# Daddy's Girl: Daughters, Managerial Decisions, and Gender Inequality 

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#### Abstract

Managers are in a unique position to hinder or advance gender equality in firms. Using Danish registry data, we study the role of managers' gender attitudes in shaping gender inequality in the workplace by exploiting the birth of a daughter as opposed to a son as a plausibly exogenous shock to male managers' gender attitudes. Comparing within-firm changes in women's labor outcomes depending on the manager's newborn gender, we find that women's relative earnings and employment increase by $4.4 \%$ and $2.9 \%$ respectively following the birth of the manager's first daughter. These effects are driven by an increase in managers' propensity to substitute male hires with female hires that have comparable education, hours worked, and earnings. In line with managers' ability to substitute men with comparable women, we do not detect any significant effect on firm performance. Finally, the change in managers' behavior appears upon the birth of the managers' first daughter, consistent with a discontinuous increase in the salience of gender issues, and intensifies as daughters age, suggesting an additional role played by exposure to themes of gender equality.


JEL Codes: J7, L2, M5

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## 1 Introduction

Managers are a key input of firm outcomes and extensive research shows that their attitudes and personal traits strongly affect company growth and financial policies. ${ }^{1}$ Managerial attitudes and values could have far-reaching consequences also for gender equality in the workplace. By wielding significant influence over the careers of their male and female employees, managers are in a unique position to either perpetuate or reduce the large gender disparities that remain in the corporate world. ${ }^{2}$ For instance, if attitudes towards women's role in the labor market affect managers' hiring, retention, or promotion decisions, we may observe differences in women's relative earnings and employment across otherwise identical firms.

Despite managers' crucial role in affecting labor outcomes and the growing emphasis on gender attitudes in the study of gender gaps (Bertrand, 2011, 2020), it remains unclear whether managers' gender attitudes causally contribute to shaping gender inequalities within and across workplaces. This is likely due to two challenges: identifying and isolating the role of attitudes, as they are generally unobservable and endogenous, and estimating the causal effect of managers on corporate outcomes, as there is no such thing as a random allocation of managers to firms. To overcome these challenges one would ideally need to randomly assign attitudes to managers, holding everything else constant, including managers' background characteristics and the match between a manager and a firm. ${ }^{3}$ Unfortunately, such an experiment is hard to come by.

In this paper we overcome these challenges by leveraging a natural experiment that comes as close as possible to the ideal one, as it generates an exogenous shift in managers' attitudes which enables us to estimate changes in firm-level gender inequality while accounting for managers endogenous sorting into firms. Motivated by sociological work showing that fathering daughters makes men more sensitive to themes of gender equality (Warner, 1991; Warner and Steel, 1999), we exploit the birth of a daughter, as opposed to a son, as a plausibly exogenous shock to male managers' unobservable gender attitudes. To account for the non-random allocation of managers across organizations, we compare changes in gender inequality along the hiring, retention, and promotion margins within a manager-firm match, depending on the gender of the manager's newborn. Additionally, to exploit the randomness of a manager's newborn gender while separating the effect of fathering an extra daughter from the endogenous decision to have an additional child, we always control for managers' total number of children in our specifications.

While using an empirical approach that leverages birth events has substantial advantages for identifying causal effects, it requires extensive data, including longitudinal information on both

[^1]managers' family structure and the associated firms. We address this challenge by using the Danish administrative data, which provides a unique opportunity to link employer-employee matched information with panel data on individuals' household composition. To ensure that we have enough traction to detect the presence of a daughter effect, i.e. whether women's relative outcomes improve in firms where male managers experience the birth of a daughter as opposed to a son, our analysis focuses on single-manager establishments, as this allows us to identify managers who are likely responsible for personnel decisions and can directly influence gender differences in the workplace. ${ }^{4}$

We present four sets of results. First, we find evidence of a daughter effect, as women's relative earnings and employment increase in establishments where male managers experience the birth of an additional daughter, as opposed to an additional son. This result is driven by managers who experience the birth of their first daughter, while we do not detect similar effects from a newborn's gender at higher parities. Quantitatively, female relative earnings and employment increase by $4.4 \%$ and $2.9 \%$ respectively following the birth of a manager's first daughter. To contextualize these findings, we draw on previous research that has identified a positive relationship between female representation in managerial positions and gender equality in firms (e.g. Cardoso and Winter-Ebmer, 2010; Kunze and Miller, 2017; Flabbi et al., 2019) and benchmark our magnitudes to the effect of having a female manager. This analysis reveals that the size of the daughter effect is between $20 \%$ and $50 \%$ of the positive association we observe between female relative outcomes and female-led companies. We rule out alternative explanations by showing that a child's gender does not affect other margins' of managers' behavior that could influence their ability to change firms' outcomes, such as the likelihood of moving to a new firm or taking up paternity leave after the birth event. At the same time, we provide evidence that following the birth of their first female child, managers are more likely to sort into firms with better outcomes for female employees, attesting to the importance of being able to control for managers' endogenous sorting when estimating the daughter effect on managers' decision-making.

Second, we investigate the margins of adjustment behind the estimated effects and find that female employment and earnings are mostly impacted by the hiring margin, while patterns of job separation and promotions remain largely unaffected. In particular, the birth of a manager's first daughter steers the composition of new hires towards women, and especially women with post-secondary education, who work full-time, and earn high salaries in the firm. Importantly, our analysis reveals that, despite the observed changes in the average characteristics of the female workforce, the composition of the overall workforce as well as average labor costs per employee remain unaffected. Thus, the improvement in women's relative outcomes is not achieved through a general restructuring of the firm labor force but rather by substituting male hires with female hires that have comparable characteristics. As a result, the only observed change in the composition of the workforce consists of its gender mix, implying that, within the range of our estimated effects, managers face only minor frictions in finding workers of the

[^2]opposite gender that are close substitutes.
Managers' ability to alter the gender mix of the workforce while leaving all other characteristics unaffected plays an important role for thinking about the implications that the observed improvement in gender equality could have for firm performance. In fact, while the direction of the daughter effect on firm performance is ex-ante ambiguous, its strength crucially depends on how constrained managers are in their ability to substitute male workers with comparable female workers. If the daughter effect leads managers to substitute male workers with women even when there are not enough qualified female candidates, it could lower the quality of the workforce and negatively impact the performance of the firm. Alternatively, if discrimination was the key driver of gender inequality in the pre-birth period, the daughter effect may redress such distortion. Whether this adjustment ultimately leads to a measurable improvement in firm performance once again depends on the difficulty of replacing equally qualified workers of the opposite gender, or - in other words - on whether discrimination interfered with the pool of labor and the optimal selection of workers in the pre-birth period. Using employment, sales, and value-added per employee as measures of firm performance, we do not detect any statistical difference in the latter measures based on the gender of the manager's newborn child. This evidence aligns well with our earlier finding that managers are able to hire more women at no additional cost for the firm, i.e. while keeping other relevant workforce characteristics unchanged. Taken together, our analysis suggests that, when managers face minor frictions in replacing comparable workers of the opposite gender, hiring more women can promote gender equality at no additional cost to the firm. ${ }^{5}$

Finally, we explore the mechanisms through which daughters can affect male managers' behavior towards women. One possibility is that managers adjust their behavior over time in response to a shift in their beliefs about gender issues, informed by their daughters' experiences. For example, by raising their daughters, male managers may progressively learn about relevant female traits and the structural or cultural barriers women may face in the labor market and society at large. In case the effects stem from gradually learning from own daughters' life experiences, we would expect changes in managers' personnel decisions to emerge sometime after the birth event and to intensify as daughters grow older. The other possibility is that the birth of a daughter discontinuously heightens the salience of gender issues for their fathers, with an associated change in their attitudes towards women. Existing work shows that this may happen both because the birth of a female child may rapidly increase a man's awareness of gender inequality, thus shaping their beliefs about gender roles (Shafer and Malhotra, 2011; Borrell-Porta et al., 2018), and because men who experience the birth of a daughter may start identifying more closely with women when forming their preferences (Oswald and Powdthavee, 2010). In either case, if the event of becoming father to a female child increases the salience of gender issues, we could observe a change in managers' behavior in the years immediately following the birth event.

[^3]While registry data do not naturally lend themselves to study changes in preferences and beliefs, we can leverage their longitudinal nature and focus on the timing of the estimated effects to gain indirect insights into the plausible mechanisms at play. In an event-study analysis, we find evidence of effects appearing right after the birth event and persisting for the subsequent years the manager spends in the firm. This suggests that prolonged exposure to daughters is not necessary to prompt managers to change their behavior towards female employees. Rather, this result supports the idea that managers experience a discontinuous increase in the salience of gender issues upon the birth of their first daughters. As our event-study covers a relatively short time span, we also explore cross-sectional variation to investigate the role of exposure to female children in the long-run. Comparing managers whose oldest daughters belong to different age groups, we find that the daughter effect intensifies with daughters' age, especially from late adolescence onward, suggesting that learning through exposure may be contributing to the persistence of the daughter effect over time.

The immediate and persistent pattern of effects also helps rule out that the observed change in managers' behavior stems from self-interest motives, i.e. the possibility that managers with daughters are motivated by a private incentive to address gender gaps in labor outcomes, as their daughters bear a personal cost associated with gender inequality. Indeed, under this scenario, we would expect managers with daughters to behave differently only if or when their actions could directly benefit their female children. Instead, the rapid and enduring nature of effects suggests that the birth of a daughter can serves as a catalyst for a swift and permanent shift in how men perceive the social costs associated with gender inequality. In this sense, our results differ from those by McGuirk et al. (2023), who find that self-interest motives are the main mechanisms behind the effect of the child's gender on politician's stance towards conscription. Specifically, their analysis shows that having a draft age son reduces politicians' support for conscription, but this opposition fades once the son is no longer draft-eligible. This suggests that politicians' actions are motivated by personal motives, and having a son does not lead to a reconsideration of the social costs associated with war.

Our work relates to several strands of literature. First, it contributes to the literature investigating the causes of remaining differentials in men's and women's labor market outcomes. Because traditional human capital factors like education and experience can no longer explain gender gaps in earnings or employment, economists have increasingly investigated the role of gender differences in opportunities and constraints, including attitudes towards women's role in the labor market. Our paper brings a personnel perspective to the rapidly growing literature that shows that gender attitudes feed into gender gaps by influencing women's own choices in the labor and marriage markets (Bertrand et al., 2015; Fortin, 2015; Bursztyn et al., 2017; Ichino et al., 2019). In particular, our focus on managers extends the relevance of gender attitudes beyond individual and household outcomes by showing that they can shape gender inequality at the corporate level through their impact on the decision-making of top-level employees. Furthermore, by examining the timing of the daughter effect, we contribute to the limited body of work on the origins of attitudes and provide evidence that such attitudes are not necessarily innate, but can evolve over the life cycle and be shaped by personal experiences (e.g. Kuziemko et al., 2018; Dahl et al., 2021; Andries et al., 2023; Bursztyn et al., 2024).

This paper is also closely linked to the literature studying the relationship between managerial traits and firm outcomes. Since the seminal study by Bertrand and Schoar (2003), much of this research has emphasized the importance of managers' attitudes, most notably over-confidence and risk-aversion, in shaping corporate performance and financial decisions (see Baker and Wurgler, 2013; Malmendier, 2018, for two recent reviews). While this literature has produced ample evidence of this link, its ability to establish a causal relationship is typically restricted by the dearth of exogenous variation in both managers' attitudes and the exposure of firms to managers with diverse attitudes (Cronqvist et al., 2012; Fee et al., 2013; Malmendier, 2018). We make two contributions to this literature. Firstly, by estimating changes in firm outcomes within a manager-firm spell, our empirical design overcomes problems of managers' endogenous sorting and allows us to isolate the causal impact of managers' traits on firm outcomes. Secondly, by recognizing that managers inevitably shape the outcomes of the workers they supervise, our paper adds to the emerging body of work extending the literature on management style to labor and workers' outcomes (e.g. He and le Maire, 2022; Acemoglu et al., 2022). Within this literature, our analysis moves beyond existing studies documenting a relationship between managers' own gender and gender gaps in firms (e.g. Kunze and Miller, 2017; Flabbi et al., 2019), and shows that also male managers may internalize the social cost of gender inequality. This is particularly important as women are still under-represented in leadership roles in the corporate world.

Finally, our paper speaks to the literature examining the effects of fathering daughters. The pioneering work by sociologists Warner (1991) and Warner and Steel (1999) was the first to posit that having daughters, as opposed to sons, may heighten men's awareness of gender inequality and make this issue more salient. Using survey data, subsequent research by Shafer and Malhotra (2011) and Borrell-Porta et al. (2018) confirmed that fathers express lower support for traditional gender roles following the birth of a daughter, while mothers' gender attitudes remain largely unchanged. These findings have motivated research in economics exploring the implications for men's behavior. Of particular relevance to our study is the work documenting a relationship between the gender mix of CEOs' children and firms' outcomes (Dahl et al., 2012; Cronqvist and Yu, 2017; Calder-Wang and Gompers, 2021). ${ }^{6,7}$ Our analysis expands this work in several ways. First, unlike these studies which compare managers in the cross-section of firms or exploit endogenous changes in family size, our empirical approach allows us to isolate the causal effect of child's gender on managers' personnel decisions from its effect on managers' mobility across firms. ${ }^{8}$ Making this separation is important given that our findings

[^4]reveal that managers with daughters tend to sort into more gender-equal firms, raising the concern that cross-sectional analyses might conflate the effect of having daughters on the type of firms managers select into with its direct effect on managers' personnel decisions. Second, our analysis explicitly focus on the effect of daughters on gender inequality along the hiring, retention, and promotion margin, as opposed to managers' career incentives or firms' financial outcomes. Finally, the longitudinal nature of our data allows us to explore the timing and long-run dynamics of the daughter effect, thus offering new insights into the scant literature studying the mechanisms underlying the effect of child's gender on fathers' behavior (McGuirk et al., 2023).

The remainder of the paper is organized as follows. The next section describes the data and sample. Section 3 describes the empirical strategy and discusses its validity. Section 4 presents our baseline results, namely the daughter effect on women's relative earnings and employment. Next, we describe the timing of the effects and discuss the potential mechanisms. Section 6 focuses on the margins of adjustment and presents results on firm performance. Section 7 discusses the heterogeneity of the effects depending on managers' and establishments' characteristics and studies managers' mobility across firms. The last section concludes and discusses the policy-implications of our findings.

## 2 Data

We use Danish registry data covering employer-employee matched information on the universe of Danish firms and individuals between 1992 and 2017. ${ }^{9}$ We link individual career histories with longitudinal data on household structure so that we can identify, for each manager in each year, the establishment in which the managers works, the characteristics of the employees the manager supervises, and the number, gender, and age of the managers' children. By observing variation in the family composition of managers due to birth events, we can relate changes in gender outcomes within a firm to the gender of the manager's newborn.

Besides the unique features of its registry data, Denmark provides an interesting setting for the study of the labor market impacts of gender attitudes. Despite generous provisions of parental leave rights and childcare subsidies, previous work has found evidence of glass ceiling effects (Smith et al. 2011, 2013) and women bear virtually the whole earning penalty associated with childbirth (Kleven et al. 2019). ${ }^{10}$
manager and across-managers variation in the gender mix of children. Our research design has been subsequently implemented by Wu et al. (2023).
${ }^{9}$ The Danish administrative data is available from 1980, but we start our analysis in 1992 as this is the first year in which information on individuals' occupations - the variable we use to identify managers - becomes available for the entire population.
${ }^{10}$ The paper by Kleven et al. (2019) also shows that the great majority of the Danish population still thinks that women should not be working full time when they have children living at home. In line with this, Pylkkänen and Smith (2004) report that Danish families traditionally do not consider potential substitution options between fathers and mothers when allocating parental leave.

### 2.1 Sample selection

Following previous work, we identify managers in the employer-employee register using Danish occupational codes, which are based on international standards (ISCO codes). The first digit of the occupational code identifies 10 major occupational classes, including a specific class for managerial positions. We identify as managers all those individuals whose first digit of the occupational code corresponds to the class of managerial positions.

Because our goal is to identify managers who are directly involved in personnel decisions, our sample of interest includes all private-sector single-manager establishments, i.e. establishments where in a given year we observe only one individual holding a managerial position. ${ }^{11}$ The rationale for this sample selection is to increase the likelihood that the managers we identify are both human-resource managers, i.e. individuals responsible for decisions regarding hiring, promotions, etc., and operational managers, i.e. individuals supervising and interacting with employees on a day-to-day basis. ${ }^{12}$

While single-manager establishments tend to be relatively small, with an average size of 13 employees, our sample covers more than half of the population of managers and approximately one-third of the workforce. Moreover, it includes more than $90 \%$ of all distinct establishments in the database, thus incorporating the most representative type of establishment in the Danish economy. The representativeness of our sample is further confirmed by Figure 1, which compares the distribution of single-manager establishments with that of the entire population of establishments across industries.

As discussed in more detail in Section 3, our empirical strategy exploits birth events for identification. Thus, from the overall sample of single-manager establishments, which covers a total of 169 thousand distinct plants, we select out the birth sample. This sample consists of the sub-group of manager-establishment spells in which we observe managers experiencing at least one birth event. As managers are typically in an advanced phase of their career, they tend to be older than the average employee and to have generally concluded their reproductive life. ${ }^{13}$ Therefore birth events are relatively infrequent. In particular, we observe birth events in 8,123 distinct manager-establishment spells, or $4 \%$ of the total number of job spells observed in the overall sample of single-manager establishments. As previous studies have shown that the impact of daughters on parental attitudes and behavior is concentrated on fathers (Warner and Steel, 1999; Shafer and Malhotra, 2011; Borrell-Porta et al., 2018), and given that over $80 \%$ of the managers in our birth sample are men, we restrict our analysis to male managers. ${ }^{14}$

[^5]One direct consequence of working with a sample of firms in which we observe managers experiencing at least one birth event is that all manager-establishment spells have a length of at least two years, namely the year of birth and the preceding year. As we explain in Section 3, we exploit this panel structure of the sample to look at within-firm changes in the labor market outcomes of female employees before and after a birth event.

### 2.2 Descriptive statistics and outcome variables

Table 1 reports descriptive characteristics for the managers, employees, and establishments included in the birth sample. On average managers who experience a birth event are slightly younger than 39 years old, have two children - one boy and one girl -, and their youngest child is just above 4 years old. Columns (2) and (3) show demographic characteristics for male and female employees respectively, while column (4) shows the differences across gender. ${ }^{15}$ In general, because we focus on small firms with only one manager, the workforce in our establishments is less educated and less skilled than the average employed population. In particular, $10 \%$ of workers have a university degree and $17 \%$ are employed in a high-skilled occupation as professionals or technicians. ${ }^{16}$ In terms of gender differences, female workers are younger, more likely to work part-time, to hold only a high-school diploma, and to earn less. ${ }^{17}$ These gender differences carry over also to the establishment level. In particular, column (5) shows our main outcome variables, namely the share of female employment and the female earnings ratio, which are defined in the following way:

$$
\begin{equation*}
\text { Share F Employment }=\frac{N_{f}}{N_{m}+N_{f}} \quad \text { F Earnings Ratio }=\frac{I_{f}}{I_{f}+I_{m}} \tag{1}
\end{equation*}
$$

$N_{f}$ and $N_{m}$ represent respectively the total number of female and male workers in an establishment, and $I_{f}$ and $I_{m}$ represent their average annual labor earnings. In terms of female employment, column (5) shows that female workers represent only $34 \%$ of the total workforce and that $26 \%$ (7\%) of all establishment-year observations are characterized by zero female (male) employees. Because we don't always observe employees of both genders in each year, we define the measure of female relative earnings displayed in equation (1) also as a share. In this way, the female earnings ratio is defined also when either gender is zero and is always bounded between zero and one. ${ }^{18}$ Columns (5) of Table 1 shows that the female earnings ratio is on average equal to 0.39 which indicates that, in line with the statistics on employment, females average earnings are lower than males one.

[^6]
## 3 Empirical Strategy

From the work of Warner (1991) and Warner and Steel (1999), and from the subsequent studies inspired by their findings, we know that child's gender affects the probability that men hold egalitarian views and support policies addressing gender inequality. Exploiting birth events experienced by male managers, we extend this insight to the corporate world. Specifically, to study whether child's gender shapes managers' personnel decisions and what this implies for within-firm gender inequality, we estimate the following regression:

$$
\begin{equation*}
Y_{e t}=\alpha+\beta N \text { Daughter }_{e t}+C_{e t}+\chi_{m e}+\phi_{t}+\epsilon_{e t} \tag{2}
\end{equation*}
$$

where $Y$ is the outcome of interest in establishment $e$ and year $t$, NDaughters is the number of daughters parented by the manager of the establishment $e$ at time $t$, and $C$ is a set of fixed effects for the total number of the manager's children. ${ }^{19}$ Finally $\phi_{t}$ and $\chi_{m e}$ are respectively year and spell fixed-effects, where a spell is defined as a unique match between a manager and an establishment. We cluster standard errors at the establishment level.

Conditioning on the total number of managers' children is of first-order importance because it allows us to separate the effect of parenting an additional child, a possibly endogenous decision, from the impact of parenting an additional daughter, an exogenous event once we condition on the decision to have a child. ${ }^{20}$ Note that once we condition on the total number of children, the number of daughters and the number of sons are linearly dependent and therefore we cannot discern whether the change in parental attitudes is driven by the presence of an extra daughter or by the absence of an extra son.

Another important feature of our specification is that it includes fixed effects for managerestablishment spells, denoted by $\chi_{m e}$. By adding these fixed-effects we are identifying the impact of a manager's child's gender on female employees by looking at within-establishment changes in their labor market outcomes. This implies that we are automatically ruling out the possibility that our results are driven by the differential sorting of managers across firms following the birth event. In particular, because daughters have been shown to affect men's values and behavior toward women, managers might endogenously sort into different types of firms depending on the gender of their children. For example, as a result of the birth of their daughters, male managers may become more likely to sort into female-friendly workplaces, a hypothesis we directly test in Section 7.2. By adding fixed effects for manager-establishment spells, we automatically solve for the potential endogeneity of managers' sorting and we exclusively identify the effect of daughters on managerial decision-making.

Given the presence of fixed effects for both managers' total number of children and job spells, our identification strategy can be thought of as the empirical estimation of the following experiment. Take two single-manager establishments in which the managers have the same

[^7]number of children and experience the birth of an extra child while employed at those firms. Nature assigns to one manager the birth of a daughter (treated) while the other manager experiences the birth of a son (control). The treatment effect is measured as the difference between the changes in labor market outcomes of female employees in treated and control establishments and is captured by $\beta$ in equation (2). In other words, $\beta$ identifies the relative daughter effect while simultaneously controlling for unobservable characteristics of both the managers and their firms.

Finally, we expand equation (2) to include controls for a set of time-varying organization characteristics, such as the average age and educational level of the workforce, the share of full-time workers, and establishment size. ${ }^{21}$ As our regression includes fixed effects for manager-establishment spells, the coefficients of these controls are estimated based on changes before and after the birth event. While we cannot rule out that some of these controls might be endogenous, a specification that includes them allows us to account for changes in female employees' labor market outcomes conditional on other changes in the general workforce characteristics. To account for the potential endogeneity of these controls, we always show our results both including and excluding them.

### 3.1 Discussion on the validity of the identification strategy

Our empirical strategy hinges on two identifying assumptions. Because we rely on variation in the gender of newborn children, the first identifying assumption is that, once we condition on a manager's decision to have a child, the child's gender is exogenous. Because sex-selective abortion is illegal in Denmark, managers cannot resort to this practice to influence the gender of their children. However, the assumption may be violated if managers follow a gender-based stopping rule for fertility that impacts the proportion of daughters they parent. For example, managers with a preference for daughters may follow a fertility rule that stipulates that they keep having children until they have at least one daughter. If this is the case, parents with more sons would be more likely to be using such a stopping rule even once we condition on the total number of children. ${ }^{22}$

To check for the presence of a gender-biased stopping rule for fertility, we follow the literature (e.g. Washington 2008) and test whether having a first-born daughter predicts the total number of managers' children. Results are presented in Table A1 of the Appendix, which shows that while having a first-born female child strongly predicts the total number of managers' daughters, it does not determine the total number of children, nor the probability that

[^8]managers have more than one or two children. This evidence indicates that managers are not following some gender-biased stopping rule for fertility and therefore, once we condition on the total number of children, we can treat the number of daughters as a random variable.

To interpret our estimates as the effects of child's gender on managers' personnel decisions and within-firm gender inequality, we are also implicitly assuming that the treatment does not directly impact managers' ability to affect the personnel policies inside their firms. In our context, this assumption might not hold if child's gender influences the actual time the manager spends in the establishment, thus affecting the degree to which he is able to have a direct impact on human-resource practices. Therefore we next investigate whether the newborn gender influences two margins that can both affect the total time a manager spends in a firm following a birth event, namely the manager's propensity to take-up paternity leave and his decision to exit the firm in the years following the birth.

First, we show in Table A2 that child's gender has no effect on either the probability a manager takes paternity leave (columns 1 to 4 ) or on the duration of such leave for the subsample of managers taking at least some leave (columns 5 and 6). Next, we look at whether the probability of observing a break in the manager-establishment spell in the years following the birth depends on the gender of the newborn. This is a first-order concern given that, through job spell fixed effects, our identification strategy conditions on managers' presence within the firm where the birth event occurs. Results are presented in Figure 3, which displays the "survival rate" of a job spell depending on whether the manager experienced the birth of a daughter or a son. Because, as explained in Section 2, all our sample consists of managerestablishment spells with a length of at least two years - the year of the birth and the preceding year - the share of spells observed in Figure 3 in these two periods is, by construction, equal to one. The graph shows that the probability that a spell breaks does not depend on the gender of the newborn and therefore we can exclude the hypothesis that our results are driven by differential mobility patterns across treated and control managers. Moreover, the fact that there is no difference between the two groups of managers in the years preceding the birth represented by the negative values of the horizontal axis - reassures us that the timing at which a spell is formed does not depend on the gender of the future child, in line with the fact that parents cannot predict nor select the gender of children. ${ }^{23}$

## 4 Women's relative earnings and employment

Women's relative labor outcomes improve when managers experience the birth of a daughter. This relationship can be seen in Panel A of Table 2, which presents the results from estimating equation (2) for our two main outcomes, namely the female earnings ratio and the share of female employment. All specifications include fixed effects for manager-establishment spells, total number of managers' children, and years. Other controls vary between columns but, as

[^9]the Table shows, their inclusion does not affect our estimates. In particular, adding potentially endogenous time-varying controls does not impact the results as odd and even columns are virtually identical. The results displayed in column (2) of Panel A indicate that following the birth of a daughter, and as opposed to the birth of a son, the female earnings ratio increases by almost 1 percentage point, which corresponds to an increase of $2.5 \%$ with respect to the average. Similarly, in column (4) we find that the share of female employment increases by $2.3 \%$ in establishments where managers become fathers of a female child.

We characterize these results along two lines. First, although we showed that the individuals in our sample do not follow a gender-biased family stopping rules, we replicate the analysis for the sub-sample of managers who experience the birth of their first-born child, whose gender is arguably more exogenous. Moreover, because this exercise entails that we select only the sample of managers who before the birth event had zero children, we are automatically controlling for managers' family size. As a result, we can show effects for daughters and sons separately and confirm whether the positive impact on female relative outcomes found previously is actually driven by a positive effect of daughters as opposed to a negative effect of sons. The results are displayed in Figure 2, which compares within-establishment changes in the outcomes of interest following the birth of managers' first-born children of opposite genders. ${ }^{24}$ We can see that there is a significant increase in female relative earnings and employment in establishments where the manager's first-born is female. On the contrary, establishments where the managers' first-born is male, do not see any significant change in female outcomes. This result is in line with Warner (1991)'s argument that having sons, as opposed to daughters, does not lead men to "be antifeminist, but rather, it makes the issue of gender fairness less salient".

Second, while the estimates presented in Panel A combine together the effects of the birth of any daughter, we now turn to compare managers who experienced the birth of their first daughter and managers who already have at least one female child and experienced the birth of an additional daughter as opposed to a son. If, as argued by sociologists, having daughters can be instrumental in increasing the saliency of gender issues in men, we may expect the birth of the first female child to have a stronger effect on their father's behavior than the birth of additional female children. To assess whether the results vary with parity, we substitute the continuous variable $N$ Daughters of equation (2) with the dummies First Daughter and Additional Daughters which, respectively, switch to one when the total number of daughters becomes positive and when it becomes greater than one. ${ }^{25}$

The results are shown in Panel B of Table 2 and indicate that the aggregate effects previously presented were driven by managers who experienced the birth of their first daughter. Specifically, following the birth of the manager's first daughter, female relative earnings and employment increase by $4.4 \%$ and $2.9 \%$. Instead, we do not detect similar effects from a newborn gender in establishments where managers already have at least one female child. In

[^10]particular, the effects of daughters at higher parity are much smaller and statistically insignificant, albeit still positive. This evidence indicates that the first female child is particularly important for shifting managers' behavior, suggesting that saliency and awareness of gender issues may discontinuously and persistently increase after men experience the birth of their first daughters, a hypothesis we investigate in more detail in Section 5. Given this result, in the rest of the analysis, we concentrate on the effects of the birth of the first daughter by relying on the specification used in Panel B.

Finally, to help interpret the magnitudes shown in Panel B, we build on previous work establishing that female executives have a positive impact on gender equality within firms. In particular, various papers have documented a negative relationship between female-led companies and the size of firm-level gender gaps in earnings and promotions (e.g. Cardoso and Winter-Ebmer 2010; Kunze and Miller 2017; Cullen and Perez-Truglia 2019; Flabbi et al. 2019). Therefore, exploiting variation in managers' gender across establishments, we estimate the magnitude of the effect of having a female manager, and compare it to the size of the results obtained in Table $2 .{ }^{26}$

Table A3 shows that, in line with existing evidence, there is a positive relationship between female managers and female employees' outcomes. In particular, even once we account for managers' endogenous sorting across narrowly defined sectors and control for average characteristics of male and female employees, establishments led by a woman are characterized by higher female relative earnings and employment. ${ }^{27}$ Specifically, columns (2) and (4) indicate that the female earnings ratio and the share of female employment are respectively almost 4 and 5 percentage points higher in female-led companies than in observably similar male-led companies. If we compare the magnitudes of the female manager dummy of Table A3 with those of the daughter effect obtained in Panel B of Table 2, we can see that the effects we find when a male manager experiences the birth of his first daughter are between $50 \%$ and $20 \%$ of the effects of having a female manager.

### 4.1 Event study analysis

This section inspects the presence of differential pre-trends between treated and control establishments. Given the exogeneity of child's gender, experiencing the birth of a daughter, as opposed to a son, should be uncorrelated with the evolution of outcomes in the pre-birth years. In line with this, Figure 3 shows that the timing of the creation of a job spell is orthogonal to

[^11]the gender of managers' newborns. To provide further evidence in favor of this assumption, we perform an event study analysis.

In addition to obtaining information about whether our outcomes of interest exhibit parallel trends in the pre-birth period, the event study design can also help us achieve two additional objectives. First, it can be used to investigate the dynamic evolution of the daughter effect, which, as we discuss in more detail in Section 5, may give us some insights into the plausible mechanisms at play. Second, this methodology enables us to alleviate the pitfalls of twoway fixed effects estimators (Borusyak and Jaravel 2017; De Chaisemartin and d'Haultfoeuille 2020; Goodman-Bacon 2021). Typically, limitations of two-way fixed effects estimators are particularly severe in contexts of staggered treatment where, in the absence of a pure control group, the estimator relies on already-treated units as a control group. Instead, our setting is characterized by the presence of a natural control group, namely the managers who experience the birth of a son. Yet, some of these control managers may also be considered already-treated if, on top of the newborn son, they also have other children some of which are female. In the presence of dynamic treatment effects, this may bias, likely downward, the estimation of the results. To address this concern, in our event study analysis we define as treated all managerestablishment spells during which managers experienced the birth of their first daughter, and as control all the spells during which managers experience the birth of a son and do not have any daughter.

For the event study, we denote the year in which the manager experiences the birth as event time $j=0$ and index all other years relative to that. Indicating with $Y_{e m, j t}$ the outcomes of interest for the manager-establishment spell $m e$ in year $t$ and event time $j$, we run the following regression:

$$
\begin{equation*}
Y_{m e, j t}=\sum_{j \neq-1}\left[\alpha_{j} \text { event }_{m e, j}+\beta_{j}\left(\text { event }_{m e, j} \times \text { treated }_{m e}\right)\right]+C_{m e, j t}+\chi_{m e}+\phi_{t}+\epsilon_{m e, j t} \tag{3}
\end{equation*}
$$

which includes a full set of event time dummies (first term on the right-hand side), the interaction between the event dummies and the treatment status as defined earlier (second-term on the right-hand side), calendar year dummies $\phi_{t}$, fixed effects for the total number of managers' children, denoted by $C_{m e, j t}$, and fixed effects for manager-establishment spells $\chi_{m e}$. We let the event time $j$ run from 3 years before the birth to 5 years after and we omit it when $j=-1 .{ }^{28}$ Thus the coefficients $\beta_{j}$ measure, for each event time, the difference in outcomes between treated and control establishments relative to their difference the year preceding the birth.

Figure 4 , which displays the coefficients $\beta_{j}$ for both the female earnings ratio and the share of female employment, allows us to graphically inspect the presence of differential pre-trends

[^12]between treated and control units. We do not find evidence of differential pre-trends, as for both outcomes the coefficients are not statistically different from zero in the years preceding the birth event. Figure 4 also shows that the positive effects of daughters kick in immediately after birth and persists for the subsequent years a manager spends in the firm. We discuss this result more at length in the next section, where we expand on how the timing underlying the estimated results can help us understand the channels driving the daughter effect.

Finally, we test for the robustness of our results along two margins. First, we re-estimate the event-study by replicating more closely the regressions specification used in Panel B of Table 2. Specifically, we identify the effects of the variable First Daughter by defining the group of treated managers as those who experience the birth of their first female child, but we include in the control group everybody else, i.e. managers who already have a daughter and experience the birth of an extra child of either gender (previously treated) and managers who do not have any female child and experience the birth of an extra son (never treated). We show the results in Figure A1. While qualitative similar, the magnitudes shown in Figure A1 are generally smaller than those we obtained in Figure 4 where we include only the never treated in the control group. This suggests that in our context issues related to dynamic treatment effects are limited and, if anything, they bias downward our results. In order to further validate this interpretation and address any residual concern related to the presence of staggered treatment timing - namely, the fact that managers experience the birth of a daughter at different points in time - we proceed by re-estimating both the average treatment effects and the event-study using the estimator proposed by De Chaisemartin and d'Haultfoeuille (2020). Results, which are shown in Figure A2, are both qualitatively and quantitatively similar to the event-study estimates obtained in Figure 4 and to the average treatment effect of the birth of a manager's first daughter shown in Panel B of Table 2.

## 5 The timing of the effects and plausible mechanisms

This study builds upon existing research which suggests that daughters positively affect men's gender attitudes (Warner, 1991; Warner and Steel, 1999; Shafer and Malhotra, 2011; BorrellPorta et al., 2018). However, the specific mechanisms by which this translates into the changes in behavior described in the previous section remain unclear. One possible channel works via exposure to daughters gradually redressing men's informational asymmetries, if any, about women's abilities and the constraint they face. For example, male managers could learn about women's ability through their daughters' accomplishments at school or gain insights into gender differences in opportunities and constraints in the labor market from their daughters' professional experiences. ${ }^{29}$ Independently on the type of information acquired, if the effects are exclusively driven by a shift in managers' beliefs about gender issues induced by exposure to their own daughters' life experiences, one would reasonably expect changes in human-resource

[^13]management to appear only some time after the birth event and to potentially intensify with daughters' age.

Instead, finding that firm-level gender equality improves shortly after the birth of the manager's first daughter, would indicate that our results cannot be fully explained by a gradual shift in managers' beliefs induced by exposure to their daughters. Such rapid behavioral responses would rather be consistent with a discontinuous increase in the salience of gender issues upon the birth event, with an associated change in attitudes towards women. ${ }^{30}$ According to existing research there are two primary channels through which this can happen. Firstly, the birth of a daughter can rapidly heighten fathers' awareness of gender inequality, thereby shaping their beliefs. This explanation aligns with models of selective attention and learning through noticing (e.g. Schwartzstein, 2014; Hanna et al., 2014; Bordalo et al., 2017) and is supported by studies like Shafer and Malhotra (2011) and Borrell-Porta et al. (2018), which find that men alter their perceptions of gender roles in the years immediately after their daughter's birth. Secondly, the birth of a daughter can make men feel closer to women, thus affecting their preferences. This explanation is consistent with findings from Oswald and Powdthavee (2010) and Cronqvist and Yu (2017), which suggest that men with daughters identify more closely with women when forming their preferences, in line with models of group identity and social preferences (e.g. Chen and Li, 2009; Klor and Shayo, 2010).

While registry data do not naturally lend themselves to study changes in managers' preferences and beliefs about women, we can leverage the longitudinal nature of our data and focus on the timing of the estimated effects to gain indirect insights into these two possible mechanisms. In particular, by investigating when the daughter effect appears - specifically how quickly after the birth event - and whether it varies over the years - particularly in relation to the daughter's age - we can assess the extent to which our findings are driven by a rapid increase in the salience of gender issues or by a gradual shift in managers' beliefs induced by exposure to their own daughters' life experiences. To investigate the timing characterizing our baseline results, we first draw upon the dynamic effects of the event study specification estimated in the previous section and displayed in Figure 4. The graph shows that the daughter effect appears right after the birth event and persists for the subsequent five years. As discussed, the fact that the daughter effect emerges soon after the birth indicates that our results cannot be fully explained by a shift in managers' beliefs induced by being exposed to gender issues through their daughters' life experiences. Rather, this evidence is consistent with a discontinuous and persistent increase in the salience of gender issues upon birth of a manager's first female child.

However, it should be noted that the relatively short time window analyzed in the event study may not be sufficient to reveal the long-run effects of sustained exposure to female children on fathers' behavior. We therefore test whether the daughter effect varies over a longer time span in a cross-section of managers whose oldest daughters are of different age. More specifically, we run the following regression, which compares female relative outcomes

[^14]across single-manager establishments depending on the age group of the managers' oldest daughter while controlling for managers' and firms' characteristics:
\[

$$
\begin{align*}
Y_{e t}= & \alpha+\beta_{1} D_{e t}^{0-5}+\beta_{2} D_{e t}^{6-15}+\beta_{3} D_{e t}^{16-21}+\beta_{4} D_{e t}^{22+}+C_{e t}  \tag{4}\\
& +M G R_{e t}^{\prime} \delta+\text { WORK }_{e t}^{\prime} \gamma+\eta_{j}+\lambda_{l}+\phi_{t}+\epsilon_{e t}
\end{align*}
$$
\]

$D^{a-b}$ are dummies equal to one if the manager's oldest daughter is between $a$ and $b$ years old, $C_{e t}$ are fixed effects for the total number of children of the manager employed in establishment $e$ at time $t, M G R$ is a vector of manager characteristics, while $W O R K$ is a vector of workforce characteristics aggregated at the establishment-year level. ${ }^{31}$ Finally $\eta_{j}, \lambda_{l}$ and $\phi_{t}$ are respectively fixed-effects for industry (at the 5 -digits level), municipality, and year.

The $\beta$ coefficients displayed in equation 4 allow us to check whether the daughter effect persists in the long-run, as they identify the relationship between the age of the manager's oldest daughter and female employees' outcomes at the firm-level. Each coefficient is identified by comparing managers with the same number of children, employed in establishments with an observably similar workforce, and working in the same narrowly defined industry and municipality. As the age of the oldest daughter correlates with that of the manager, we make sure to compare managers of similar age by accounting for cohort effects through the inclusion of age deciles dummies in the vector of managers controls $M G R .{ }^{32}$

Figure 5 plots the $\beta$ coefficients from equation (4) and shows that the effects of fathering a daughter on our outcomes of interest remain consistently positive over time and seem to be increasing with the age of managers' oldest daughters, particularly from late adolescence onward. This result indicate that the initial shift in managers' behavior may be further strengthened over time as their daughters grow older. In particular, the gradual increase in the effects happening around critical junctures in daughters' lives, (e.g. different educational thresholds, entering the labor market) is consistent with the hypothesis of gradually learning through exposure to own daughters' experiences, which, in the medium-long run, may lead to a redressing in managers' informational asymmetries about women's abilities and the constraints they face. ${ }^{33}$

[^15]The immediate and persistent pattern of effects we document offer two novel insights to the literature on the daughter effect. First, the rapid onset of the effects implies that men's behavior can rapidly change following the birth of a female child, suggesting that male managers do not necessarily require prolonged exposure to gender issues before altering their personnel decisions. Second, the observed timing of effects help us rule out that managers with daughters are motivated by a private incentive to address gender gaps in labor outcomes - as their daughters bear a personal cost associated with gender inequality - while managers with sons lack this additional incentive. Indeed, under this scenario, we would expect managers with daughters to behave differently from those with sons only if or when their actions could directly benefit their female children. McGuirk et al. (2023) provides clear evidence of such mechanism in the context of voting on issues of war and peace in the US Congress, where they show that having a draft age son decreases politicians' pro-conscription voting but that support for conscription recovers once the legislator's son ages out of eligibility. Overall, their results indicate that having a son, as opposed to a daughter, affects politicians behavior through self-interest motives rather than by triggering an ideological shift in their positions towards war. There are to main reasons why an explanation based on private incentives is unlikely in our context. First, the daughter effect emerges when daughters are sill infants, a stage at which self-interest motives are less likely to be a factor, and persists thereafter. Secondly, we study a context where the actions of a single manager have hardly any impact on aggregate levels of gender inequality, making self-interest a less plausible motive for the observed change in managers' behavior. Instead, our results are most consistent with the hypothesis that the birth of a daughter alters men's perception of the social costs associated with gender inequality, either by rapidly heightening their awareness of gender inequality, thereby shaping their beliefs, or by making them feel closer to women, thus affecting their preferences.

## 6 Margins of adjustment and firm performance

We now turn to look at the specific dimensions of impact. Ex ante, the birth of a daughter can have ambiguous effects on the type of human resource policies managers implement. On the one hand, treated managers might become more supportive of corporate policies that improve work-family balance and increase amenities for women with young children. If this is the case, we may find evidence of a general restructuring of the firm workforce and, for example, detect an increase in the representation of women - and possibly also men - working part-time or having pre-school children.

On the other hand, the birth of the first female child may lead managers to increase female presence within the workplace while at the same avoiding a general restructuring of the firm labor force. To obtain this result, managers would have to substitute men with women with comparable characteristics, thereby increasing women's representation among full-time workers or among workers employed in high-pay positions.

To assess the relative importance of these different hypotheses, we start by investigating in Section 6.1 the direction in which the birth of the manager's first daughter affects the average
characteristics of the female workforce and the consequential impact for the composition of the overall labor force within the firm. Next, in Sections 6.2 and 6.3 , we assess the relative importance of the hiring, retention, and promotion margins in driving these changes. Finally, Section 6.4 concludes this part of the analysis by testing whether the observed changes in human resource management affect firm performance.

### 6.1 Changes in workforce composition

Table 3 shows whether daughters affect the average characteristics of the female workforce within the firm. First, we show in the first three columns that women's representation within the group of employees earning a high salary relative to the firm earnings distribution increases. In particular, column (1) indicates that, following the birth of the manager's first daughter, there is an $8 \%$ increase in the probability that the employee with the highest earnings in the establishment is a woman. The next two columns show a similar increase in the share of women whose earnings are above the 90th percentile of the employees' earnings distribution calculated at the firm-level (column 2) and in the share of women who are among the top three earners in the establishment (column 3).

To account for possible changes in human resource management to favor family-work balance, we also investigate the daughter effect on the representation of women working full-time vs part-time or having pre-school aged children. While column (4) indicates that treated establishments experience a $2.2 \%$ rise in the share of female workers employed full-time, we do not find any evidence of a positive daughter effect on the other two outcomes, as indicated in columns (5) and (6). Finally, while column (7) shows that there is a $5.9 \%$ increase in the share of female workers with post-secondary education, the last column indicates that there is no effect on the proportion of women whose highest educational title is high-school or below.

Taken together, the results showed in Table 3 indicate that treated establishments see an increase in women's representation within the categories of workers in which they are generally under-represented, as shown in Table 1. In particular, following the birth of their first daughter, treated managers increase the share of female employees whose observable characteristics resemble those of males. On the contrary, these results speak against the hypothesis that daughters induce managers to implement corporate policies that improve family-work balance by introducing, for example, more flexible work arrangements and amenities for women with very young children.

Next, we investigate whether the adjustments observed in Table 3 translate into broader changes affecting the composition of the overall labor force within the firm. In particular, Table 4 investigates if the birth of the manager's first daughter affects the average age and years of tenure of workers, the overall proportion of employees who work part-time as opposed to full-time, and the share of workers who have young children, or who have completed postsecondary education. ${ }^{34}$ In contrast to the results of Table 3, the first five columns of Table

[^16]4 show that the composition of the overall workforce is not affected by the newborn gender. Importantly, in line with a lack of an effect on the average characteristics of the establishment labor force, the last column of Table 4 indicates that the birth of the manager's first daughter leaves unchanged also average labor costs per employee.

Combined together, the results of Table 3 and 4 suggest that the changes in women's relative outcomes are not achieved through a general restructuring of the firm labor force. Rather, treated managers substitute male workers with observably similar women, i.e. women with post-secondary education, working full-time, and occupying more remunerative positions within the firm. As a result, the only observable characteristic of the workforce that appears to be affected by the change in managers' personnel decisions is its gender-mix.

The substitution between male and female workers and the consequential increase in women's representation among full-time and high-pay workers can occur through two main margins. On the one hand, the effect might run through a change in the promotion rate of incumbents, i.e. the group of workers employed at the firm already before the birth event. In particular, following the birth of their first daughter, treated managers may adjust their evaluation of male and female incumbents and become more likely to offer a higher salary or a full-time position to a woman. This would result in an increase in the promotion rate of female incumbents, possibly at the expense of men.

On the other hand, daughters might affect managers' hiring and separation policies. In particular, treated managers may increase their propensity to hire women, particularly for full-time and high-pay positions. Similarly, child's gender could also differentially affect the probability of separation of male and female employees. In the following sections, we investigate these two margins of adjustment in more detail.

### 6.2 Hiring and separations

In Panel A of Table 5 we test whether the newborn's gender affects managers' hiring and separations practices. We find that the birth of the managers' first daughter has a positive effect on a manager's propensity to hire women, as the proportion of female hires over total hires increases by $4.5 \%$, while it has a negative but imprecisely estimated effect on the share of female separations. ${ }^{35}$ The observed increase in the share of women hired can come from two margins. On the one hand, treated managers might want to increase women's representation among hires but, at the same time, keep constant the number of men hired. If this is the case, then we should observe treated managers hiring more workers overall. On the other hand, daughters might lead managers to substitute male hires with female candidates, without any effect on the total number of hires.

Panel B of Table 5 shows evidence supporting this substitution mechanism, as we find that treated establishments are not characterized by a higher hiring (or separation) rate with respect

[^17]to control establishments. Taking stock of these results and going back to the interpretation of our baseline effects, the analysis presented so far suggests that the overall increase in female employment observed in Table 2 is driven by a shift in the gender mix of new hires, while patterns of job separations remain largely unaffected.

Next, we turn to investigate if the observed change in hiring patterns can also rationalize the increase in the share of female workers who are high earners, work full-time, and have post-secondary education. We address this question in two ways. First, in Table 6 we replicate the results presented in Table 3 but, rather than focusing on the change in the total number of female workers having a specific characteristic, we measure changes in the number of female hires having that characteristic. In this way, we can compare the magnitudes of the coefficients presented in Table 6 with those presented in Table 3 and assess, for example, how much of the increase in the overall share of female workers working full-time is explained by an increase in the share of hires who are both women and employed full-time.

By looking at the results, it emerges that the majority of the total increase in the share of $f e$ male workers who are top earners, who work full-time, and who have post-secondary education, can be explained by an increase in the share of female hires who have those characteristics. ${ }^{36}$ In particular, the magnitudes estimated in Table 6 are approximately between 60 and $80 \%$ of the magnitudes obtained in Table 3.

The analysis presented in Table 6 is performed using the entire sample of establishments, including those that did not hire any woman before the birth event. Therefore, part of the effects previously estimated might by driven by managers who had never hired a female candidate before the birth and start doing so only after. However, we may also be interested in knowing whether, in reaction to the treatment, managers start hiring female candidates with different observable characteristics than the women they used to hire. To answer this question, we study changes in the observable characteristics of female hires in the sub-sample of establishments characterized by a positive number of women hired both before and after the birth.

The results of this analysis are shown in Table 7. Specifically, the first three columns indicate that, in the sub-sample of establishments with a positive number of women hired in the pre- and post-birth period, treated managers become more likely to hire women with more education, who work full time, and with higher earnings, although this last result is imprecisely estimated. In line with the substitution mechanisms highlighted before, we find symmetric results when we replicate the analysis on the sub-sample of establishments that hired at least one man both before and after the birth event (see columns 4 to 6). Note that the sample of establishments in the first three columns does not perfectly overlap with the sample used in columns (4) to (6). Therefore, in the last three columns of Table 7, we focus on the group of establishments hiring workers of both genders both before and after the birth event. This allows us to calculate the daughter effect on the gender gap in the observable characteristics of new hires. While the number of observations drops significantly, these results

[^18]suggest that in establishments where managers experience the birth of their first daughter, the gender gap in educational qualifications, in the probability of working full-time, and in earnings among new hires closes, albeit significantly so only for education.

### 6.3 Promotions

Besides the hiring margin, changes in promotion practices may also play a role in driving the observed improvement in female relative earnings. After the birth of their first daughter, treated managers may, for example, change their evaluations of the workers already employed at the firm before the birth event (i.e. the incumbents) and become more likely to promote women over men. We measure the potential adjustment in male and female incumbents' promotion rate by analyzing within-firm changes in the growth of their salaries around a birth event. ${ }^{37}$ We report the results of this analysis in Panel A of Table 8, which shows that the birth of the manager's first daughter does not have any significant effect on the earnings of male and female incumbents.

The analysis presented in Panel A tests for the relationship between manager's newborn gender and promotion policies using the entire sample of establishments, independently of the gender mix of the incumbents. However, it may be that, in order to re-assess their evaluation of female employees, managers need to benchmark the performance of women with that of men. To test this hypothesis, we replicate the analysis on promotions only on the sample of establishments that employed workers of both genders the year before the birth. The results are presented in Panel B of Table 8 and they confirm the effects found in Panel A. If anything, Panel B shows that, in the sub-sample of mixed gender establishments, daughters might slow the wage growth of male employees, but this effect is not significant at conventional levels. ${ }^{38}$

Taken together, the results presented so far indicate that the increase in female relative earnings and employment is mainly driven by a change in managers' hiring practices rather than in promotion policies. The fact that treated managers mostly rely on the hiring margin to change the relative outcomes of female employees might be a result specific to the type of firms we study. Indeed, a change in hiring practices might be the most effective strategy to change the composition of the female workforce if, as it sometimes happens in our sample, there are no female workers already employed at the firm or if the number of female incumbents that can be considered for a promotion is small.

[^19]
### 6.4 Firm performance

The observed changes in human-resource management can have both a positive or a negative effect on firm performance depending on whether, prior to the birth event, managers' personnel practices were motivated by discrimination or by profit maximization. If the birth of daughters induces treated managers to lower the productivity threshold used to evaluate female candidates, managers may find themselves hiring lower-quality workers, with potentially negative effect on performance. On the other hand, if discrimination was the key driver of women's worse relative outcomes in the pre-birth period, the observed changes in human-resource management may redress this distortion and have a positive effect on firm performance.

The strength of this effect, positive or negative, will crucially depend on how constrained managers are in their ability to substitute comparable workers of the opposite gender. An increase in female hiring does not have to result in a worsening of firm performance if managers can select from a pool of sufficiently qualified female candidates when making hiring decisions. At the same time, the daughter effect may not induce an improvement in firm performance if discriminatory behavior against female candidates was pay-off irrelevant in the pre-birth period, that is, it did not interfere with the optimal selection of workers.

We investigate this relationship empirically by measuring firm performance in terms of employment, sales, and value added per worker. While registry data on workers' characteristics is available at the establishment level, balance sheet data is only available at the firm level. Therefore, this part of the analysis is restricted to the sample of single-establishment firms with non-missing information for our outcomes of interest, which represent approximately $73 \%$ of the total number of observations used for the main analysis.

As Table 9 indicates, we do not detect any significant effects of child's gender on our measures of firms performance. In particular, although our coefficients are imprecisely estimated, they indicate effects close to zero for what concerns total employment and sales, while the estimates for value added per employee correspond to a small increase of about three thousand and six hundred Danish Kroner (equivalent to approximately 483 euro or 527 US dollars using March 2024 exchange rate). In comparison, Sauvagnat and Schivardi (2019) find that value added per employee changes by ten thousand euros following a change in CEO, an effect that is several times larger than ours. ${ }^{39}$

The absence of a meaningful effect on firm performance is consistent with our evidence on the margins of adjustments, which indicates that, within the range of our estimated effects, treated managers can alter the gender-mix of the workforce without affecting any other workforce characteristics. ${ }^{40}$ Thus, taken together, our analysis suggests that when managers face minor frictions in replacing men by hiring comparable women, there may be no trade-

[^20]off between equity and efficiency. ${ }^{41}$ Although these results may not be broadly generalizable, as they depend on the degree of workers substitutability and on the extent of hiring needs, it is worth noting that a recent paper by Huber et al. (2021) obtained similar results when studying discrimination against Jewish managers in the context of Nazi Germany. Specifically, the authors find that even in the presence of explicit discrimination directed towards top-level employees, firms that expelled Jewish managers experienced a decline in performance only if those managers had particularly hard-to-replace characteristics.

## 7 Heterogeneous and long-run effects

This section is divided into two parts. Section 7.1, performs a series of heterogeneity tests to investigate whether and how our baseline results vary depending on managers' and establishments' characteristics. Section 7.2 investigates the persistence of the effects by testing whether, in the medium-long run, treated and control managers are employed in firms with a different workforce composition, particularly in terms of female employees' characteristics, and discusses the implications of these results for the issue of managers endogenous sorting across firms.

### 7.1 Heterogeneous effects

We first analyze whether our baseline results differ depending on female intensity at the industry level. A priori, it is ambiguous whether the daughter effect should be stronger or weaker in establishment operating in industries characterized by high female employment. On the one hand, we may expect weaker results in sectors characterized by a scarcity of female labor supply because, due to supply-side constraints, treated managers might face higher frictions when adjusting their personnel policies to increase the proportion of female workers. These frictions may be particularly binding especially if managers want to increase female hiring while keeping other workforce characteristics constant. On the other hand, managers employed in female intensive industries may have already developed a higher level of familiarity in working with female employees, independently on the presence of female children. As a result, the room for changing human-resource management following the birth of their first daughter might be smaller in these sectors.

We test this relationship in Panel A of Table 10, where we divide the sample of managerestablishment spells into two groups depending on whether the firm operates in an industry with a share of female employment above (even columns) or below (odd columns) $50 \%$. In line with the hypothesis suggesting that supply-side considerations may constrain the adjustment of human-resource practices, the results of Panel A show that the baseline effects, especially

[^21]those on female employment, are stronger if the firm operates in an industry characterized by a relatively higher presence of female employment. As these industries are also characterised by a larger pool of female labor, these effects are consistent with our earlier finding showing that when managers respond to the daughter effect, they are able to alter the gender-mix of the workforce while keeping all other characteristics constant.

Next, we move onto analyzing heterogeneous effects depending on female intensity at the establishment-level. Specifically, we examine how the results differ based on the size of potential adjustments, as indicated by whether, in the year prior to the birth event, the establishment had a higher or lower share of female workers compared to the industry average. Results are shown in Panel B of Table 10. The comparison of columns (1) and (3) with columns (2) and (4) highlights that the birth of the manager's first daughter has a stronger effect on female relative earnings and employment in those establishments whose pre-birth share of female employees was below the industry average. In particular, the coefficients in columns (2) and (4), while still positive, are imprecisely estimated and smaller than the coefficients displayed in columns (1) and (3). The fact that effects are stronger in establishments that were characterized by a higher gender gap in employment, suggests that the birth of the manager's first daughter may foster some convergence in female outcomes across firms within the same sector.

Finally, we investigate the presence of heterogeneous effects depending on managers' characteristics. Since gender norms and gender gaps evolve though time, we check whether baseline results vary depending on managers' year of birth. In particular, because societal support for gender equality has significantly increased over the last decades, we may expect that daughters will have a larger effect on the personnel policies of their fathers if managers were born in more recent years. We base this hypothesis on two main factors.

First, as argued by the sociologists Warner and Steel (1999), parents want the best for their children and care about the barriers that their sons and daughters must face to fulfil these hopes. However, both the types of barriers constraining women as well as parents' hopes and aspirations for their daughters evolve through time, and it is only since recently that parents with daughters are likely to be mostly concerned with the issue of gender inequality in economic success. ${ }^{42}$ Thus, it is possible that male managers born in the second half of the century have different views about gender issues as well as different aspirations for their daughters with respect to those born in the first half, and, as a result, they may be more likely to make more extensive adjustments to their personnel decisions following the birth of a female child. Second, even if managers born in different periods react with the same intensity to the birth of a female

[^22]child, the effects might still still be stronger for managers born in more recent years if they face lowers frictions coming from women's labor supply.

To test whether baseline effects are stronger for managers born in more recent decades, we divide the sample of job spells into two groups depending on whether the manager is born before or after 1965, which is the median value of executives' year of birth. Results, reported in Table 11, are in line with our hypothesis, as they show that the daughter effect on female labor market outcomes is stronger if the manager was born after 1964. While we are not able to fully tease out whether the stronger effect found for managers born in more recent cohorts stems from evolving gender norms or reduced supply-side constraints, it is noteworthy that over the period we study (1992 to 2017) Denmark has experienced minimal fluctuations in women's labor supply, suggesting that differences in gender norms across cohorts may be a more plausible explanation for the results presented in Table $11 . .^{43}$ Regardless, the fact that the effects are less pronounced for managers born in the first half of the 20th century provides insight into why we still observe gender inequality in labor outcomes despite men having fathered female children throughout history.

### 7.2 Long-run effects

So far our analysis has mostly focused on what happens inside the establishment where the manager experiences the birth and in the years immediately following this event. In this section we turn to investigate whether child's gender also influences managers' careers in the mediumlong run. To answer this question, we focus on the years following the break of the job spell during which managers experienced the birth event and focus on two aspects of managers' subsequent outcomes. First, we test whether child's gender affects managers' overall career progression by investigating whether experiencing the birth of a daughter influences fathers' likelihood to hold a managerial position or working in a multi-manager firm. Second, we test whether treated and control managers are observed working into firms characterised by different outcomes for female employees. If, as discussed in Section 5, daughters permanently change their fathers' perception of the social costs associated with gender inequality, treated manager may be more likely to sort into firms characterised by better outcomes for female employees.

To answer the first question, we follow the sample of managers who experienced a birth event and we find that, 5 to 10 years after the break of the job spell during which they experienced the birth event, treated and control managers are equally likely to to hold executive positions and work in multi-manager firms. This result, which is presented in the top panel of Figure 6 suggests that child's gender does not seem to affect managers' overall career progression.

To isolate the role of daughters in shaping managers' likelihood to sort into female-friendly firms, we follow managers into their subsequent establishment and compare gender equality at the destination firm the year before the focal manager arrives, depending on managers' treatment status. Looking at firm characteristics measured before the arrival of treated and control managers allows us to net out any impact the managers could have on gender equality

[^23]in the destination firm and test whether managers who have experienced the birth of a daughter are more likely to sort into firms that were more female-friendly already before their arrival.

The results of this analysis are displayed in the bottom panel of Figure 6 and indicate that treated managers do sort into firms characterized by different outcomes for female employees. In particular, these firms are characterized by a higher share of women working part-time, and a higher share of women whose earnings are in the top ten percentile of the earnings distribution. Because these outcomes have been previously used to proxy for the femalefriendliness of a workplace (e.g. Kleven et al. 2019), our analysis suggests that treated managers are more likely to be employed at firms characterised by better opportunities for female workers. By showing that daughters can affect managers' preference for the type of workplace they want to be employed at, this evidence attests to the importance of being able to control for managers' endogenous sorting when estimating the effect of daughters on managerial decisionmaking. Moreover, it lends further support to the hypothesis that the daughter effect operates by persistently changing their fathers' perception of the social cost associated with gender inequality.

## 8 Conclusion

Despite decades of progress, large gender differences persist in the career progression of men and women in the corporate world. This paper identifies a mechanism that can contribute to closing within and across firms gender disparities, namely changing the gender attitudes of male managers. To identify the causal effect of managers' gender attitudes on firm-level gender inequality, we build on previous work establishing a positive association between fathering daughters and fathers' attitudes towards women and we extend it to the context of human resource management. In particular, taking advantage of some unique features of Danish registry data, we exploit the birth of a daughter, as opposed to a son, as a plausibly exogenous shock to male managers' gender attitudes and we compare within-firm changes in female relative earnings and employment depending on managers' newborn's gender. Because we identify changes in firm outcomes within a manager-firm spell, our empirical design overcomes problems of endogenous sorting of managers across firms, which represents a major challenge for causal identification of managers' impacts on corporate outcomes.

We show evidence of a daughter effect, as female employees working in establishments where male managers parent an additional daughter, as opposed to a son, experience an improvement in labor outcomes. Specifically, we find that following the birth of the manager's first daughter, the female earnings ratio and the share of female employment increase by $4.4 \%$ and $2.9 \%$ respectively. Instead, we do not detect similar effects if managers already have a daughter and experience the birth of an additional child of opposite gender.

We study the margins of adjustment and find that, following the birth of their first daughter, managers increase their propensity to hire female workers who work full-time, are more educated, and have high earnings. On the contrary, we do not find any increase in the share of female workers employed part-time or having pre-school aged children. We also show that
the observed changes in managers' hiring decisions do not affect the average characteristics of the workforce nor average labor costs per employee. Taken together, these results indicate that treated managers substitute male workers by hiring women with comparable characteristics. As a result, the only observable characteristic of the workforce that appears to be affected by the observed change in managers' personnel decisions is its gender-mix.

Furthermore, we can exclude that the daughter effect has economically meaningful impacts on firm performance. This result is consistent with our earlier finding that, within the range of our estimated effects, managers can improve gender equality leaving all other characteristics of the workforce unchanged. Thus, our analysis suggests that, when managers face minor frictions in replacing comparable workers of the opposite gender, hiring more women can promote gender equality at no additional cost for the firm.

Finally, we leverage the timing of the estimated effects to gain indirect insights about the plausible mechanisms through which daughters can affect men's behaviour. Using an event study analysis, we first show that the positive effects on female earnings and employment appear right after the birth event and persist for the whole length of the job spell. This suggests that neither self-interest motives nor prolonged exposure to gender issues are necessary to prompt managers to change their behavior towards female employees. Instead, this rapid behavioral response is consistent with a discontinuous and persistent increase in the salience of gender issues as soon as a manager experiences the birth of his first daughter, with an associated change in attitudes towards women. Using cross-sectional variation, we also show that the effects are increasing in the age of a manager's oldest daughter, suggesting that managers may gradually learn about women's abilities and the constraints they face via sustained exposure to their daughters. Analyzing managers' movements across firms in the years following the break of the job spell during which mangers experienced the birth event, we also find that managers with daughters are more likely to sort into more female-friendly firms. This evidence attests to the importance of being able to control for managers' endogenous sorting when estimating the effect of daughters on manager personnel decision and lends support to the hypothesis that the daughter effect operates by persistently changing men's perception of the social cost associated with gender inequality.

Given the key role played by managers in the labor market and the over-representation of men in leadership positions, showing that male managers' gender attitudes shape gender differences in personnel outcomes within their organizations has important policy implications. Indeed, from previous studies on gender board quotas (Bertrand et al., 2019; Maida and Weber, 2022), we have learned that increasing women's representation, on its own, may not be sufficient to reduce gender gaps in the corporate world. Thus, policies aimed at shifting male managers' perceptions of the social cost associated with gender inequality may also be required. In line with this hypothesis, our analysis shows that personnel policies and firm-level gender inequality change following a shift in managers' gender attitudes. Importantly, our results support the hypothesis that gender attitudes are not necessarily innate, but, rather, can change rapidly and be molded by personal experiences which increase the salience of gender issues. Given the increasing amount of firms' budget which is - often ineffectively - spent on diversity training
(Bohnet 2016), future research could investigate which type of interventions are more successful at mimicking the daughter effect on managers' decisions making and study the implications for firm inequality and performance.

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## Figures

Figure 1: Industry distribution of establishments


This Figure shows the share of single-manager establishment-year observations by industry and compares it to the corresponding share for the overall sample of establishments.

Figure 2: Relative daughter effect: sub-sample of first births


This Figure shows the magnitudes and the $95 \%$ confidence intervals of the coefficients obtained from two regressions estimated on the sub-sample of managers who have zero children and experience the birth of their first child. In particular, the dark and light gray bars shows changes in the female earnings ration and the share of female employment depending on the gender of the manager's first-born. The relative daughter effect, captured by the coefficient $\beta$ in equation (2), corresponds to the difference between the two coefficients represented by the bars. Standard errors are clustered at the establishment level.

Figure 3: Effect of newborn child's gender on the duration of manager-establishment spells


This Figure shows the inverse of the probability of observing a break in manager-establishment spells over time. More specifically, the y-axis shows the number of manager-establishment spells observed in a given year before/after the birth as a share of the total number of spells used for identification. Thus, by construction, the probability of observing all our spells is equal to one in the year of the birth and the year before. The black (gray) bars represent the survival rate of spells if the manager experienced the birth of a daughter (son). Similarly, the numbers on top of the bars represent the overall number of spells observed at each point in time. We stop showing survival probabilities when we observe less than $10 \%$ of the overall spells sample, namely 5 years before and 11 years after the birth. The differences between the two bars, which inform us about whether the probability that a spell is observed at a given point in time depends on the gender of the newborn child, are never statistically significant.

Figure 4: Event study estimates: baseline outcomes


This Figure plots difference-in-difference coefficients and $95 \%$ confidence intervals from estimating equation (3) using the sample of establishments in which managers experienced the birth of their first daughter (treated group) and in which managers experience the birth of an extra son and do not have any daughter (control group). If, within a job spell, the manager experiences both the birth of his first daughter and the birth of an extra son, we consider him treated. The coefficients are plotted relative to the difference between the treated and control group the year before the birth (time $j=-1$ ), which is normalized to zero. Standard errors are clustered at the establishment level.

Figure 5: Effects by age of oldest daughter


This Figure plots the coefficients $\beta_{1}, \beta_{2}, \beta_{3}$, and $\beta_{4}$ from equation (4) and their $95 \%$ confidence intervals. The sample consists of all single-manager establishment-year observations. Controls include 10 dummies for managers' age groups (younger than 34, 34-38, 39-42, 43-45, 46-48, 49-51, 52-53, 54-57, 58-61, older than 61 ), managers' years of education and years of tenure in the establishment. The establishment-level controls include employees' average age, employees' average years of education, employees' average tenure, the share of employees working full-time, the share of employees who are married, the share of employees who have at least one child, and establishment size. Standard errors are clustered at the establishment level.

Figure 6: Long-run effects on the probability of being manager and to be in a multi-manager firm (top) and on firms characteristics (bottom)



This Figure is estimated using outcomes measured between 5 and 10 years after the break of the job spell during which managers experience the birth event. The Figure shows $95 \%$ confidence intervals and long-run average differences between managers who experienced the birth of their first daughter and managers who experienced the birth of an extra son and have no daughters. The outcome variables of the top Figure are defined in the following way: (i) a dummy equal to one if the individual is manager of the establishment and equal to zero otherwise; (ii) a dummy equal to one if the establishment has more than one manager and equal to zero otherwise. The outcome variables of the bottom Figure are defined in the following way: (i) share of female employment, as measured as in equation (1); (ii) share of female employees who work part-time ( (iii) full-time), defined as the total number of female workers working part-time (full-time) over the total number of workers; (iv) the share of women whose earnings are in the top percentile of the earnings distribution within the firm; (v) female earnings ratio, defined as in equation (1). All regressions are computed using robust standard errors and include year and number of children fixed effects.

## Tables

Table 1: Managers and employees' characteristics

|  | Managers <br> (1) | Male <br> Employees <br> (2) | Female Employees (3) | Difference <br> (4) | Establishments (5) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Age | 38.50 |  |  |  |  |
| N of children | 1.99 |  |  |  |  |
| N of daughters | 0.96 |  |  |  |  |
| N of sons | 1.03 |  |  |  |  |
| Age of oldest child | 9.53 |  |  |  |  |
| Age of youngest child | 4.12 |  |  |  |  |
| Observations | 60,164 |  |  |  |  |
| Age |  | 34.18 | 31.55 | 2.63 |  |
| Earnings |  | 250,832 | 170,105 | 80,727 |  |
| \% Full-time |  | 0.75 | 0.60 | 0.151 |  |
| Tenure |  | 3.83 | 3.32 | 0.510 |  |
| Years of education |  | 11.58 | 11.36 | 0.218 |  |
| \% High school |  | 0.48 | 0.58 | -0.102 |  |
| \% Vocational |  | 0.42 | 0.32 | 0.099 |  |
| \% University |  | 0.10 | 0.10 | 0.003 |  |
| \% High-skilled occupations |  | 0.17 | 0.17 | -0.003 |  |
| \% Medium-skilled occupations |  | 0.67 | 0.69 | -0.016 |  |
| \% Low-skilled occupations |  | 0.16 | 0.14 | 0.019 |  |
| Observations |  | 1,044,571 | 668,034 | 1,712,605 |  |
| \% Female employment |  |  |  |  | 0.34 |
| \% Obs only male employees |  |  |  |  | 0.26 |
| \% Obs only female employees |  |  |  |  | 0.07 |
| Female earnings ratio |  |  |  |  | 0.39 |
| Observations |  |  |  |  | 48,766 |

This Table reports summary statistics for the sample of managers, employees, and establishments used in our analysis. Employees' earnings are shown in real Danish krone (as of August 2024, 1 Danish Krone corresponds to 0.13 euros and 0.15 US dollars). High-skilled, medium-skilled, and low-skilled occupations are defined following the ILO categorization. Specifically, high-skilled occupations include occupations whose ISCO code first digit is 1 , 2 , or 3 (respectively: managers, professionals, and technicians and associate professionals); medium-skilled occupations include occupations whose ISCO code first digit is $4,5,6,7$, or 8 (respectively: clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators, and assemblers); low-skilled occupations include occupations whose ISCO code first digit is 9 (elementary occupations). The establishment-level variables \% Female Employment and Female earnings ratio are defined as in equation (1). The standard deviation of the share of female employment and the female earnings ratio (not reported in the Table) are equal to 0.32 and 0.29 respectively.

Table 2: Effects on baseline outcomes

|  | Female Earnings Ratio |  | Share of Female Employment |  |
| :---: | :---: | :---: | :---: | :---: |
|  | (1) | (2) | (3) | (4) |
|  | Panel A |  |  |  |
| N of daughters | $\begin{aligned} & 0.0095^{* *} \\ & (0.00458) \end{aligned}$ | $\begin{aligned} & 0.0098^{* *} \\ & (0.00456) \end{aligned}$ | $\begin{gathered} 0.0075^{*} \\ (0.00387) \end{gathered}$ | $\begin{aligned} & 0.0079^{* *} \\ & (0.00385) \end{aligned}$ |
|  | Panel B |  |  |  |
| First Daughter | $\begin{gathered} 0.0168^{* * *} \\ (0.00596) \end{gathered}$ | $\begin{aligned} & 0.0172 * * * \\ & (0.00594) \end{aligned}$ | $\begin{aligned} & 0.0102^{* *} \\ & (0.00500) \end{aligned}$ | $\begin{aligned} & 0.0100^{* *} \\ & (0.00497) \end{aligned}$ |
| Additional Daughters | $\begin{gathered} 0.0048 \\ (0.00641) \end{gathered}$ | $\begin{gathered} 0.0050 \\ (0.00633) \end{gathered}$ | $\begin{gathered} 0.0023 \\ (0.00535) \end{gathered}$ | $\begin{gathered} 0.0031 \\ (0.00528) \end{gathered}$ |
| Observations | 48,766 | 48,766 | 48,766 | 48,766 |
| R -squared | 0.73 | 0.73 | 0.84 | 0.84 |
| N of Children FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |
| Mean | 0.39 |  | 0.34 |  |

The variable $N$ of daughters is a continuous variable indicating the total number of daughters a manager has. The variable First Daughter is a dummy equal to one if the number of a manager's daughters is positive and the variable Additional Daughters is a dummy equal to one if the number of a manager's daughters is greater than one. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 3: Effects on female workforce characteristics

|  | Share of female employees that: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Top earner is a woman |  | Have earnins above the 90th pct |  | Are among the 3 highest paid |  | Are working full-time |  | Are working part-time |  | Have youngest child age 5 or less |  | Have post secondary education |  | Have lower education |  |
|  | (1) |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  | (7) |  | (8) |  |
| First Daughter | $\begin{aligned} & 0.0218^{* *} \\ & (0.0102) \end{aligned}$ | $\begin{gathered} 0.0216^{* *} \\ (0.0101) \end{gathered}$ | $\begin{aligned} & 0.0099 * * \\ & (0.00418) \end{aligned}$ | $\begin{aligned} & 0.0093 * * \\ & (0.00415) \end{aligned}$ | $\begin{aligned} & 0.0106 * * \\ & (0.00497) \end{aligned}$ | $\begin{gathered} 0.0091 * \\ (0.00485) \end{gathered}$ | $\begin{gathered} 0.0083 * \\ (0.00467) \end{gathered}$ | $\begin{gathered} 0.0076^{*} \\ (0.00413) \end{gathered}$ | $\begin{gathered} 0.0019 \\ (0.00409) \end{gathered}$ | $\begin{gathered} 0.0024 \\ (0.00340) \end{gathered}$ | $\begin{gathered} 0.0001 \\ (0.00346) \end{gathered}$ | $\begin{gathered} 0.0000 \\ (0.00304) \end{gathered}$ | $\begin{aligned} & 0.0091^{* *} \\ & (0.00400) \end{aligned}$ | $\begin{aligned} & 0.0082 * * \\ & (0.00375) \end{aligned}$ | $\begin{gathered} 0.0011 \\ (0.00470) \end{gathered}$ | $\begin{gathered} 0.0018 \\ (0.00451) \end{gathered}$ |
| Observations | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | $48,766$ |  | 48,766 |  | 48,766 |  | $48,766$ |  |
| R-squared | 0.619 | 0.620 | 0.661 | 0.666 | 0.619 | 0.620 | 0.76 | 0.81 | 0.75 | 0.82 | 0.56 | 0.63 | 0.74 | 0.77 | 0.78 | 0.79 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |  | YES |  | YES |  | YES |  | YES |
| Mean | 0.274 |  | 0.0769 |  | 0.154 |  | 0.21 |  | 0.14 |  | 0.06 |  | 0.14 |  | 0.20 |  |

Outcome variables from columns (2) to (8) are all defined as the total number of female workers with a certain characteristic divided by the total number of employees. The outcome variable in column (1) is defined as a dummy equal to 1 if the employee with the highest earnings in the establishment is a woman. We define employees with post-secondary education as those who completed either vocational education or university. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 4: Effects on overall workforce characteristics

|  | Share of employees that: |  |  |  |  |  | Average age |  | Average tenure |  | Log labor costs per employee |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Are w full- | rking <br> ime | Have youngest child age 5 or less |  | Have post secondary education |  |  |  |  |  |  |  |
|  |  |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  |
| First Daughter | $\begin{gathered} 0.0013 \\ (0.0054) \end{gathered}$ | $\begin{aligned} & 0.00001 \\ & (0.0051) \end{aligned}$ | $\begin{aligned} & -0.0008 \\ & (0.0056) \end{aligned}$ | $\begin{aligned} & -0.0004 \\ & (0.0037) \end{aligned}$ | $\begin{gathered} -0.0007 \\ (0.0060) \end{gathered}$ | $\begin{gathered} -0.0014 \\ (0.0056) \end{gathered}$ | $\begin{gathered} 0.0097 \\ (0.1476) \end{gathered}$ | $\begin{aligned} & -0.0478 \\ & (0.1104) \end{aligned}$ | $\begin{gathered} 0.0171 \\ (0.0429) \end{gathered}$ | $\begin{gathered} 0.0034 \\ (0.0409) \end{gathered}$ | $\begin{gathered} 0.0030 \\ (0.0094) \end{gathered}$ | $\begin{gathered} 0.0014 \\ (0.0080) \end{gathered}$ |
| Observations | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  |
| R-squared | 0.72 | 0.78 | 0.43 | 0.73 | 0.69 | 0.72 | 0.78 | 0.88 | 0.78 | 0.88 | 0.801 | 0.847 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |  | YES |  | YES |
| Mean | 0.71 |  | 0.18 |  | 0.47 |  | 32.3 |  | 3.3 |  | 12.19 |  |

Outcome variables from column (1) to (3) are all defined as the total number of workers with a certain characteristic divided by the total number of employees. While the outcome variables in columns (4) and (5) are defined as the average age and tenure of the employees. We define employees with post-secondary education as those who completed either vocational education or university. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. The full list of time-varying controls includes employees' average age (omitted in column (4)), employees' average years of education (omitted in column (3)), employees' average years of tenure in the establishment (omitted in column (5)), the share of employees working full-time (omitted in column (1)), the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 5: Effects on hiring and separation rates

|  | (1) | (2) | (3) | (4) |
| :---: | :---: | :---: | :---: | :---: |
|  | Panel A |  |  |  |
|  | \% Female hirings |  | \% Female separations |  |
| First Daughter | $\begin{gathered} 0.0155 * * \\ (0.0075) \end{gathered}$ | $\begin{gathered} 0.0153 * * \\ (0.0075) \end{gathered}$ | $\begin{aligned} & -0.0105 \\ & (0.0081) \end{aligned}$ | $\begin{aligned} & -0.0107 \\ & (0.0081) \end{aligned}$ |
|  | Panel B |  |  |  |
|  | \% Total hirings |  | \% Total separations |  |
| First Daughter | $\begin{aligned} & 0.0062 \\ & (0.006) \end{aligned}$ | $\begin{aligned} & 0.0082 \\ & (0.058) \end{aligned}$ | $\begin{aligned} & 0.0014 \\ & (0.058) \end{aligned}$ | $\begin{aligned} & 0.0030 \\ & (0.058) \end{aligned}$ |
| Observations Panel A | 38,648 | 38,648 | 36,682 | 36,682 |
| Observations Panel B | 48,766 | 48,766 | 48,766 | 48,766 |
| Time-varying controls |  | YES |  | YES |
| Mean Panel A | 0.34 |  | 0.35 |  |
| Mean Panel B | 0.33 |  | 0.29 |  |

The outcome variables in Panel A are defined as the total number of female hired over total hires - columns (1) and (2) - and as the total number of female separations over total separations - columns (3) and (4). The outcome variables in Panel B instead are defined as the total number of hires over the total number of workers - columns (1) and (2) - and as the total number of separations over the total number of workers - columns (3) and (4). An individual is considered hired if she receives remuneration from the establishment in a given year but not during the preceding 3 years. The separation variable is a dummy taking the value one if the worker leaves the firm in $t+1$ and does not return within 3 years. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 6: Effects on the characteristics of female hires

|  | Share of female hires that: |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Have earnings above the 90th pct <br> (1) | Are working full-time |  | Are working part-time |  | Have pre-school aged child |  | Have post secondary education |  | Have lower education |  |
|  |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  |
| First Daughter | $\begin{array}{cc} 0.0075 * * * & 0.0074 * * * \\ (0.0024) & (0.0024) \end{array}$ | $\begin{aligned} & 0.0051^{*} \\ & (0.0027) \end{aligned}$ | $\begin{aligned} & 0.0052^{*} \\ & (0.0027) \end{aligned}$ | $\begin{gathered} 0.0034 \\ (0.0028) \end{gathered}$ | $\begin{gathered} 0.0039 \\ (0.0027) \end{gathered}$ | $\begin{gathered} 0.0020 \\ (0.0016) \end{gathered}$ | $\begin{gathered} 0.0020 \\ (0.0015) \end{gathered}$ | $\begin{gathered} 0.0049^{*} * \\ (0.0022) \end{gathered}$ | $\begin{gathered} 0.0048 * * \\ (0.0021) \end{gathered}$ | $\begin{gathered} 0.0036 \\ (0.0033) \end{gathered}$ | $\begin{gathered} 0.0043 \\ (0.0032) \end{gathered}$ |
| Observations | 48,766 | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  |
| R -squared | $0.31 \quad 0.32$ | 0.33 | 0.37 | 0.54 | 0.59 | 0.22 | 0.26 | 0.30 | 0.32 | 0.51 | 0.54 |
| N of Children FE | YES YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls | YES |  | YES |  | YES |  | YES |  | YES |  | YES |

The outcome variables are defined as the ratio between the total number of female workers who are hired and have certain characteristics divided by the number of total workers. We define employees with post-secondary education as those who completed either vocational education or university. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. *** $\mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 7: Effects on the gender gap in the observable characteristics of new hires

|  | Establishments with positive F hired |  |  | Establishments with positive M hired |  |  | Establishments with positive M\&F hired |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | \% F Hired with H -Edu | \% F Hired Full-time | F Hired Log Earnings | \% M Hired with H -Edu | \% M Hired Full-time | M Hired Log Earnings | Education Gap | Full-time Gap | $\begin{gathered} \text { Log Earnings } \\ \text { Gap } \end{gathered}$ |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| First Daughter | $\begin{aligned} & 0.0170^{* *} \\ & (0.00855) \end{aligned}$ | $\begin{gathered} 0.0148^{*} \\ (0.00899) \end{gathered}$ | $\begin{gathered} 0.0148 \\ (0.0291) \end{gathered}$ | $\begin{aligned} & -0.0152^{*} \\ & (0.00860) \end{aligned}$ | $\begin{aligned} & -0.0207 * * \\ & (0.00855) \end{aligned}$ | $\begin{gathered} -0.0391^{*} \\ (0.0202) \end{gathered}$ | $\begin{aligned} & -0.0212 * * \\ & (0.00980) \end{aligned}$ | $\begin{gathered} -0.0142 \\ (0.0112) \end{gathered}$ | $\begin{gathered} -0.0599 \\ (0.0402) \end{gathered}$ |
| Observations | 21,766 | 21,766 | 21,766 | 33,263 | 33,263 | 33,263 | 16,542 | 16,542 | 16,542 |
| R-squared | 0.448 | 0.516 | 0.561 | 0.446 | 0.604 | 0.625 | 0.423 | 0.521 | 0.359 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Mean | 0.18 | 0.25 | 11.39 | 0.30 | 0.46 | 11.73 | 0.04 | 0.06 | 0.07 |

Estimates in columns (1) to (3) (columns (4) to (6)) are respectively based on the sample of manager-establishment spells experiencing positive hiring of female (male) workers both before and after the birth event. Estimates in columns (7) to (9) are based on the sample of manager-establishment hiring workers of both genders both before and after the birth event. The outcome variable in column (1) (column (4)) is defined as the number of female (male) hires with post-secondary education over the number of total hires, the outcome variable in column (2) (column (5)) is defined as the number of female (male) hires working full-time over the number of total hires, the outcome variable in column (3) (column (6)) is defined as the average earnings of female (male) hired, where earnings are expressed in logarithm. The outcome variable in columns (7) (column (8)) is defined as the difference between the share of male hires with post-secondary education (working full-time) and the share of female hires with post-secondary education (working full-time). The outcome variable in column (9) is defined as the difference between the average earnings of male and female hired. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 8: Effects on promotions of incumbents

|  | All establishments |  |  |  | Mixed-gender establishments |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Female Log Earnings |  | Male Log Earnings |  | Female Log Earnings |  | Male Log Earnings |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| First Daughter | $\begin{gathered} 0.0018 \\ (0.0103) \end{gathered}$ | $\begin{gathered} 0.0009 \\ (0.0103) \end{gathered}$ | $\begin{aligned} & -0.00096 \\ & (0.0081) \end{aligned}$ | $\begin{gathered} 0.0000 \\ (0.0081) \end{gathered}$ | $\begin{gathered} 0.0006 \\ (0.0107) \end{gathered}$ | $\begin{gathered} -0.0006 \\ (0.0108) \end{gathered}$ | $\begin{gathered} -0.0119 \\ (0.0087) \end{gathered}$ | $\begin{aligned} & -0.0108 \\ & (0.0087) \end{aligned}$ |
| Observations | 73,721 | 73,721 | 140,899 | 140,899 | 68,650 | 68,650 | 111,499 | 111,499 |
| R-squared | 0.885 | 0.886 | 0.884 | 0.885 | 0.889 | 0.889 | 0.898 | 0.898 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |

The sample used to estimate the coefficients of Panel A consists of the population of male (female) workers employed at the firm the year before the birth event. In Panel B we restrict the sample to the pool of establishments that employed workers of both genders the year before the birth event. All regressions include a dummy for additional daughters, fixed effects for manager-employee pairs, manager's number of total children, and years. Time-varying controls include employee's age, tenure, a dummy for whether she/he is married and for whether she/he has at least one child, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 9: Effects on firm performance

|  | Log Employment |  | Log Sales |  | Value Added per Employee |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| First Daughter | $\begin{gathered} 0.0072 \\ (0.0192) \end{gathered}$ | $\begin{gathered} 0.0080 \\ (0.0187) \end{gathered}$ | $\begin{gathered} -0.0018 \\ (0.0200) \end{gathered}$ | $\begin{gathered} -0.0013 \\ (0.0199) \end{gathered}$ | $\begin{gathered} 4,041 \\ (7,466) \end{gathered}$ | $\begin{gathered} 3,594 \\ (7,358) \end{gathered}$ |
| Observations | 36,201 | 36,201 | 36,201 | 36,201 | 36,201 | 36,201 |
| R -squared | 0.86 | 0.87 | 0.79 | 0.81 | 0.66 | 0.68 |
| N of Children FE | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |

This Table is computed on the sample of single-establishment firms who have non-missing information for valueadded and sales. To account for outliers, we winsorize the outcomes below the 1st and above the 99th percentile to value of the 1st and 99th percentile respectively. The mean of employment is 12 employees, the mean of sales per workers is $1,264,000$ Danish Kroner, and the mean of value added per employee is 386,952 Danish Kroner. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, manager's total number of children, and years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 10: Heterogeneous effects depending on establishment- and industry-level employment

|  | (1) |  | (2) |  | (3) |  | (4) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Share of Female Employment |  |  |  | Female Earnings Ratio |  |  |  |
|  | Panel A: \%F in the industry |  |  |  |  |  |  |  |
| First Daughter |  | ow |  | igh | Lo | w |  | gh |
|  | $\begin{gathered} 0.0040 \\ (0.0056) \end{gathered}$ | $\begin{gathered} 0.0044 \\ (0.0055) \end{gathered}$ | $\begin{aligned} & 0.0180 * * \\ & (0.0078) \end{aligned}$ | $\begin{aligned} & 0.0176^{* *} \\ & (0.0085) \end{aligned}$ | $\begin{gathered} 0.0160^{*} * \\ (0.0073) \end{gathered}$ | $\begin{aligned} & 0.0169^{* *} \\ & (0.0072) \end{aligned}$ | $\begin{aligned} & 0.0194 * * \\ & (0.0095) \end{aligned}$ | $\begin{aligned} & 0.0186^{* *} \\ & (0.0094) \end{aligned}$ |
|  | Panel B: \%F pre-birth |  |  |  |  |  |  |  |
|  | Below industry average |  | Above industry average |  | Below industry average |  | Above industry average |  |
| First Daughter | $\begin{aligned} & 0.0112^{* *} \\ & (0.0054) \end{aligned}$ | $\begin{aligned} & 0.0114^{*} * \\ & (0.0054) \end{aligned}$ | $\begin{array}{r} 0.0080 \\ (0.0089) \end{array}$ | $\begin{array}{r} 0.0081 \\ (0.0088) \end{array}$ | $\begin{gathered} 0.0192^{*} * * \\ (0.0075) \end{gathered}$ | $\begin{gathered} 0.0204^{* * *} \\ (0.0074) \end{gathered}$ | $\begin{gathered} 0.0121 \\ (0.0093) \end{gathered}$ | $\begin{gathered} 0.0123 \\ (0.0093) \end{gathered}$ |
| Observations Panel A | 28,767 | 28,767 | 19,926 | 19,926 | 28,767 | 28,767 | 19,926 | 19,926 |
| Observations Panel B | 28,406 | 28,406 | 20,181 | 20,181 | 28,406 | 28,406 | 20,181 | 20,181 |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |
| Mean Panel A |  | 22 |  | . 52 |  | 31 |  | 51 |
| Mean Panel B |  | 19 |  | . 56 |  | 28 |  | 54 |

Panel A: The sample used to compute results in columns (1) and (3) (columns (2) and (4)) consists of all establishments operating in industries whose share of female employment over the sample period is lower (equal or higher) than $50 \%$. Panel B: The sample used to compute the results in column (1) and (3) (columns (2) and (4)) consists of all manager-establishment spells whose share of female employment was below (above) the average share of female employment in the industry of the establishment the year before the birth event. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, manager's number of total children, and years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment's size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table 11: Heterogeneous effects depending on managers cohort of birth

|  | Female Earnings Ratio |  |  |  | Share of Female Employment |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Born Before 1965 |  | Born from 1965 |  | Born Before 1965 |  | Born from 1965 |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| First Daughter | $\begin{gathered} 0.0087 \\ (0.0098) \end{gathered}$ | $\begin{gathered} 0.0107 \\ (0.0098) \end{gathered}$ | $\begin{gathered} 0.0221^{* * *} \\ (0.0074) \end{gathered}$ | $\begin{gathered} 0.0208^{* *} * \\ (0.0073) \end{gathered}$ | $\begin{gathered} 0.0004 \\ (0.0080) \end{gathered}$ | $\begin{gathered} 0.0019 \\ (0.0081) \end{gathered}$ | $\begin{gathered} 0.0172 * * \\ (0.0063) \end{gathered}$ | $\begin{gathered} 0.0153 * * \\ (0.0062) \end{gathered}$ |
| Observations | 24,866 | 24,866 | 23,899 | 23,899 | 24,866 | 24,866 | 23,899 | 23,899 |
| R-squared | 0.73 | 0.73 | 0.73 | 0.74 | 0.83 | 0.83 | 0.85 | 0.86 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |
| Mean |  | 38 |  | 40 |  |  |  | 35 |

This Table shows results depending on the manager's year of birth. Coefficients in columns (1)-(2) and (5)-(6) ((3)-(4) and (7)-(8)) are calculated on the sample of manager-establishment spells whose manager was born before (from) 1965, which is the median value of managers' cohort of birth. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, manager's number of total children, and years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment's size. Standard errors are clustered at the establishment level. $* * * \mathrm{p}<0.01, * * \mathrm{p}<0.05$, ${ }^{*} \mathrm{p}<0.1$.

Appendix

Figure A1: Event study estimates: baseline outcomes and broader control group


This Figure plots difference-in-difference coefficients and $95 \%$ confidence intervals from estimating equation (3) where we define as treated the group of managers who experienced the birth of their first daughter and as control everybody else, i.e. managers who already have a daughter an experience the birth of an extra child of either gender and managers who do not have any female child and experience the birth of an extra son. In case in one of these spells the manager experiences both the birth of his first daughter and the birth of an extra son, we consider him treated. The coefficients are plotted relative to the difference between the treated and control group the year before the birth (time $j=-1$ ), which is normalized to zero. Standard errors are clustered at the establishment level.

Figure A2: Event study estimates: De Chaisemartin and d'Haultfoeuille (2020) estimator
Female Earnings Ratio


## \% Female Employment



This Figure reports the effect of the birth of a manager's first daughter obtained using the estimator proposed by De Chaisemartin and d'Haultfoeuille (2020). Each graph reports both the average treatment effect (at the top of each graph) and event-study estimates showed with $95 \%$ confidence intervals. The coefficients are plotted relative to the difference between the treated and control group the year before the birth (time $j=-1$ ), which is normalized to zero. Standard errors are clustered at the establishment level.

Figure A3: Effects by age of oldest daughter - Robustness


This Figure plots the coefficients $\beta_{1}, \beta_{2}, \beta_{3}$, and $\beta_{4}$ from equation (4) and their $95 \%$ confidence intervals. Rather than controlling for managers' age distribution like we did in Figure 5, this figures includes dummies for whether the manager's oldest child is between age 0 and $5 ; 6-15 ; 16-21 ; 22$ or more. We also control for managers' age and age squared, managers' years of education and years of tenure in the establishment. The establishment-level controls include employees' average age, employees' average years of education, employees' average tenure, the share of employees working full-time, the share of employees who are married, the share of employees who have at least one child, and establishment size. Standard errors are clustered at the establishment level.

Figure A4: Event study estimates: hiring and separations


This Figure plots difference-in-difference coefficients and $95 \%$ confidence intervals from estimating equation 3 using the sample of establishments in which managers experienced the birth of their first daughter (treated group) and in which managers experience the birth of an extra son and do not have any daughter (control group). In case in one of these spells the manager experiences both the birth of his first daughter and the birth of an extra son, we consider him treated. The coefficients are plotted relative to the difference between the treated and control group the year before the birth (time $j=-1$ ), which is normalized to zero. The outcomes of interest are measured as the total number of women hired (separations) over the total number of hires (separations). Standard errors are clustered at the establishment level.

Table A1: Evidence on Manager Child Gender Mix Selection

|  | All Managers |  | Subsample Age > 50 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N Daughters | N Children | N Daughters | N Children | Two or more children | Three or more |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Female First-born | $\begin{aligned} & 1.002^{* * *} \\ & (0.0156) \end{aligned}$ | $\begin{gathered} 0.0263 \\ (0.0230) \end{gathered}$ | $\begin{aligned} & 1.003^{* * *} \\ & (0.0229) \end{aligned}$ | $\begin{gathered} 0.0145 \\ (0.0325) \end{gathered}$ | $\begin{gathered} 0.0104 \\ (0.00909) \end{gathered}$ | $\begin{aligned} & -0.0212 \\ & (0.0151) \end{aligned}$ |
| Observations | 6,631 | 6,631 | 3,406 | 3,406 | 3,406 | 3,406 |
| R-squared | 0.572 | 0.229 | 0.571 | 0.297 | 0.201 | 0.241 |
| Manager's controls | YES | YES | YES | YES | YES | YES |
| N Children FE | YES |  | YES |  |  |  |

This Table reports OLS estimates, with robust standard errors where each observation represents one of the managers of the birth sample the last time we observe them. Columns (1) and (3) show the effect of having a first child who is female on the total number of daughters, columns (2) and (4) show its effect on the total number of children, and columns (5) and (6) show its effect on the probability of having two or more children and three or more children respectively. To make sure that managers have completed their reproductive life when we measure the effects of the firs-born gender on the gender-mix of children, in columns (3) to (6) we select only managers who are above 50 years old the last time they are observed. In all columns, the set of controls includes managers age at first birth (also in quadratic term), dummies for managers' educational level, a dummy for whether the manager lives in the capital, and year fixed effects.

Table A2: Paternity-leave take up and child's gender

|  | Paternity Leave Probability of take-up |  | Paternity Leave Days of leave |  | Paternity Leave Days of leave if take-up |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Female Child | $\begin{gathered} 0.0042 \\ (0.0104) \end{gathered}$ | $\begin{gathered} 0.0041 \\ (0.0104) \end{gathered}$ | $\begin{gathered} -0.0538 \\ (0.2548) \end{gathered}$ | $\begin{gathered} -0.0545 \\ (0.2538) \end{gathered}$ | $\begin{aligned} & -0.3562 \\ & (0.5582) \end{aligned}$ | $\begin{aligned} & -0.3879 \\ & (0.5620) \end{aligned}$ |
| Observations | 6,701 | 6,701 | 6,701 | 6,701 | 1,965 | 1,965 |
| R-squared | 0.124 | 0.136 | 0.045 | 0.046 | 0.140 | 0.141 |
| N Children FE | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES |
| Time-Varying Controls |  | YES |  | YES |  | YES |

This Table considers each job spell and tests whether the gender of the managers' newborn child predicts his probability of taking-up paternity leave. Specifically, we regress a dummy for whether the newborn child is a female on: a dummy for whether the manager takes-up paternity leave after the birth in columns (1)-(2), the number of days of paternity leave in columns (3)-(4), and the number of days of paternity leave for the sub-sample of managers taking up at least one day of leave in columns (5)-(6). All regressions include fixed effects for the total number of managers' children and year dummies. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. *** p<0.01, ** $\mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table A3: Effect of manager's gender in the cross-section of establishments

|  | Female Earnings Ratio |  |  | Share of Female Employment |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $(1)$ | $(2)$ | $(3)$ | $(4)$ |  |
| Female Manager | $0.0822^{* * *}$ | $0.0361^{* * *}$ |  | $0.101^{* * *}$ | $0.0496^{* * *}$ |
|  | $(0.00214)$ | $(0.00142)$ |  | $(0.00206)$ | $(0.00117)$ |
| Observations | 622,894 | 622,894 |  | 622,894 | 622,894 |
| R-squared |  |  |  |  |  |
| Year, municipality and <br> industry FE | 0.321 | 0.622 |  | 0.504 | 0.816 |
| Controls for managers' <br> characteristics | YES | YES |  | YES | YES |
| Controls for overall <br> workforce characteristics | YES | YES |  | YES | YES |
| Controls for female <br> workforce characteristics |  | YES |  | YES | YES |
| Mean |  |  |  |  |  |

The Table is estimated on the entire sample of single-manager establishments. All regressions include year, municipality, and 5 -digits industry fixed-effects. Time-varying controls include: (i) controls for the characteristics of the managers - namely managers' age and age squared, managers' years of experience, managers' years of tenure in the establishment, managers' years of education, and a dummy for whether managers do not have any children; (ii) controls for establishment size and for a number of characteristics of the workforce namely employees' average age, employees' average years of experience, employees' average years of tenure in the establishment, employee's average years of education, the share of employees who are married, the share of employees who work full-time, the share of employees who do not have children. In columns (2) and (4) we include the following additional controls: the share of female employees who work full-time, the share of female employees with higher education, and the share of female employees whose youngest child is 5 years old or less. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.

Table A4: Effects on the characteristics of female separations

|  | Share of female separations that: |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Have earnings above the 90th pct <br> (1) |  | Are working full-time |  | Are working part-time |  | Have pre-school aged child |  | Have post secondary education |  | Have lower education |  |
|  |  |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  |
| First Daughter | $\begin{gathered} 0.0028 \\ (0.0024) \end{gathered}$ | $\begin{gathered} 0.0027 \\ (0.0024) \end{gathered}$ | $\begin{gathered} 0.0029 \\ (0.0028) \end{gathered}$ | $\begin{gathered} 0.0030 \\ (0.0027) \end{gathered}$ | $\begin{gathered} -0.0032 \\ (0.0026) \end{gathered}$ | $\begin{gathered} -0.0028 \\ (0.0025) \end{gathered}$ | $\begin{gathered} -0.0009 \\ (0.0016) \end{gathered}$ | $\begin{gathered} -0.0008 \\ (0.0016) \end{gathered}$ | $\begin{gathered} 0.0006 \\ (0.0022) \end{gathered}$ | $\begin{gathered} 0.0006 \\ (0.0022) \end{gathered}$ | $\begin{gathered} -0.0010 \\ (0.0031) \end{gathered}$ | $\begin{gathered} -0.0003 \\ (0.0030) \end{gathered}$ |
| Observations | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  | 48,766 |  |
| R-squared | 0.33 | 0.33 | 0.34 | 0.36 | 0.54 | 0.58 | 0.24 | 0.27 | 0.29 | 0.31 | 0.51 | 0.53 |
| N of Children FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Manager-Estab FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Time-varying controls |  | YES |  | YES |  | YES |  | YES |  | YES |  | YES |

The outcome variables are defined as the ratio between the total number of female workers who leave the firm in a given year and have certain characteristics divided by the number of total workers. All regressions include a dummy for additional daughters, fixed effects for manager-establishment spells, fixed effects for the total number of children, and fixed effects for years. Time-varying controls include employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. Standard errors are clustered at the establishment level. ${ }^{* * *} \mathrm{p}<0.01,{ }^{* *} \mathrm{p}<0.05,{ }^{*} \mathrm{p}<0.1$.


[^0]:    *Ronchi: Northwestern University, IFS, CESifo, and IZA. Smith: Aarhus university and IZA. Maddalena Ronchi is very grateful to Barbara Petrongolo for her invaluable support and guidance and to Thomas Le Barbanchon, Anna Raute, and Julien Sauvagnat for insightful feedback and encouragement. For very helpful comments she thanks Jérôme Adda, Manuel Bagues, Jan Bakker, Alberto Bisin, Jordi Blanes i Vidal, Gaia Dossi, Elisa Facchetti, Paul Gompers, Daniel Ferreira, Simon Franklin, Jared Gars, Nicola Gennaioli, François Gerard, Jonas Hjort, Marco Manacorda, Viola Salvestrini, Shanker Satyanath, Fabiano Schivardi, Jason Sturgees, Silvia Vannutelli, Fabian Waldinger, and Konstantinos Zachariadis. This paper also benefited from comments from seminars and conferences, including at NBER Organizational Economics Spring 2022 Meeting, NYU, Stanford GSB, University of Michigan, University of Zurich, London School of Economics, HEC Paris, University of Munich, Imperial University, LUISS, Bank of Italy, Amsterdam Business School, Universita della Svizzera Italiana, Bocconi University, Institute for Fiscal Studies, University of Oslo, BI Norwegian Business School, IESE Business School, Universidad Carlos III, Lund University, NYU Abu Dhabi, Queen Mary University of London.

[^1]:    ${ }^{1}$ See Bertrand and Schoar (2003) for a pioneering study on this topic and Malmendier (2018) for a recent review.
    ${ }^{2}$ Despite decades of progress, recent studies show that women continue to be under-represented in highpay occupations and leadership positions (e.g. Bertrand, 2018), are less likely to be promoted than their male counterparts (e.g. Azmat and Ferrer, 2017; Benson et al., 2021), receive less recognition for their work (e.g. Sarsons, 2017a,b), and experience more severe punishment for workplace misconduct (e.g. Egan et al., 2022). All these outcomes are likely to be directly or indirectly affected by managers.
    ${ }^{3}$ Note that even if we could observe gender attitudes, randomly assigning managers with different attitudes across firms may not be sufficient to isolate the effect of interest, as many other background characteristics and unobserved traits of managers likely correlate with their gender attitudes.

[^2]:    ${ }^{4}$ Our analysis focuses on male managers for two reasons. Firstly, previous studies have shown that daughters affect men's gender attitudes, but leave mothers' ones largely unaffected. Secondly, in our birth sample, $80 \%$ of the managers are male, leaving us with insufficient observations to replicate the analysis on female managers.

[^3]:    ${ }^{5}$ Theoretically, this result can be rationalized using models of discrimination in which discriminatory behavior is payoff-irrelevant. For example, in the model of subtle discrimination by Ferreira and Pikulina (2022), gender bias affects managers' decision-making only when managers choose between equally qualified candidates. As a result, breaking ties in favor of candidates from a particular group (e.g. men) has no direct payoff consequences for the manager and the firm.

[^4]:    ${ }^{6}$ Dahl et al. (2012) find that compared to managers who do not experience a birth event, managers who transition to fatherhood increase their own compensation at the expense of employees' wages, with the effect being more muted is the newborn is female. Using cross-sectional variation, Cronqvist and Yu (2017) finds that S\&P 500 companies led by CEOs with daughters have better corporate social responsibility ratings, while Calder-Wang and Gompers (2021) use the gender of venture capital partners' children as an instrument for gender diversity and show that a higher presence of female partners improves deal and fund performances in the cross-section of venture capital firms.
    ${ }^{7}$ A separate strand of the literature has instead focused on the effect of fathering daughters on men's political preferences and voting behavior (e.g. Washington, 2008; Doepke and Tertilt, 2009; Oswald and Powdthavee, 2010). This literature finds that when men have daughters they tend to vote more liberally and to favor left-wing parties.
    ${ }^{8}$ This is possible thanks to the longitudinal nature of our data, which allows us to exploit both within-

[^5]:    ${ }^{11}$ In this paper the term establishment refers to a firm's individual plant and, with the exception of section 6.4 , all our analysis is conducted at the establishment level. However, for simplicity, we will sometimes refer to establishments as firms.
    ${ }^{12}$ Previous work interested in identifying managers with similar responsibilities also selects firms that have only one manager. See, for example, Giuliano et al. (2009), Giuliano et al. (2011), and Åslund et al. (2014).
    ${ }^{13}$ Specifically, managers in the overall sample of single-manager establishments are on average 47.5 years old.
    ${ }^{14}$ More precisely, the number of manager-establishment spells in which we observe a birth event for a female manager equals only 1,422 , and therefore we lack the power to replicate our results for the sample of female managers separately. Once we exclude female managers, our final birth sample includes 6,701 unique managerestablishment spells.

[^6]:    ${ }^{15}$ All the differences showed in column (4) are statistically significant at the $1 \%$ level.
    ${ }^{16}$ The corresponding shares in the overall population are $20 \%$ and $31 \%$ respectively.
    ${ }^{17}$ The earning difference across gender is around 80,700 Danish Krone, which corresponds to approximately 11 thousands euros or 12 thousands US dollars using March 2024 exchange rates.
    ${ }^{18}$ The female earnings ratio is usually defined as the average of female earnings divided by the average of male earnings. However, because in our sample the denominator of such a measure would be missing for all the establishments employing zero male workers, we re-define it as a share. For the unbalanced sub-sample in which we can estimate the standard measure of the female earnings ratio we find that it is on average equal to 0.82 , meaning that women earn 0.82 Danish Krone for each Krone earned by men.

[^7]:    ${ }^{19}$ Note that in a sample of single-manager establishments, there is a one-to-one correspondence between managers and establishments. Thus, the subscript $e$ can refer also to managers' characteristics, such as their number of daughters and children.
    ${ }^{20}$ Section 3.1 presents evidence in favor of the assumption that - conditional on the decision of having a child - the newborn gender is exogenous.

[^8]:    ${ }^{21}$ The full list of controls includes employees' average age, employees' average years of education, employees' average years of tenure in the establishment, the share of employees working full-time, the share of employees who are married, the share of employees with children, and establishment size. We do not include controls for managers' characteristics because they would be absorbed by the combination of fixed effects for years and manager-establishment spells.
    ${ }^{22}$ The issue of a gender-based stopping rule for fertility is more pronounced if the researcher relies on crosssectional variation in the gender mix of children, as opposed to leveraging within-individual variation introduced by birth events like we do in our analysis. Nevertheless, we test for the presence of this issue also in our setting as the gender mix of existing children could still influence the probability of observing additional births. Moreover, ruling our the presence of gender-biased stopping rule for fertility is important for our analysis of mechanisms discussed in Section 5 which partly relies on cross-sectional variation.

[^9]:    ${ }^{23}$ Despite the exogenous assignment of child's gender, we inspect for the absence of differential trends between treated and control managers in Section 4.1, where we also discuss how we deal with the pitfalls of two-way fixed effects estimators highlighted for example in recent work by Borusyak and Jaravel (2017); De Chaisemartin and d'Haultfoeuille (2020); and Goodman-Bacon (2021).

[^10]:    ${ }^{24} \mathrm{We}$ observe first births in 2,340 distinct manager-establishment spells, which correspond to $35 \%$ of the number of distinct spells present in our entire birth sample.
    ${ }^{25}$ There are 2,239 distinct manager-establishment spells in which we observe the birth of the manager's first female child and 1,365 in which we observe the birth of an additional daughter after the first one. Note that the sample used to estimate the First Daughter effect differs from the one used to estimate Figure 2 as the birth of the first female child may follow rather than correspond to the birth of the first-born child.

[^11]:    ${ }^{26}$ In order to use a directly comparable benchmark for the magnitudes presented in Panel B of Table 2, we have opted for computing our own estimates of the effects of the gender of managers using the population of single-manager establishment in Denmark. The results of existing papers in fact cannot be readily used as a benchmark because they are based on different types of companies and workforce and often relate to firm-specific measures of gender inequality. For example, Kunze and Miller (2017) focus on gender gaps in promotions using data on seven hierarchical ranks specific to white-collar workers employed in a sub-sample of Norwegian firms, while Cullen and Perez-Truglia (2019) investigates the role of manager's gender using administrative as well as survey data specific to a large commercial bank in Asia.
    ${ }^{27}$ While adding controls for workforce characteristics may be problematic given their potentially endogenous nature, failing to account for female workforce characteristics could lead the female manager coefficient to be upward bias given the cross-sectional nature of this comparison. This can be easily seen by comparing odd and even columns in Table A3.

[^12]:    ${ }^{28}$ We chose the event time window $[-3 ;+5]$ because it allows us to observe at least 1,000 distinct managerestablishment spells at each point in time. As it can be best seen in Figures 3, job spells decrease asymmetrically around the birth event. This asymmetry in the length of job spells around a birth event is consistent with the age at which individuals normally become managers: because individuals tend to be older when they reach a managerial position, we are less likely to observe a long spell before the birth rather than after the birth.

[^13]:    ${ }^{29}$ In line with this intuition, Dahl et al. (2021) finds that men belonging to military squads that included female recruits change their views about the productivity of gender-mix teams and hold more egalitarian gender attitudes overall. Bursztyn et al. (2024) find that prolonged exposure to Arab Muslims improves natives' attitudes and knowledge about this immigrant groups.

[^14]:    ${ }^{30}$ Evidence of a similar mechanisms has been highlighted in recent work by Andries et al. (2023) who show how salient events can induces a higher perceived similarity between individuals belonging to different groups and lead to a greater empathetic response.

[^15]:    ${ }^{31}$ We defined daughters' age groups in a way that is consistent with the Danish educational system. In particular, the age group 0-5 captures pre-school children; the age group 6-15 captures children enrolled in compulsory education, which is formed by primary and lower secondary education; the age group 16 -21 includes students in upper secondary education and those potentially enrolled into university. Finally, the age group $22+$ captures the years typically spent working as, after the age of 21 , the majority of Danish youngsters have concluded their education.
    ${ }^{32}$ We use age deciles rather than five or ten-years age groups to account for the fact that managers' age distribution is quite skewed towards older individuals. Specifically, we include dummies for the following age deciles: younger than $34,34-38,39-42,43-45,46-48,49-51,52-53 ; 54-57,58-61$, older than 61 . We add to the vector of managers' controls their years of education and tenure in the establishment. We also run a specification where, rather than controlling for managers' age deciles, we include dummies equal to one if the manager's oldest child is between $a$ and $b$ years old, where the age categories are the same as those used for oldest daughters in equation 4. The results are virtually identical and are shows in Figure A3 of the Appendix.
    ${ }^{33}$ In section 7.2 we provide evidence that, in the years following the birth event, managers with daughters are more likely to sort into female-friendly firms. Because the results depicted in Figure 5 rely on cross-sectional variation, they can be partially explained by differential sorting of managers with and without daughters into female-friendly firms. The fact that the daughter effect intensifies over time holds irrespective of how one interprets these findings - whether as a shift in sorting behavior or a modification in personnel policies.

[^16]:    ${ }^{34}$ Note that in Table 3 the outcomes are computed by dividing the total number of female workers with a certain characteristic by the total number of employees in the firm. Thus, for example, we can compute effects on both the share of full-time and part-time female workers as the two do not sum up to one. In Table 4 instead

[^17]:    these two share sum up to one and thus we only show the effects on one of the two.
    ${ }^{35}$ Moreover, Figure A4 in the Appendix plots the coefficients obtained from an event study analysis of these two outcomes and shows that the effect found on the share of female hired is consistently positive over time and it is not due to a one-off adjustment.

[^18]:    ${ }^{36}$ Table A4 in the Appendix replicates the analysis of Table 6 but looking at changes in the composition of female separations and shows that this margin is not affected by child's gender.

[^19]:    ${ }^{37}$ Because of their small size, our establishments are characterized by a relatively simple occupational hierarchy that prevents us from using occupational categories as a proxy for promotions. Therefore, we proxy for promotions using earnings growth. This is in line with previous work; see among others Sarsons (2017a), Bronson and Thoursie (2019), and Cullen and Perez-Truglia (2019).
    ${ }^{38}$ This result is consistent with recent papers analyzing the effects of pay transparency requirements on the gender pay gap which find that this type of legislation reduces the pay gap primary by slowing the wage growth for male employees. See for example Bennedsen et al. (2022) for evidence on Denmark and Duchini et al. (2020) for evidence on the UK.

[^20]:    ${ }^{39}$ Even once we account for the fact that the effect on value added per employee is imprecisely estimated, our estimates imply that we can exclude with $90 \%$ probability any economically meaningful effect, either positive or negative, i.e. negative effects larger than 8,473 Kroner (equivalent to 1,137 euro or 1,240 dollars) and positive effects larger than 15,661 Kroner (equivalent to 2,101 euro or 2,293 dollars).
    ${ }^{40}$ Considering that our analysis focuses on lower-ranked employees, it is indeed plausible that managers face relatively low constrains in substituting men by recruiting comparable female workers.

[^21]:    ${ }^{41}$ From a theoretical perspective, these findings can be rationalized through models in which engaging in discriminatory behavior doesn't always lead to direct payoff consequences for the firm. For instance, Ferreira and Pikulina (2022) present a model of subtle discrimination where managers discriminate only when choosing between equally qualified candidates. In this scenario, favoring one group (e.g., men) when breaking ties has no immediate impact on firm profits. Alternatively, models of employer discrimination that incorporate frictions in job search (e.g., Black 1995) also indicate that discrimination becomes more costly when it is difficult for a firm to fill a vacancy, for example due to the tightness of the labor market.

[^22]:    ${ }^{42}$ For example, Doepke and Tertilt (2009) show that in the 19th century men had very different concerns and hopes for their daughters. Prior to the first half of the 19th century in fact, women had very little legal rights as all legal authority rested with their husbands. Doepke and Tertilt (2009) link the subsequent improvement in legal rights witnessed by women to men's altruism toward their own female children. In particular, they show that because men prefer their daughters to have strong bargaining position vis-a-vis their sons-in-law, fathers with daughters have an incentive to agree to grant more economic rights to women. Two hundred years later, fathers with daughters are likely to be concerned about different issues, such as gender inequality in labor outcomes. This is best exemplified in a remark on equal pay for equal work made by President Obama in April 2014. In that occasion Obama said: "equal pay is not just an economic issue for millions of Americans and their families. It's also about whether [...] our daughters have the same chances to pursue their dreams as our sons [...]."

[^23]:    ${ }^{43}$ In particular, average female labor force participation during the first and second half of our sample are very similar, standing at $75.4 \%$ and $74.9 \%$ respectively (OECD).

