0.034	0.047
Full-time	0.786	0.726	0.872
Part-time	0.175	0.240	0.081
Worker chooses working hours	0.409	0.378	0.453
Start and end times variable	0.557	0.554	0.562
Hours vary each week	0.358	0.321	0.411
Monthly labor market earnings (in 2018 DKK)	42,648	35,423	52,187
	(2,082)	(1,981)	(3,999)
N	998	592	406

Notes: This table presents summary statistics from the Vignette Survey. All entries are sample means. All variables except age and monthly labor market earnings are indicator variables. Sample sizes for the income variable are 703, 400, and 303 for the full sample, women, and men, respectively. For age and monthly labor market earnings, standard errors are reported in parentheses. Monthly earnings are winsorized at the 1st and 99th percentiles.

Table 4: Average Post-child Effect

	Women		Men	
	Mean in year before child	Post-child effect	Mean in year before child	Post-child effect
Evening work	0.501	-0.117	0.521	-0.005
	(0.464)	(0.012)	(0.463)	(0.012)
Distance between work and home	20373.569	-1552.915	25055.355	160.617
	(32021.966)	(77.480)	(40266.151)	(96.242)
Work under time pressure	0.492	-0.043	0.362	0.072
	(0.504)	(0.085)	(0.485)	(0.083)
Expected to be available for work in free time	0.475	-0.004	0.672	-0.133
	(0.504)	(0.084)	(0.473)	(0.077)
Working at home	0.300	-0.037	0.321	0.035
	(0.433)	(0.011)	(0.442)	(0.010)
Possible to vary work time for family reasons	0.771	-0.012	0.918	-0.062
	(0.422)	(0.048)	(0.275)	(0.032)
Actual hours above 45/week	0.057	-0.028	0.127	-0.016
	(0.204)	(0.005)	(0.300)	(0.008)
Worker chooses working hours	0.408	0.009	0.475	-0.079
	(0.497)	(0.080)	(0.506)	(0.085)
Worker controls hours	0.516	0.012	0.683	-0.100
	(0.504)	(0.085)	(0.469)	(0.078)
Decide content of tasks	0.607	0.058	0.655	0.030
	(0.493)	(0.079)	(0.479)	(0.072)
Decide order of tasks	0.836	0.013	0.741	0.068
	(0.373)	(0.056)	(0.442)	(0.070)
Start and end times variable	0.371	-0.010	0.398	0.021
	(0.460)	(0.011)	(0.461)	(0.011)
Abs. diff. between usual and actual hours	3.964	-0.289	4.580	-0.047
	(5.701)	(0.158)	(7.261)	(0.191)
Monthly labor market earnings (in 2018 DKK)	319,693.474	-44,689.497	382,988.537	10,496.9928
	(136,011.612)	(296.648)	(191,991.371)	(438.692)

Note: This table presents the means in the year before childbirth for the work characteristics we study in columns (1) for women and (3) for men. Columns (2) and (4 present the regression coefficient on an indicator for whether event time is post-first childbirth, with standard errors in parentheses for women and men respectively Standard errors are clustered at the individual level. This coefficient captures the average difference in years 0–10 post-birth relative to the level in the year befor birth.

Table 5: Observations Included in Firm Event-Study Regressions

	Person-Year Obs.	Unique Workers	Unique Firms
Amenities available in all years	2394796	474424	5870
All amenities	2063334	424309	1859
All amenities, firms present all years	535763	49754	1158

Notes: The table reports person-year observations, unique workers, and unique firms for three samples. The first row corresponds to the broadest sample, which includes all firms that ever employ a worker observed in the LFS (and all such workers). The second sample restricts to firms with at least one worker responding to the LFS ad hoc supplements and for which all amenities discussed in the paper are observed. The third sample further restricts to firms that appear in the data in every year of the sample period, in order to avoid compositional changes in the firm population driven by the limited availability of some amenity questions.

Table 6: Vignette Survey: Women vs. Men

	(1) Female	(2) Male	(3) P-value $WTP_{female} = WTP_{male}$
Evening work	-0.099	-0.081	0.000
	(0.007)	(0.008)	
Work is near home	0.104	0.063	0.000
	(0.007)	(0.007)	
Work under time pressure	-0.074	-0.069	0.011
	(0.006)	(0.008)	
Expected to be available for work in free time	-0.068	-0.040	0.000
	(0.005)	(0.007)	
Can work from home	0.054	0.043	0.007
	(0.006)	(0.008)	
Possible to vary work time for family reasons	0.062	0.028	0.000
	(0.006)	(0.007)	
Long hours	0.064	0.034	0.335
	(0.030)	(0.037)	
Worker chooses working hours	0.016	0.013	0.344
	(0.005)	(0.006)	
Worker decides content of tasks	0.010	0.017	0.777
	(0.005)	(0.006)	
Start and end times variable	0.004	0.013	0.400
	(0.005)	(0.006)	
Hours vary each week	-0.006	-0.005	0.739
	(0.005)	(0.006)	
Percentage increase in wage	0.012	0.017	
	(0.001)	(0.001)	
Observations	17760	12180	29940
Number of participants	592	406	998

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right). All characteristics are fully interacted with indicators for women and men. Column 1 reports coefficients for women; column 2 reports coefficients for men. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for women and men, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table 7: WTP Estimated from Worker Flows

	(1) Female WTP	(2) Male WTP	(3) P-value $WTP_{female} = WTP_{male}$
Evening work	-0.037	0.016	0.054
	(0.020)	(0.019)	
Work is near home	0.060	-0.007	0.003
	(0.016)	(0.016)	
Work under time pressure	-0.026	-0.075	0.053
	(0.017)	(0.018)	
Expected to be available for work in free time	0.015	0.025	0.673
	(0.017)	(0.016)	
Can work from home	0.028	0.047	0.522
	(0.022)	(0.021)	
Possible to vary work time for family reasons	0.010	-0.050	0.065
	(0.019)	(0.026)	
Long hours	0.122	-0.002	0.214
	(0.034)	(0.093)	
Worker chooses working hours	0.051	0.015	0.216
	(0.021)	(0.019)	
Worker decides content of tasks	-0.029	-0.003	0.314
	(0.018)	(0.018)	
Start and end times variable	0.006	0.017	0.719
	(0.023)	(0.021)	
Hours vary each week	-0.026	-0.012	0.634
	(0.020)	(0.022)	
Observations	5300	3568	

Notes: The table reports coefficients from regressions of the pagerank of the firm an individual works in on the measured amenities that individuals has access to at that firm, as they reported in the LFS or as recorded in administrative data, as well as the pay premium of that firm. Column 3 reports p-values from tests of equality between the willingness-to-pay for women compared to men. Robust standard errors are computed using the delta method.

Table 8: Observations Per Variable

	Person-Year Observations	Years in Data
Evening work	233170	12
Distance between work and home	20910950	12
Work under time pressure	7220	1
Expected to be available for work in free time	7203	1
Working at home	233170	12
Possible to vary work time for family reasons	17264	3
Actual hours above 45/week	233140	12
Worker chooses working hours	14698	2
Decide content of tasks	7200	1
Decide order of tasks	7200	1
Start and end times variable	231198	12
Absolute difference between usual and actual hours	217951	12
Labor market earnings (in 2018 DKK)	21020839	12

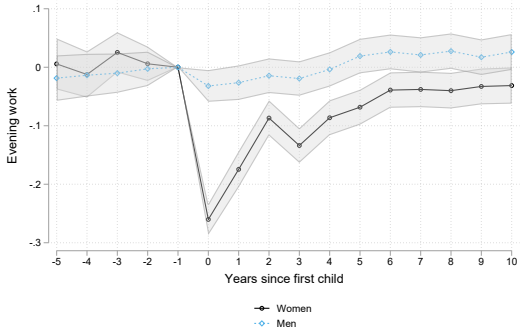
Notes: This table displays the person-year observations (unique responses) to the questions we use to measure amenities, as well as the number of unique surveys these questions appear in. There are 12 potential years of survey data (2008-2019), but some questions are asked only in an ad hoc supplement. There are up to 3 ad hoc supplements we draw from, with some questions only asked in one of these supplements.

Appendix for:

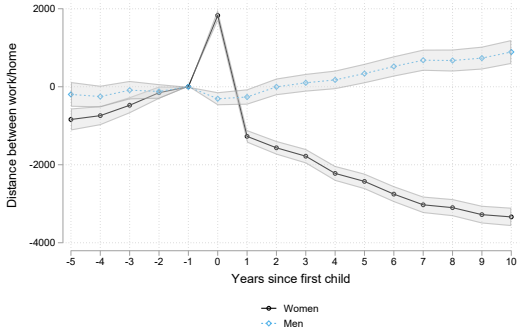
Gender Differences in Amenities, Wages, and Firms

A Appendix Figures and Tables

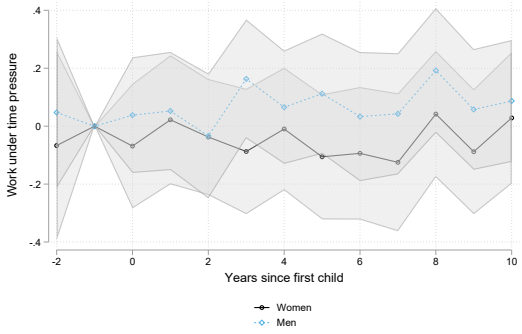
Figure A1: Parenthood and Amenities



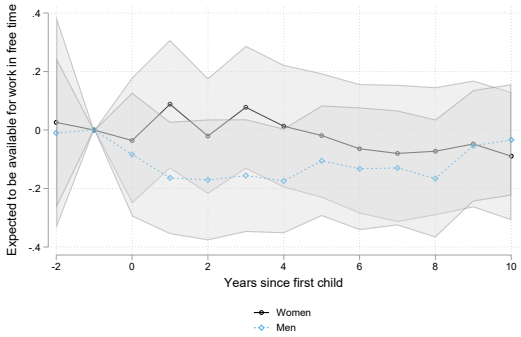
(a) Evening work



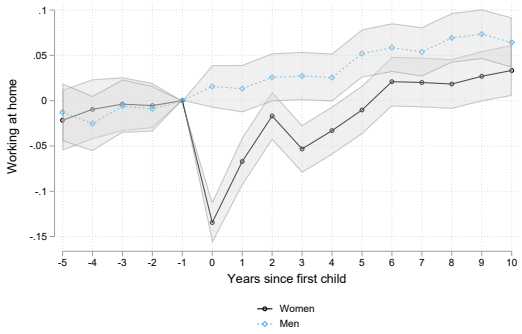
(b) Distance between work and home



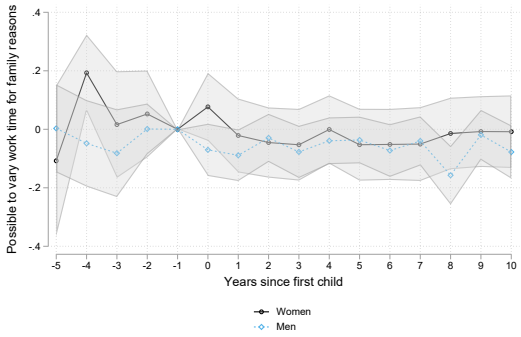
(c) Work under time pressure



(d) Expected available for work in free time



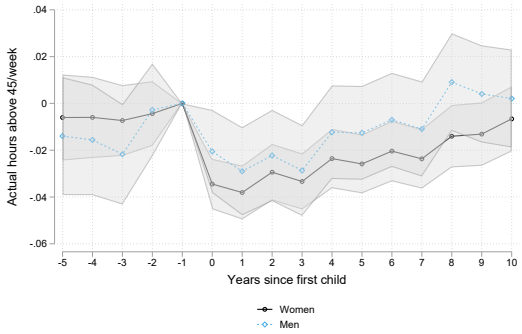
(e) Working at home



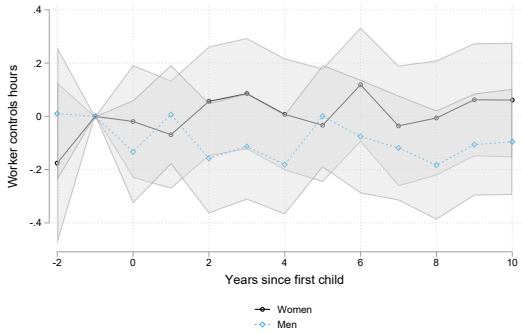
(f) Possible vary work time family reasons

Notes: The figure shows the relationship between years since first birth and various workplace amenities, as reported in survey data. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These regressions additionally include fixed effects for individual age and fixed effects for the calendar year.

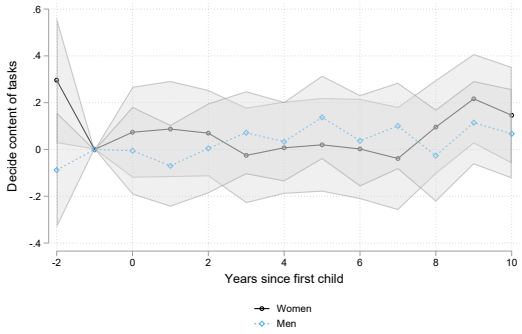
Figure A2: Parenthood and Amenities (cont)



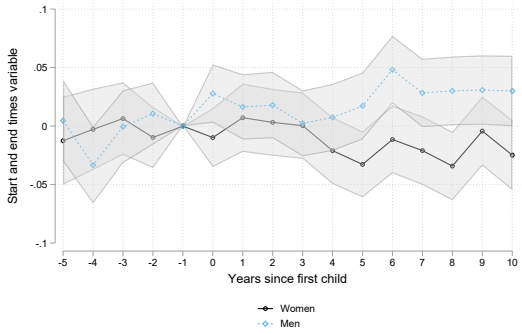
(a) Actual hours above 45/week



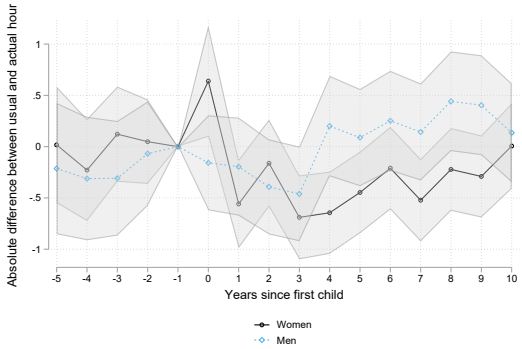
(b) Worker chooses working hours



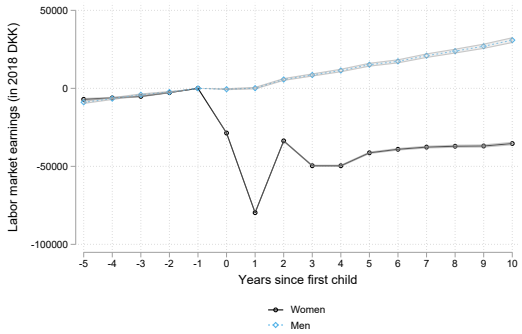
(c) Worker decides content of tasks



(d) Start and end times variable



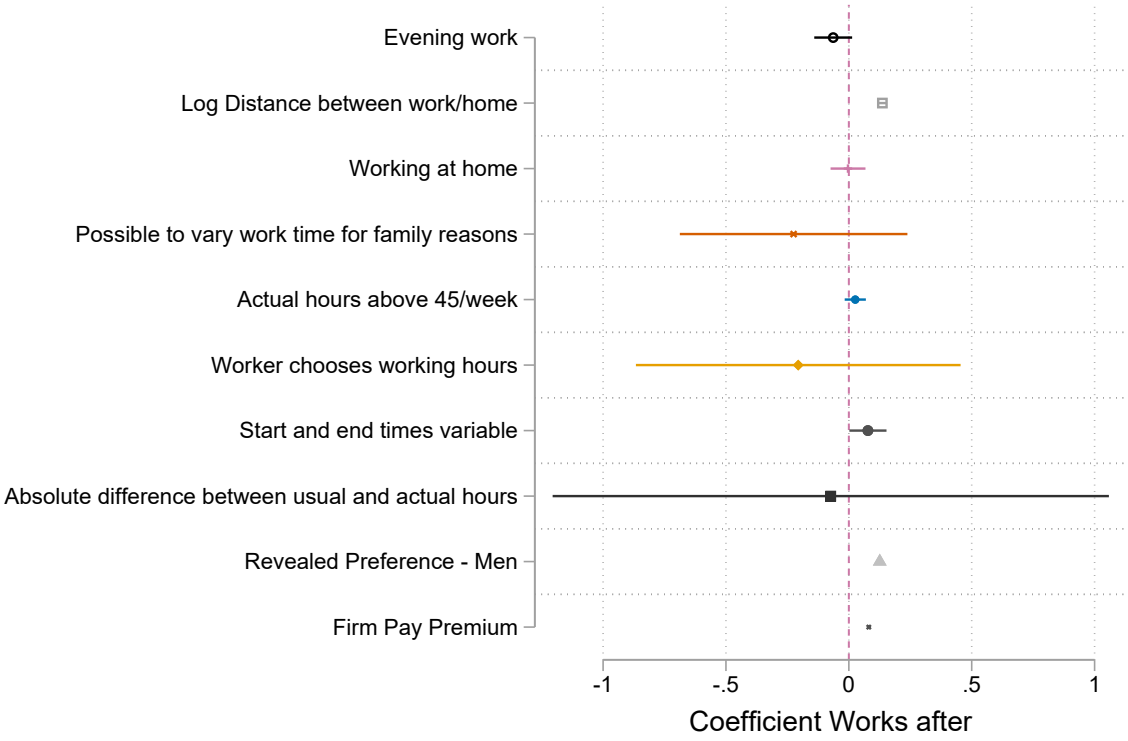
(e) Absolute difference usual/actual hours



(f) Labor market earnings (in 2018 DKK)

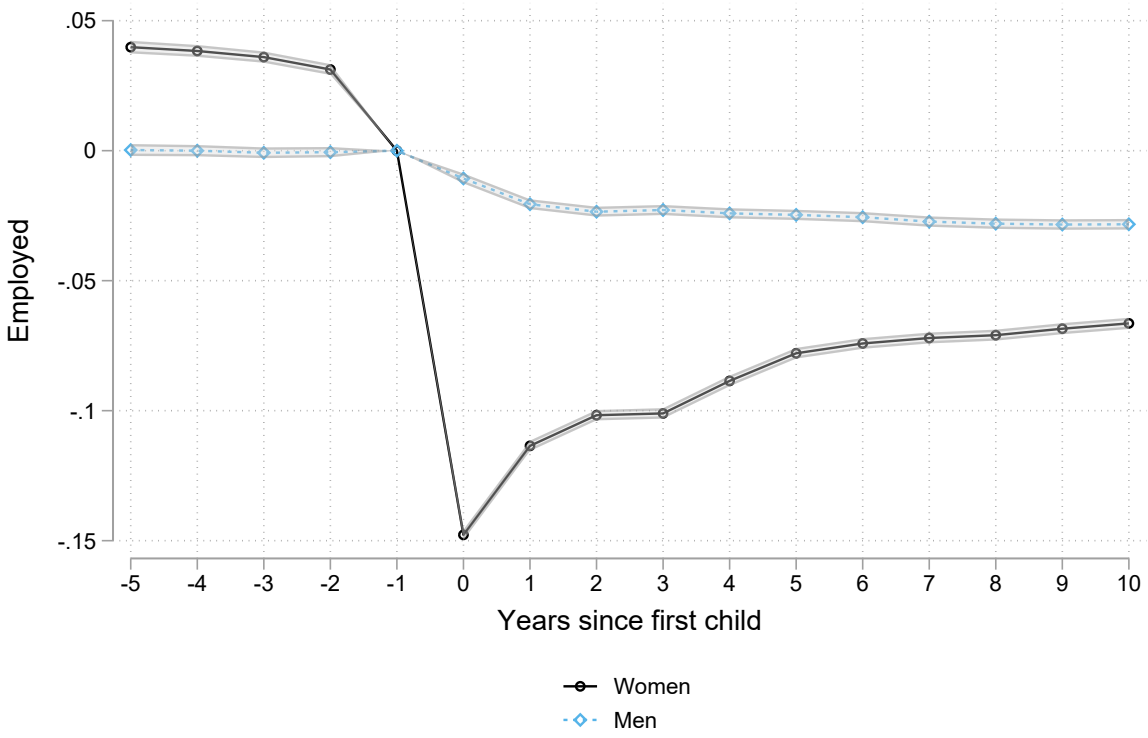
Notes: The figure shows the relationship between years since first birth and various workplace amenities, as reported in survey data. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These regressions additionally include fixed effects for individual age fully interacted with education level and fixed effects for the calendar year fully interacted with education level.

Figure A3: Selection out of work



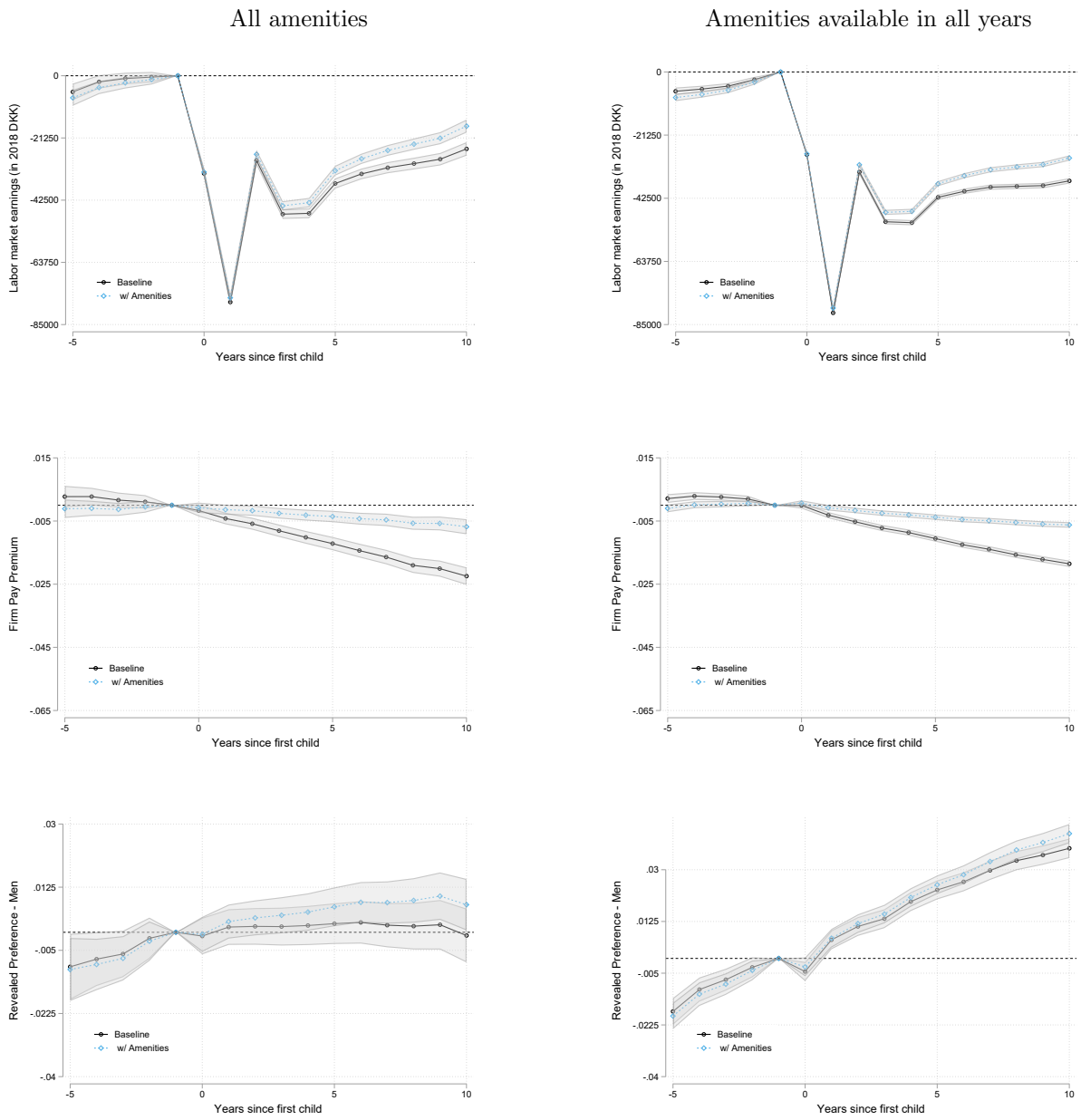
Notes: This Figure plots the coefficients on a regression of whether a woman is working in any of years 1-5 after her first birth on characteristics of her employment in the year before birth.

Figure A4: Employment



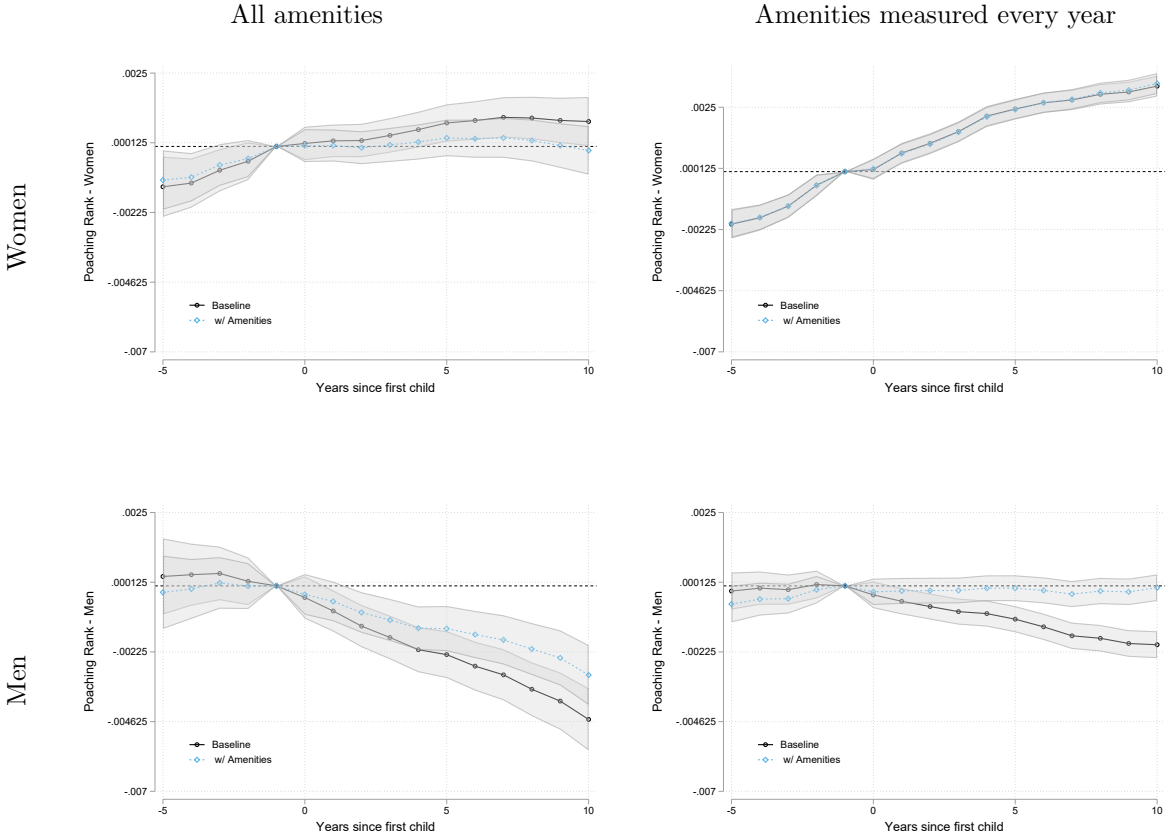
Notes: The figure shows the relationship between years since first birth and employment, where employment is measured as having any positive earnings. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These regression additionally includes fixed effects for age and calendar year fully interacted with education level.

Figure A5: Accounting for Firm-Level Amenities in Measures of Pay and Firm Quality without Controls for Firm Size



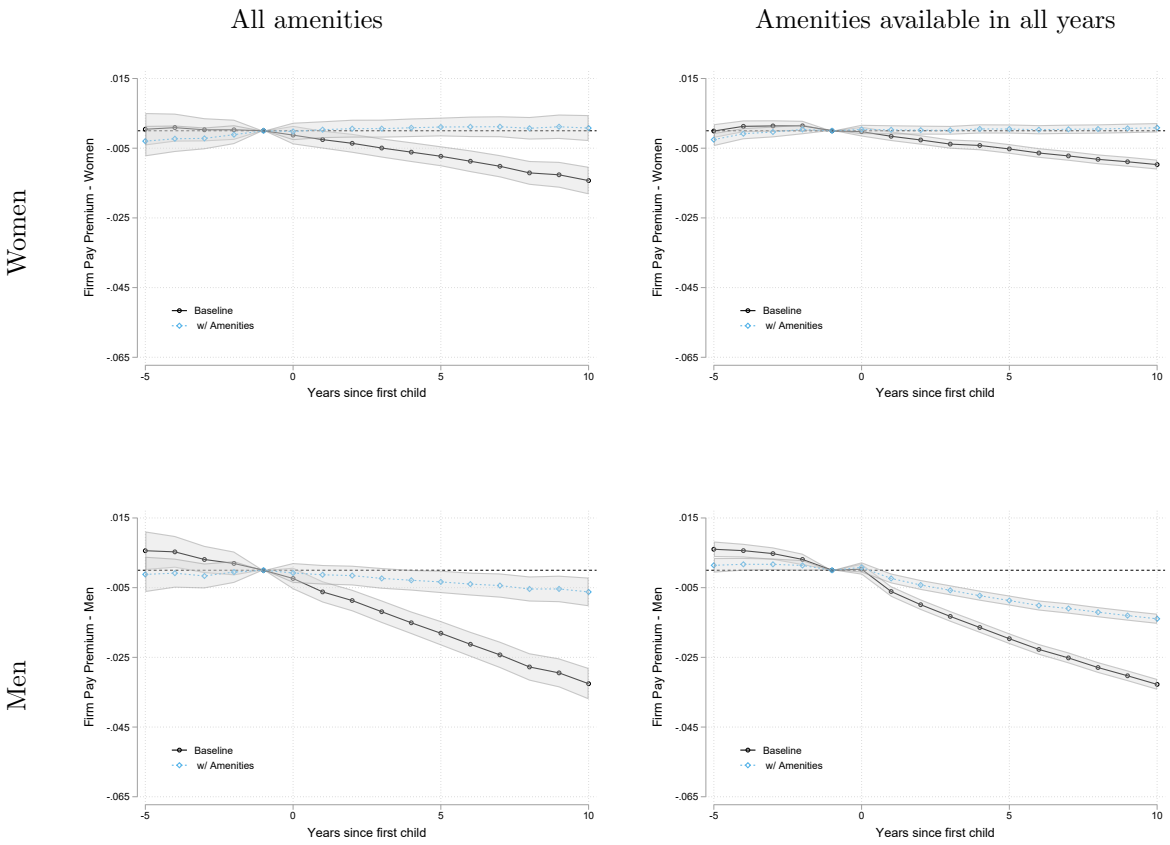
Notes: This figure shows the relationship between years since first birth and measures of pay (first row), the firm-level pay premium (second row), and firm PageRank, based on male employee movements (third row). The solid black line is the result of a regression including only event-year, age and calendar year interacted with education fixed effects. The dashed blue line adds to the regression firm averages of the amenities available in the LFS and administrative data. The left-hand-side includes all amenities in these regressions, including those only asked about in one ad-hoc survey. Since some of these questions are asked only in one year, firms present in that year would be differentially selected into the sample and trends may reflect changes in the composition of firms. To alleviate this concern, we restrict to a balanced set of firms which appear in the BFL data in every year in the sample period. The right-hand-side includes a much larger set of firms and a smaller subset of amenities—those measured in every year—in the regressions. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These standard errors are computed taking the measured firm premia as constants.

Figure A6: Firm-Level Amenities and Revealed-Preference Rankings (Poaching Rate)



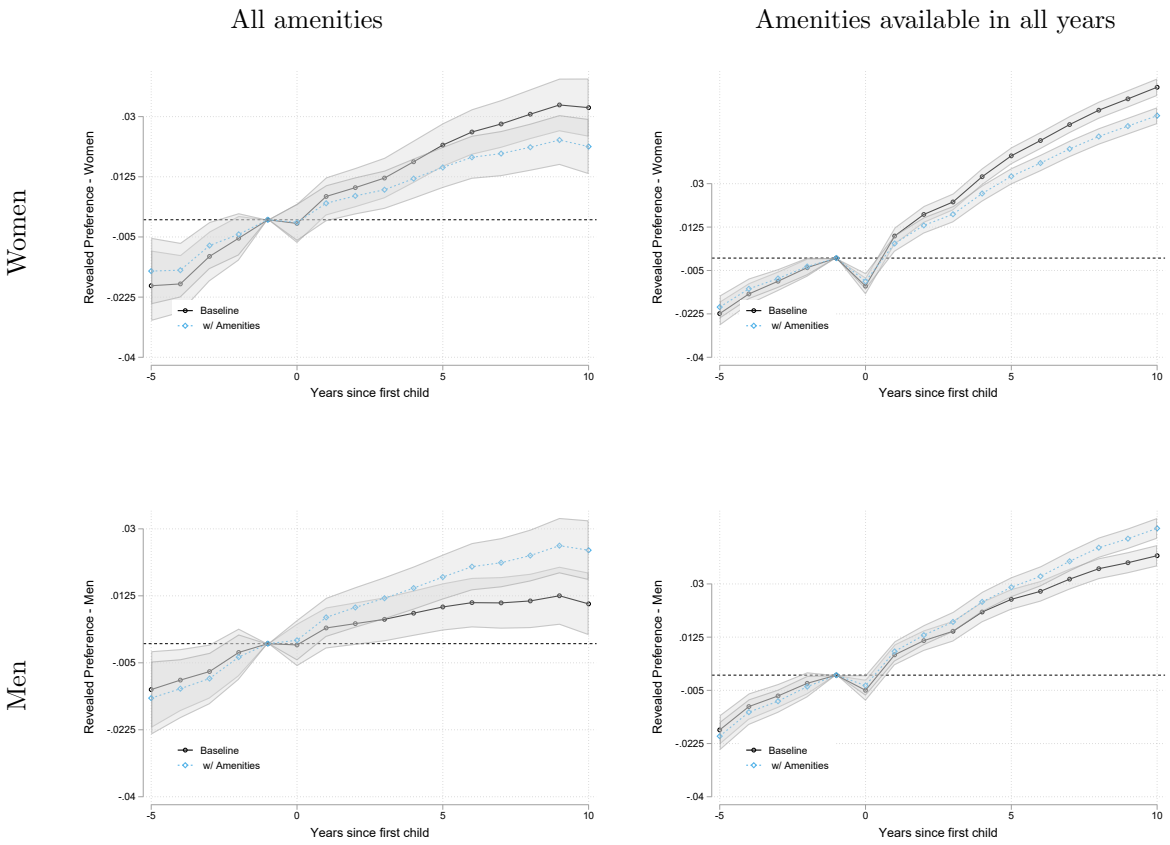
Notes: The figure plots event-study coefficients for firm preferences measured by the poaching rate as a function of years since first birth. The first row uses poaching rates computed over women only, and the second row over men only. In each panel, the solid black line reports estimates from regressions including event-time indicators, age fixed effects, and year fixed effects. The dashed blue line adds firm-level averages of amenities measured in the LFS and administrative data. The left column includes the full set of amenities, including those from one-off ad hoc survey questions, and is restricted to a balanced panel of firms that appear in the BFL data in every year of the sample period. The right column uses a larger set of firms but restricts the amenity controls to those observed in every year. Gray shaded areas denote 95% confidence intervals around the event-time coefficients. Standard errors are computed treating the measured firm rankings as fixed.

Figure A7: Accounting for Firm-Level Amenities: Robustness to Using Male Only vs. Female Only Sample to Estimate Pay Premia



Notes: This figure shows the relationship between years since first birth and measures of which firms are preferred by workers. The first row has firm level pay premium when measured on the subset of women, and the second row has firm level pay premium when measured on the subset of men. The solid black line is the result of a regression including only event-year, age, and year fixed effects. The dashed blue line adds to the regression firm averages of the amenities available in the LFS and administrative data. The left-hand-side includes all amenities in these regressions, including those only asked about in one ad-hoc survey. Since some of these questions are asked only in one year, firms present in that year would be differentially selected into the sample and trends may reflect changes in the composition of firms. To alleviate this concern, we restrict to a balanced set of firms which appear in the BFL data in every year in the sample period. The right-hand-side includes a much larger set of firms and a smaller subset of amenities—those measured in every year—in the regressions. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These standard errors are computed using a parametric bootstrap as outlined in section C.2.

Figure A8: Accounting for Firm-Level Amenities–Revealed Preference Ranking (PageRank) - Robustness



Notes: This figure shows the relationship between years since first birth and measures of which firms are preferred by workers. The first row has PageRank when measured on the subset of women, and the second row has PageRank when measured on the subset of men. The solid black line is the result of a regression including only event-year, age, and year fixed effects. The dashed blue line adds to the regression firm averages of the amenities available in the LFS and administrative data. The left-hand-side includes all amenities in these regressions, including those only asked about in one ad-hoc survey. Since some of these questions are asked only in one year, firms present in that year would be differentially selected into the sample and trends may reflect changes in the composition of firms. To alleviate this concern, we restrict to a balanced set of firms which appear in the BFL data in every year in the sample period. The right-hand-side includes a much larger set of firms and a smaller subset of amenities—those measured in every year—in the regressions. The gray shaded region is the 95% confidence interval around the point estimate for year since birth. These standard errors are computed using a parametric bootstrap as outlined in section C.2.

Table A1: Correlations across Firm Measures

	V^g	ϕ	π	$\log(L)$	$\log(Y/L)$
V^g	1.00				
ϕ	0.43	1.00			
π	0.11	0.16	1.00		
$\log(L)$	0.05	0.19	-0.02	1.00	
$\log(Y/L)$	0.09	0.26	0.03	0.16	1.00

Notes: The table reports weighted correlations across alternative firm-level measures. V^g denotes the PageRank-based firm valuation for gender g, ϕ the AKM firm wage premium, π the poaching rate, $\log(L)$ log firm size, and $\log(Y/L)$ revenue per worker. Estimates are weighted by firm size.

Table A2: Correlations across Firm Measures

	V^g	ϕ	π	$\log(L)$	$\log(Y/L)$
V^g	1.00				
ϕ	0.38	1.00			
π	0.02	0.07	1.00		
$\log(L)$	0.10	0.33	-0.13	1.00	
$\log(Y/L)$	0.14	0.18	0.04	0.09	1.00

Notes: The table reports unweighted correlations across alternative firm-level measures. V^g denotes the PageRank-based firm valuation for gender g, ϕ the AKM firm wage premium, π the poaching rate, $\log(L)$ log firm size, and $\log(Y/L)$ revenue per worker.

Table A3: Gelbach decomposition of coefficient attenuation when controlling for amenities

		Impact of motherhood on		
	Gender pay gap	Log earnings	Firm pay premium	Pagerank
Distance between work and home	-12.52%	-2.21%	-18.08%	20.07%
Actual hours above 45/week	-25.64%	-5.92%	-2.81%	13.17%
Absolute difference between usual and actual hours	-4.93%	-8.98%	-24.79%	-103.16%
Working at home	-18.34%	-19.64%	-1.12%	-40.57%
Start and end times variable	-29.88%	-30.50%	-66.02%	-59.20%
Evening work	-8.68%	-32.75%	12.82%	69.68%
% reduction in gap inc. amenities $100 \times (\hat{\beta}_{long} - \hat{\beta}_{short})/\hat{\beta}_{long}$	21.26%	27.73%	69.33%	31.71%

Note: This table presents the results of a Gelbach decomposition for the role of amenities for main regressions discussed: the regression of log earnings on an indicator for whether the individual is female (first column), the regression of log earnings on a post-motherhood indicator among women (residualized for age and year, second column), the regression of firm pay premia on a post-motherhood indicator among women (residualized for age and year, third column), and the regression of firm pagerank according to the male sample's preferences on a post-motherhood indicator among women (residualized for age and year, fourth column). The entries give the percentage of the total reduction in the coefficient on female in column (1) and the coefficient on post-motherhood event years in columns (2) - (4) that is attributable to inclusion of the variable described in rows on the regression described in columns. We use those amenities that are available in every year in order to avoid small sample sizes. All covariates are normalized. The total percentage reduction in the coefficient of interest in the regression (which includes the amenities) and the regression (which does not) is given in the last row.

Table A4: Vignette Survey: Mothers vs. Non-mothers

	(1) Mother	(2) Nonmother	(3) P-value $WTP_{mother} = WTP_{nonmother}$
Evening work	-0.117	-0.063	0.000
	(0.012)	(0.012)	
Work is near home	0.095	0.102	0.198
	(0.013)	(0.013)	
Work under time pressure	-0.065	-0.072	0.352
	(0.011)	(0.011)	
Expected to be available for work in free time	-0.065	-0.052	0.043
	(0.010)	(0.010)	
Can work from home	0.049	0.053	0.383
	(0.011)	(0.011)	
Possible to vary work time for family reasons	0.070	0.058	0.060
	(0.011)	(0.011)	
Long hours	0.039	0.127	0.483
	(0.056)	(0.060)	
Worker chooses working hours	0.027	0.006	0.053
	(0.009)	(0.009)	
Worker decides content of tasks	-0.007	0.037	0.004
	(0.009)	(0.009)	
Start and end times variable	0.005	0.018	0.487
	(0.009)	(0.010)	
Hours vary each week	-0.001	0.005	0.653
	(0.009)	(0.009)	
Percentage increase in wage	0.012	0.017	
	(0.001)	(0.001)	
Observations	5190	4590	9780
Number of participants	173	153	326

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right), for the sample of women. All characteristics are fully interacted with indicators for mothers and non-mothers. Column 1 reports coefficients for mothers; column 2 reports coefficients for non-mothers. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for mothers and non-mothers, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. The sample is restricted to women aged 27–42, to align more closely with the age range used in the event-study analysis; results for all ages are reported in Appendix Table A6. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table A5: Vignette Survey: Fathers vs. Nonfathers

	(1) Father	(2) Nonfather	(3) P-value $WTP_{father} = WTP_{nonfather}$
Evening work	-0.053	-0.058	0.637
	(0.012)	(0.016)	
Work is near home	0.046	0.069	0.753
	(0.012)	(0.018)	
Work under time pressure	-0.046	-0.077	0.546
	(0.012)	(0.019)	
Expected to be available for work in free time	-0.024	-0.043	0.587
	(0.011)	(0.014)	
Can work from home	0.051	0.036	0.233
	(0.013)	(0.017)	
Possible to vary work time for family reasons	0.036	0.012	0.136
	(0.013)	(0.016)	
Long hours	0.125	-0.078	0.056
	(0.070)	(0.086)	
Worker chooses working hours	0.013	0.021	0.883
	(0.011)	(0.017)	
Worker decides content of tasks	0.016	0.025	0.871
	(0.010)	(0.015)	
Start and end times variable	-0.000	0.029	0.127
	(0.010)	(0.014)	
Hours vary each week	-0.007	0.005	0.516
	(0.009)	(0.017)	
Percentage increase in wage	0.016	0.021	
	(0.002)	(0.002)	
Observations	4200	2040	6240
Number of participants	140	68	208

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right), for the sample of men. All characteristics are fully interacted with indicators for fathers and non-fathers. Column 1 reports coefficients for fathers; column 2 reports coefficients for non-fathers. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for fathers and non-fathers, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. The sample is restricted to men aged 27–42, to align more closely with the age range used in the event-study analysis; results for all ages are reported in Appendix Table A7. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table A6: Vignette Survey: Mothers vs. Non-mothers (All Ages)

	(1) Mother	(2) Nonmother	(3) P-value $WTP_{mother} = WTP_{nonmother}$
Evening work	-0.109	-0.085	0.010
	(0.009)	(0.010)	
Work is near home	0.101	0.109	0.378
	(0.009)	(0.011)	
Work under time pressure	-0.071	-0.078	0.531
	(0.008)	(0.009)	
Expected to be available for work in free time	-0.073	-0.062	0.051
	(0.007)	(0.008)	
Can work from home	0.055	0.053	0.253
	(0.008)	(0.009)	
Possible to vary work time for family reasons	0.065	0.059	0.169
	(0.008)	(0.009)	
Long hours	0.051	0.078	0.832
	(0.039)	(0.047)	
Worker chooses working hours	0.023	0.008	0.073
	(0.007)	(0.007)	
Worker decides content of tasks	-0.001	0.025	0.021
	(0.007)	(0.007)	
Start and end times variable	-0.000	0.009	0.413
	(0.007)	(0.008)	
Hours vary each week	-0.006	-0.005	0.807
	(0.006)	(0.007)	
Percentage increase in wage	0.011	0.014	
	(0.001)	(0.001)	
Observations	10140	7620	17760
Number of participants	338	254	592

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right), for the sample of women. All characteristics are fully interacted with indicators for mothers and non-mothers. Column 1 reports coefficients for mothers; column 2 reports coefficients for non-mothers. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for mothers and non-mothers, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table A7: Vignette Survey: Fathers vs. Non-fathers (All Ages)

	(1) Father	(2) Nonfather	(3) P-value $WTP_{father} = WTP_{nonfather}$
Evening work	-0.084	-0.074	0.202
	(0.011)	(0.013)	
Work is near home	0.057	0.074	0.744
	(0.009)	(0.012)	
Work under time pressure	-0.058	-0.088	0.328
	(0.009)	(0.014)	
Expected to be available for work in free time	-0.042	-0.037	0.424
	(0.009)	(0.010)	
Can work from home	0.051	0.029	0.073
	(0.010)	(0.011)	
Possible to vary work time for family reasons	0.040	0.008	0.008
	(0.009)	(0.010)	
Long hours	0.063	-0.012	0.293
	(0.048)	(0.059)	
Worker chooses working hours	0.019	0.005	0.229
	(0.008)	(0.011)	
Worker decides content of tasks	0.020	0.013	0.415
	(0.007)	(0.010)	
Start and end times variable	0.004	0.029	0.084
	(0.008)	(0.010)	
Hours vary each week	-0.012	0.006	0.167
	(0.007)	(0.011)	
Percentage increase in wage	0.016	0.019	
	(0.001)	(0.001)	
Observations	7740	4440	12180
Number of participants	258	148	406

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right), for the sample of men. All characteristics are fully interacted with indicators for fathers and non-fathers. Column 1 reports coefficients for fathers; column 2 reports coefficients for non-fathers. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for fathers and non-fathers, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table A8: Vignette Survey: Women vs. Men - Flexibility Demanded by Employer

	(1) Female	(2) Male	(3) P-value $WTP_{female} = WTP_{male}$
Evening work	-0.099	-0.081	0.000
	(0.007)	(0.008)	
Work is near home	0.104	0.063	0.000
	(0.007)	(0.007)	
Work under time pressure	-0.074	-0.069	0.011
	(0.006)	(0.008)	
Expected to be available for work in free time	-0.068	-0.040	0.000
	(0.005)	(0.007)	
Can work from home	0.054	0.043	0.007
	(0.006)	(0.008)	
Possible to vary work time for family reasons	0.063	0.028	0.000
	(0.006)	(0.007)	
Long hours	0.064	0.034	0.325
	(0.030)	(0.037)	
Worker chooses working hours	0.009	0.009	0.769
	(0.007)	(0.008)	
Worker decides content of tasks	0.010	0.017	0.780
	(0.005)	(0.006)	
Start and end times variable	0.011	0.017	0.845
	(0.007)	(0.008)	
Hours vary each week	-0.006	-0.005	0.728
	(0.005)	(0.006)	
Flexibility demanded by employer	-0.014	-0.008	0.530
	(0.010)	(0.010)	
Percentage increase in wage	0.012	0.017	
	(0.001)	(0.001)	
Observations	17760	12180	29940
Number of participants	592	406	998

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right). All characteristics are fully interacted with indicators for women and men. Column 1 reports coefficients for women; column 2 reports coefficients for men. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for women and men, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. Relative to Table 6, we add an additional characteristic to these regressions: 'Flexibility demanded by employer.' Jobs where flexibility is demanded by the employer are defined as those in which the employer chooses working hours and start and end times are variable. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

Table A9: Vignette Survey: Women vs. Men - Hours Chosen by Employer

	(1) Female	(2) Male	(3) P-value $WTP_{female} = WTP_{male}$
Evening work	-0.106	-0.088	0.027
	(0.011)	(0.013)	
Work is near home	0.101	0.057	0.001
	(0.011)	(0.013)	
Work under time pressure	-0.078	-0.081	0.319
	(0.010)	(0.013)	
Expected to be available for work in free time	-0.071	-0.047	0.018
	(0.010)	(0.012)	
Can work from home	0.072	0.042	0.008
	(0.010)	(0.013)	
Possible to vary work time for family reasons	0.077	0.038	0.003
	(0.011)	(0.013)	
Long hours	0.050	0.146	0.437
	(0.062)	(0.064)	
Worker decides content of tasks	0.011	0.019	0.805
	(0.010)	(0.011)	
Start and end times variable	-0.011	0.020	0.049
	(0.010)	(0.012)	
Hours vary each week	-0.006	-0.005	0.878
	(0.010)	(0.012)	
Percentage increase in wage	0.013	0.017	
	(0.001)	(0.001)	
Observations	4338	3017	7355
Number of participants	592	406	998

Notes: The table reports coefficients from regressions of an indicator for choosing the left-hand-side job vignette on the difference in job characteristics between the left- and right-hand-side jobs (left minus right). All characteristics are fully interacted with indicators for women and men. Column 1 reports coefficients for women; column 2 reports coefficients for men. Column 3 reports p-values from tests of equality between the implied willingness-to-pay ratios for women and men, defined as the ratio of the amenity coefficient to the coefficient on the percentage wage increase. The sample is restricted to contrasts in which, for both the left- and right-hand-side jobs, work hours were chosen by the employer. Each individual evaluates 30 job contrasts. Standard errors, in parentheses, are clustered at the participant level.

B Mathematical Details for Estimation of Flow Utility

We build on Sorkin (2018); Audoly et al. (2024) to recover the flow utility u_j of working at firm j from worker mobility patterns. These flow utilities allow us to back out willingness-to-pay for job attributes, net of firm differences in option values.

Given the PageRank measure σV_j estimated in Section 4.3, we identify exit rates δ_j, ρ_j, job arrival rates λ_0, λ_1, the offer distribution f_j, the shock scale σ, and finally u_j.

Bellman equations. Let u_j denote the per-period flow utility at firm j and u_N that in non-employment. With firm-specific involuntary separation δ_j, relocation shocks ρ_j, and job offer arrival λ_1 when employed, the value of employment at j satisfies

$$\begin{aligned} V_j \;=\; u_j \;+\; \beta\Big[&\delta_j\,\mathbb{E}[V_N+\varepsilon_N] + \rho_j \sum_k f_k\,\mathbb{E}[V_k+\varepsilon_k] \\ &+ (1-\delta_j-\rho_j)\,\lambda_1 \sum_k f_k\,\mathbb{E}\big(\max\{V_j+\varepsilon_j,\; V_k+\varepsilon_k\}\big) \\ &+ (1-\delta_j-\rho_j)(1-\lambda_1)\,\mathbb{E}\big(\max\{V_N+\varepsilon_N,\; V_j+\varepsilon_j\}\big)\Big]. \end{aligned} \tag{5}$$

The value of non-employment is

$$\begin{aligned} V_N \;=\; u_N \;+\; \beta\Big[&\lambda_0 \sum_k f_k\,\mathbb{E}\big(\max\{V_k+\varepsilon_k,\; V_N+\varepsilon_N\}\big) \\ &+ (1-\lambda_0)\,\mathbb{E}[V_N+\varepsilon_N]\Big]. \end{aligned} \tag{6}$$

Scaled representation. It is convenient to work in scaled units

$$W_j = \sigma V_j, \quad W_N = \sigma V_N, \qquad \phi_j = \sigma u_j, \quad \phi_N = \sigma u_N,$$

and to write $\varepsilon = \eta/\sigma$ where η is i.i.d. type-I extreme value with unit scale. Then

$$\sigma\,\mathbb{E}(V+\varepsilon) = W + \gamma, \qquad \sigma\,\mathbb{E}\max(V_a+\varepsilon_a, V_b+\varepsilon_b) = \ln\left(e^{W_a}+e^{W_b}\right)+\gamma,$$

so that job choice probabilities only depend on W:

$$p_{k|j} = \frac{e^{W_k}}{e^{W_k}+e^{W_j}}, \qquad p_{j|N} = \frac{e^{W_j}}{e^{W_j}+e^{W_N}}.$$

We normalize $u_N = 0$ so that $\phi_N = 0$ and iterate on W_N.

Data moments. Let the sample span T model periods (years). Person-time exposure is $E_j = \sum_{t=1}^{T} L_{j,t}$ for firm j and $E_N = \sum_{t=1}^{T} L_{N,t}$ for non-employment. From counts M_{jk} (flows $j \to k$), M_{jN} ($j \to N$) and M_{Nj} ($N \to j$), define rates

$$r_{A,j} = \frac{\sum_{k \neq j} M_{jk}}{E_j}, \quad r_{B,j} = \frac{M_{jN}}{E_j}, \quad r_{\text{J2J}} = \frac{\sum_{j \neq k} M_{jk}}{\sum_j E_j}, \quad r_{\text{NE}} = \frac{\sum_j M_{Nj}}{E_N}.$$

We convert these into per-period transition probabilities using the competing-Poisson mapping:

$$A_j = \left(1 - e^{-(r_{A,j}+r_{B,j})}\right) \frac{r_{A,j}}{r_{A,j}+r_{B,j}}, \quad B_j = \left(1 - e^{-(r_{A,j}+r_{B,j})}\right) \frac{r_{B,j}}{r_{A,j}+r_{B,j}},$$

$$\text{J2J} = 1 - e^{-r_{\text{J2J}}}, \qquad s_j = \frac{M_{Nj}}{\sum_\ell M_{N\ell}}.$$

We treat the observed rates as arising from a Poisson process within each discrete period, and use the implied competing-risks probabilities as the per-period transition probabilities in the discrete-time model.

Identification of W_N, f_j, λ_0. Given $W_j = \sigma V_j$, we identify the remaining search primitives as in Sorkin (2018); Audoly et al. (2024):

1. **Choice probabilities**:

$$p_{k|j} = \frac{e^{W_k}}{e^{W_k} + e^{W_j}}, \quad p_{j|N} = \frac{e^{W_j}}{e^{W_j} + e^{W_N}}.$$

2. **Offer distribution**:

$$f_j = \frac{(s_j / p_{j|N})}{\sum_\ell (s_\ell / p_{\ell|N})}.$$

3. **Arrival rate in non-employment**: let $a = \sum_j f_j p_{j|N}$ be the job-acceptance probability; then

$$\lambda_0 = 1 - \exp\left(-\frac{r_{\text{NE}}}{a}\right).$$

4. **Value of non-employment**: the scaled Bellman equation for W_N is

$$W_N = \phi_N + \beta\Big[\lambda_0 \sum_k f_k \big(\ln(e^{W_k} + e^{W_N}) + \gamma\big) + (1 - \lambda_0)\big(W_N + \gamma\big)\Big],$$

which we solve as a one-dimensional fixed point given $\{W_k\}, f, \lambda_0, \beta$ and $\phi_N = 0$.

Separation shocks δ_j, ρ_j and arrival rate λ_1. Let $x_j = 1 - \rho_j - \delta_j$ and

$$S_j = \lambda_1 \sum_k f_k \, p_{k|j}, \qquad T_j = (1 - \lambda_1) \, p_{N|j}.$$

Firm outflow identities yield

$$x_j = \frac{1 - A_j - B_j}{1 - S_j - T_j}, \qquad \rho_j = A_j - x_j S_j, \qquad \delta_j = B_j - x_j T_j.$$

Aggregating across firms, the job-to-job rate pins down the employed arrival probability:

$$r_{\text{EE}} = \frac{r_{\text{J2J}}}{\sum_j \frac{L_j}{\sum_\ell L_\ell} x_j \sum_k f_k \, p_{k|j}}, \qquad \lambda_1 \;=\; 1 - e^{-r_{\text{EE}}}.$$

Because x_j depends on λ_1 through S_j, T_j and λ_1 depends on x_j, we solve by a simple fixed-point iteration. Following the literature, we estimate separation shocks at the sector level (2-digit NACE) using firms with declining employment.

Recovering u_j and the scale σ. Given $(W_N, \rho_j, \delta_j, f_j, \lambda_0, \lambda_1)$, we invert the scaled Bellman for job j using equation 5:

$$\begin{aligned}\phi_j = W_j - \beta \Big[& \delta_j \big(W_N + \gamma\big) + \rho_j \sum_k f_k \big(W_k + \gamma\big) \\ & + (1 - \delta_j - \rho_j)\lambda_1 \sum_k f_k \Big(\ln\left(e^{W_j} + e^{W_k}\right) + \gamma \Big) \\ & + (1 - \delta_j - \rho_j)(1 - \lambda_1) \Big(\ln\left(e^{W_N} + e^{W_j}\right) + \gamma \Big) \Big].\end{aligned}$$

We then pin down the shock scale σ using AKM firm effects Ψ_j via

$$\text{Var}\left(\phi_j / \sigma^\star\right) = \text{Var}(\Psi_j),$$

which implies that amenities can only be compensating differentials as in Audoly et al. (2024). Defining weighted variances

$$\sigma^\star = \sqrt{\frac{\text{Var}_w(\phi_j)}{\text{Var}_w(\Psi_j)}}, \quad \text{Var}_w(X_j) = \frac{\sum_j w_j \, (X_j - \bar{X}_w)^2}{\sum_j w_j}, \quad \bar{X}_w = \frac{\sum_j w_j X_j}{\sum_j w_j},$$

we obtain

$$u_j = \frac{\phi_j}{\sigma^\star}, \qquad V_j = \frac{W_j}{\sigma^\star}, \qquad V_N = \frac{W_N}{\sigma^\star}.$$

For additional derivations and robustness, we refer to Sorkin (2018); Audoly et al. (2024).

C Details for Computation of Standard Errors

C.1 Standard Errors for Willingness to Pay Estimates using Administrative Data

Let $T = g(\theta_1, \theta_2)$, where θ_1 and θ_2 denote estimators. The variance of the transformation T is approximated via the delta method as:

$$\text{Var}(T) \approx \nabla g(\hat{\theta}_1, \hat{\theta}_2)^T \cdot \text{Cov}(\hat{\theta}_1, \hat{\theta}_2) \cdot \nabla g(\hat{\theta}_1, \hat{\theta}_2)$$

where $\nabla g(\hat{\theta}_1, \hat{\theta}_2)$ denotes the gradient of the transformation, and $\text{Cov}(\hat{\theta}_1, \hat{\theta}_2)$ is the covariance matrix of the estimators. In the application considered here, the transformation is given by:

$$T = g(\hat{\beta}_{\text{amenity}}, \hat{\beta}_{\text{wage}}) = 1 - \exp\left(-\frac{\hat{\beta}_{\text{amenity}}}{\hat{\beta}_{\text{wage}}}\right)$$

The gradient with respect to $\hat{\beta}_{\text{amenity}}$ and $\hat{\beta}_{\text{wage}}$ is:

$$\frac{\partial T}{\partial \hat{\beta}_{\text{amenity}}} = \frac{1}{\hat{\beta}_{\text{wage}}} e^{-\frac{\hat{\beta}_{\text{amenity}}}{\hat{\beta}_{\text{wage}}}}$$

$$\frac{\partial T}{\partial \hat{\beta}_{\text{wage}}} = \frac{\hat{\beta}_{\text{amenity}}}{\hat{\beta}^2_{\text{wage}}} e^{-\frac{\hat{\beta}_{\text{amenity}}}{\hat{\beta}_{\text{wage}}}}$$

Accordingly, the variance of the transformed coefficient is:

$$\begin{aligned}\text{Var}(T) \approx &\left(\frac{\partial T}{\partial \hat{\beta}_{\text{amenity}}}\right)^2 \cdot \text{Var}(\hat{\beta}_{\text{amenity}}) + \\ &\left(\frac{\partial T}{\partial \hat{\beta}_{\text{wage}}}\right)^2 \cdot \text{Var}(\hat{\beta}_{\text{wage}}) + \\ &2 \cdot \frac{\partial T}{\partial \hat{\beta}_{\text{amenity}}} \cdot \frac{\partial T}{\partial \hat{\beta}_{\text{wage}}} \cdot \text{Cov}(\hat{\beta}_{\text{amenity}}, \hat{\beta}_{\text{wage}})\end{aligned}$$

To compare transformed estimates across genders T_1 and T_2 obtained from independent regressions, the standard error of the difference is:

$$\text{SE}(T_1 - T_2) = \sqrt{\text{SE}(T_1)^2 + \text{SE}(T_2)^2}$$

C.2 Standard Errors for Two-Stage Regression Using Firm Rank Variables

C.2.1 Overview

We consider a two-step estimation procedure:

1. Estimate firm characteristics Z_j in a first stage;
2. Regress estimated firm characteristics $\hat{Z}_j$ on covariates X_j:

$$\hat{Z}_j = X_j\beta + \omega_j,$$

where the regression residual $\omega_j = \varepsilon_j + \nu_j$ combines structural noise ε_j and first-stage estimation error ν_j.

We consider three firm-level measures Z_j: firm fixed effects $\hat{\psi}_{j(i,t)}$, PageRank $\exp(V^g)$, and poaching rates π_j. Each is subject to sampling error due to limited mobility, network sparsity, or small firm size. These errors affect the variance of the second-stage estimator $\hat{\beta}$. From

$$\hat{\beta} = (X'X)^{-1}X'\hat{Z} = \beta + (X'X)^{-1}X'\nu,$$

the variance of $\hat{\beta}$ is

$$\mathrm{Var}(\hat{\beta}) = (X'X)^{-1}X'(\Sigma_\varepsilon + \Sigma_\nu)X(X'X)^{-1},$$

so heteroskedasticity in ν_j leads to mismeasured standard errors. This is empirically relevant: larger firms with more movers have more precise first-stage estimates (e.g. AKM fixed effects, cf. Bonhomme et al. (2023)).

Simulation-Based Variance Estimation To account for this additional uncertainty, we adopt a simulation-based variance combination approach, conditional on an estimate of $\widehat{\mathrm{Var}}(\nu_j)_j$.[34] We assume

$$\hat{Z}_j = Z_j + \nu_j, \quad \nu_j \sim \mathcal{N}(0, \widehat{\mathrm{Var}}(\nu_j)_j),$$

[34]Standard bootstrap estimates can be severely biased. By construction, bootstrap estimators resample workers and perturb not only noise but also the network structure and labor mobility paths underlying $\hat{\psi}_j$, π_j, and PageRank. This violates the assumption that the structure defining ν_j is fixed, and can distort variance estimates when heteroskedasticity in ν_j is driven by network sparsity or unbalanced coverage.

with $E[\nu \mid X] = 0$, so we propagate variance rather than correct for endogeneity. The procedure is:

1. Simulate $\nu_j^{(s)} \sim \mathcal{N}(0, \widehat{\text{Var}}(\nu_j)_j)$, for $s = 1, \ldots, S$;
2. Construct $Z_j^{(s)} = \hat{Z}_j - \nu_j^{(s)}$;
3. Estimate $\hat{\beta}^{(s)}$ from $Z_j^{(s)} = X_j\beta + \varepsilon_j$ and compute its model-based variance $V^{(s)} = \widehat{\text{Var}}(\hat{\beta}^{(s)})$.

Following Rubin (1987), we combine across S draws as

$$\bar{\beta} = \frac{1}{S}\sum_{s=1}^{S}\hat{\beta}^{(s)}, \quad W = \frac{1}{S}\sum_{s=1}^{S}V^{(s)}, \quad B = \frac{1}{S-1}\sum_{s=1}^{S}(\hat{\beta}^{(s)} - \bar{\beta})(\hat{\beta}^{(s)} - \bar{\beta})^{\top},$$

and report the total variance

$$T \;=\; W + \left(1 + \tfrac{1}{S}\right)B, \qquad \text{SE}(\bar{\beta}) = \sqrt{\text{diag}(T)}.$$

This accounts for both within-simulation (sampling) and between-simulation (attenuation-correction) uncertainty. In practice, we set $S = 100$.

We now describe how $\widehat{\text{Var}}(\nu_j)_j$ is obtained for each type of firm characteristic.

C.2.2 Variance Estimators for Firm Fixed Effects $\hat{\psi}_{j(i,t)}$

Let $\hat{\psi} = Aw$, where A is the projection matrix from the first-stage AKM estimation. Kline et al. (2020) show that the variance of the estimation error can be approximated as

$$\text{Var}(\nu) \approx \sigma^2 AA',$$

where σ^2 is estimated using leave-one-out methods.

C.2.3 Variance Estimators for PageRank $\exp(V^g)$

We next show how the MLE formulation of PageRank yields a variance estimator.

Maximum Likelihood Estimate of PageRank The probability of a worker choosing firm k is

$$\pi_k = \frac{\exp(V_k^g)}{\sum_l \exp(V_l^g)}.$$

Suppose we observe aggregate mobility data as a matrix $M^0 \in \mathbb{R}^{F\times F}$, where M^0_{kj} is the number of workers moving from firm j to firm k. Assuming independent transitions, the likelihood of all transitions is

$$\prod_{j=1}^{F}\prod_{k=1}^{F}(\pi_k)^{M^0_{kj}}.$$

The log-likelihood is

$$\mathcal{L}(V^g) = \sum_{j=1}^{F}\sum_{k=1}^{F} M^0_{kj}\log(\pi_k).$$

Using

$$\log(\pi_k) = V^g_k - \log\left(\sum_{l=1}^{F}\exp(V^g_l)\right),$$

we obtain

$$\mathcal{L}(V^g) = \sum_{j=1}^{F}\sum_{k=1}^{F} M^0_{kj}\left[V^g_k - \log\left(\sum_{l=1}^{F}\exp(V^g_l)\right)\right].$$

Rearranging,

$$\begin{aligned}
\mathcal{L}(V^g) &= \sum_{j=1}^{F}\sum_{k=1}^{F} M^0_{kj}\left[V^g_k - \log\left(\sum_{l=1}^{F}\exp(V^g_l)\right)\right] \\
&= \sum_{k=1}^{F}\left(\sum_{j=1}^{F} M^0_{kj}\right)V^g_k - \sum_{j=1}^{F}\left(\sum_{k=1}^{F} M^0_{kj}\right)\log\left(\sum_{l=1}^{F}\exp(V^g_l)\right) \\
&= \sum_{k=1}^{F} T_k\cdot V^g_k - \left(\sum_{j=1}^{F} S^0_{jj}\right)\log\left(\sum_{l=1}^{F}\exp(V^g_l)\right),
\end{aligned}$$

where $T_k = \sum_{j=1}^{F} M^0_{kj}$ is total inflow to firm k, and $S^0_{jj} = \sum_k M^0_{kj}$ is total outflow from firm j. Differentiating with respect to V^g_m yields

$$\begin{aligned}
\frac{\partial\mathcal{L}}{\partial V^g_m} &= T_m - \left(\sum_{j=1}^{F} S^0_{jj}\right)\cdot\frac{\exp(V^g_m)}{\sum_{l=1}^{F}\exp(V^g_l)} \\
&= T_m - N\cdot\pi_m,
\end{aligned}$$

where $N = \sum_j S^0_{jj}$ is total transitions. The FOCs are

$$T_m = N\cdot\pi_m, \quad \text{for all } m,$$

or equivalently

$$\frac{T_m}{N} = \pi_m,$$

so empirical inflow shares equal predicted probabilities.

Equivalence to PageRank Solution The MLE V^g coincides with the PageRank solution of Sorkin (2018). From above,

$$\pi_k = \frac{T_k}{N}, \quad \text{where } T_k = \sum_j M^0_{kj}, \quad N = \sum_{k,j} M^0_{kj},$$

and

$$\frac{\exp(V^g_k)}{\sum_l \exp(V^g_l)} = \frac{T_k}{N}$$

imply

$$\exp(V^g_k) = \frac{T_k}{N} \cdot \sum_l \exp(V^g_l),$$

so $\exp(V^g_k)$ is proportional to T_k. The PageRank equation is

$$S^{0^{-1}} M^0 \exp(V^g) = \exp(V^g),$$

where S^0 is the diagonal matrix of column sums of M^0, i.e. $S^0_{kk} = \sum_j M^0_{jk}$. Let $P = S^{0^{-1}} M^0$ be the transition matrix; then

$$P \exp(V^g) = \exp(V^g),$$

so $\exp(V^g)$ is the stationary distribution of this Markov chain. In equilibrium, inflows equal firm values, consistent with the MLE condition that inflow shares match choice probabilities. Thus, the multinomial logit MLE and PageRank fixed point coincide, up to a location normalization of V^g.

Variance of PageRank The observed information (negative Hessian) is

$$\frac{\partial^2 \mathcal{L}}{\partial V^g_m \partial V^g_n} = -N \left[\pi_m(\delta_{mn} - \pi_n)\right],$$

so in matrix form

$$\nabla^2 \mathcal{L} = -N \left(\text{diag}(\pi) - \pi\pi^\top\right).$$

The asymptotic variance of V^g is

$$\mathrm{Var}(V^g) = \frac{1}{N}\left(\mathrm{diag}(\pi) - \pi\pi^\top\right)^+,$$

where $(\cdot)^+$ is the Moore–Penrose pseudoinverse.

In practice, we normalize by a π-weighted mean $\bar{V}_\pi = \sum_k \pi_k V_k$ and impose $\sum_k \pi_k V_k = 0$. More generally, for any anchor w with $\sum_k w_k = 1$ (reporting $V_i - w^\top V$), the delta method and Fisher information $J = \mathrm{diag}(\pi) - \pi\pi^\top$ imply

$$\mathrm{Var}\big(V_i - w^\top V\big) = \frac{1}{N}\sum_{k=1}^{F} \frac{(e_i - w)_k^2}{\pi_k} = \frac{1}{N}\left(\frac{1}{\pi_i} - \frac{2w_i}{\pi_i} + \sum_k \frac{w_k^2}{\pi_k}\right).$$

Minimizing over w subject to $\sum_k w_k = 1$ gives $w_k = \pi_k$, so anchoring at the π-weighted mean yields the smallest asymptotic variance among all convex-combination anchors, and

$$\mathrm{Var}(V_i - \bar{V}_\pi) = \frac{1}{N}\Big(\frac{1}{\pi_i} - 1\Big).$$

D Online Appendix: Survey Materials

D.1 Survey in English translation

Information Sheet about Aarhus University

Professor Nabanita Datta Gupta, Department of Economics, Aarhus University, is conducting a research project funded by the ROCKWOOL Foundation on evaluations of job characteristics.

Recruitment of participants is carried out by Bilendi.co, a survey company with over 20 years of experience helping researchers with market studies in more than 13 European countries, including Denmark.

Your participation in this research study is voluntary.

Why is this study being conducted?

The purpose of this study is to map how individuals decide which type of job they prefer. Using a series of hypothetical job contrasts, you will be asked to choose which job you would prefer to have. Based on these contrasts, researchers will be able to understand individuals' preferences for job characteristics.

What happens if I participate in this research study?

Participation is voluntary. If you choose to participate, the researcher will ask you to:

- Take part in the survey about your job preferences.
- Answer some basic demographic questions.

How long will I be in the research study?

Participation takes about 20 minutes in total.

Are there any potential risks or discomforts I can expect from this study?

There are no expected risks or discomforts.

Are there any potential benefits to participating?

You may benefit from the study by receiving guidance on potential job opportunities once the study is completed.

Will I be paid for participating?

You will receive 200 Bilendi points for participating.

Will information about me and my participation be kept confidential?

All information collected during this study that can identify you will remain confidential. It will only be disclosed with your permission or as required by law. The researcher will not have access to identifiable data.

Identifiable information will only be used for payment and to send personalized suggestions about job opportunities. Data will be de-identified and anonymized before analysis.

How will results be shared?

All results will only be shared in aggregated form, meaning no individual participant's responses can be identified. Results will be published in scientific journals after peer review. Participants are welcome to request copies of publications resulting from the study.

What rights do I have if I participate in this study?

- You can choose whether or not to participate, and you can withdraw your consent at any time by stopping participation.
- Whatever decision you make, there will be no penalty and no loss of benefits you are otherwise entitled to.
- You can refuse to answer any questions you do not wish to answer and still participate in the survey.
- After participating, you cannot withdraw your consent for participation.

Who can I contact if I have questions about this study?

Research team If you have questions, comments, or concerns about the research, please contact the researcher responsible for the study:

Professor Nabanita Datta Gupta, ndg@econ.au.dk

Data Protection Officer at Aarhus University If you have questions about your rights as a participant, or if you have concerns or suggestions and wish to speak to someone other than the researchers, you can contact the Data Protection Officer at Aarhus University at dpo@au.dk.

You will receive payment and guidance within two weeks.

Consent

If you agree to participate, please click "Yes".

Yes No

Survey Introduction and Questions

Introductory text

Thank you for participating in this survey. It takes about 20 minutes to complete. This survey asks about your job preferences. First, we will ask about your current job and some background questions.

Screening and background questions

(a) Are you currently employed?

Response options: Yes / No. (If "No", not eligible.)

(b) What is your age?

(c) What is your gender?

Response options: Male / Female / Other.

(d) What is your highest completed level of education?

Response options:

- No education
- Primary school
- Upper secondary education
- Vocational education
- Short-cycle higher education
- Medium-cycle higher education
- Long-cycle higher education
- PhD and research education

(e) Do you have children living at home?

Response options: Yes / No.

(f) Do you live in:

Response options:

- A large city

- A medium-sized city
- A small town
- The countryside

(g) What is your current monthly salary?

(Please report your monthly salary or indicate "Prefer not to answer".)

(h) What is your current industry? (Based on Denmark Statistics occupational codes)

Response options:

1: Management work, e.g., top management in authorities, companies, and organizations, within administration, production and service companies, hotel and restaurant, and other service areas.

2: Work requiring knowledge at the highest level in the relevant field, e.g., engineer, doctor, nurse, teacher, educator, economics, administration and sales staff, auditor, finance and insurance work, IT, journalist, priest, librarian, author, artist, etc.

3: Work requiring intermediate-level knowledge, e.g., technician, business services, agent and broker work, sales and purchasing, freight forwarding, customs and border work, administration and law enforcement, athlete and coach, photographer, head chef, operations technician, etc.

4: General office and customer service work, e.g., secretarial work, cashier and customer information work, calculation and registration work, warehouse dispatch work, etc.

5: Service and sales work, e.g., service during transport, cooking, waiter, hairdresser, cleaning inspector, sales work, childcare and health care work, rescue and surveillance work.

6: Work in agriculture, forestry, and fishing excluding assistants, e.g., work in farming and horticulture, plant growth, animal husbandry, forestry, fishing, and hunting.

7: Craft-related work, e.g., construction, metal and machine work, precision craftsmanship and graphics, electrical and electronic work, food production, carpentry, etc.

8: Operator and assembly work and transport work, e.g., operator work at stationary plants and machines, assembly work of mechanical, electrical, and electronic work, driver work and vehicle operation, etc.

9: Other manual work, e.g., cleaning work, manual work in agriculture, forestry, and fishing, raw material extraction, construction, production, transport and warehouse work, food preparation, etc.

0: Military work, e.g., officer level, non-commissioned officer level, and other ranks.

(i) In your current position, please answer the following:

- Do you have part-time, full-time, or long hours?
- Do you set your own schedule, or is your schedule set by your employer?
- Do you have the ability to work from home?
- Are your start/end times at work fixed or variable?
- Do you work evenings?
- Does your weekly working time vary, or is it about the same each week?
- Is it easy to adjust your working hours for family/personal reasons?
- Are you ever on call?
- Is your workplace within 15 km of your home?
- Is your workplace more than 30 km from your home?

Hypothetical job profiles

In the next part of the survey, you will be shown 30 profiles of hypothetical jobs. These jobs can vary in the following ways:

- Number of hours
- Control over hours
- Ability to work from home
- Start/end times
- Amount of evening work

- Weekly hours
- Flexibility of working time
- On-call requirements
- Commute time
- Salary conditions

We use your answers in this section to give you personalized suggestions for types of jobs currently available that may match your preferences. If you decide to receive these suggestions, you will receive them via Bilendi. We will not contact workplaces or companies on your behalf. We only provide recommendations that match the choices you make in the next part of this questionnaire, if you indicate that you are interested in these suggestions.

Choice questions

Which job do you prefer?

A B

Example characteristics for the study

Job suggestions

Are you interested in receiving job suggestions based on your preferences?

Yes No

Thank you for participating in this research study!

Table A10: Example characteristics for hypothetical jobs

Feature	Job A	Job B	Job C
Hours	Part-time – 20 hours per week	Full-time – 37 hours per week	Long hours – typically more than 37 hours
Control	Set your own schedule	Employer sets your schedule	
Work from home	None	Yes, employees can work from home some days	
Start times	Fixed times	Variable start/end times	
Evening work	Yes, often	Never	
Hours regular	Same number of hours each week	Hours vary from week to week	
Pace	Relaxed	Time pressure	
Independence	You decide how to do your work	Tasks and workflows are well-defined	
Family time	Easy to adjust for personal/family	Difficult to adjust for personal/family	
On-call	You may be contacted when off-duty	You are not on call	
Distance	Workplace within 15 km of home	Workplace more than 30 km away	
Salary	x% more than your current monthly salary		