

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 replace male workers by hiring women with 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, our findings suggest that the daughter effect does not result from changes in managers' private incentives, but rather from a rapid and persistent shift in their perception of the social cost associated with gender inequality.

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1 Introduction

Managers are a key input of firm behaviour and extensive research shows that their attitudes and personal traits strongly affect company growth and financial policies (see [Bertrand and Schoar 2003](#) for a pioneering study on this topic and [Malmendier 2018](#) for a recent review). 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.¹ 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.² 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 while allowing us to estimate changes in gender inequality within a manager-firm match. 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 exogeneous shock to unobservable male managers’ 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 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

¹Despite decades of progress, recent studies show that women continue to be under-represented in high-pay 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.

²Note 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.

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.³

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. To rule out alternative explanations, we show that child's gender does not affect other margins' of managers behavior that could influence their ability to affect firms' outcomes, such as the likelihood of moving to a new firm or taking up paternity leave after the birth event. Interestingly, we find that the positive effects on women's relative outcomes are 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.

Second, we investigate the margins of adjustment behind the estimated impacts and find that female employment and earnings are mostly affected through 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 hires towards women, and especially women with post-secondary education, who work full-time, and earn high salaries in the firm.⁴ 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 workers by hiring women with comparable characteristics. As a result, the only change in the composition of the workforce we observe is its gender-mix, which suggest that managers face only minor frictions in finding workers of the opposite gender that are close substitutes. In line with this interpretation, we find that the daughter effect is stronger in industries characterized by a higher supply of female workers.

Managers' ability to alter the gender-mix of the workforce while leaving all other character-

³Our 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.

⁴We do not detect significant impacts on the share of women working part-time or with pre-school children, suggesting that managers' newborn's gender does not influence the adoption of human resource practices favoring the work-life balance of female employees.

istics unaffected has important implications for thinking about how the observed improvement in gender equality may impact 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 result in a lower quality 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 per employee, 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 for the firm. We can rationalize this results using theories of discrimination in which discriminatory behavior is payoff-irrelevant. For example, in the model of subtle discrimination by [Ferreira and Pikulina \(2022\)](#), gender bias affect 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. While candidates' ties in qualifications are common in many settings, they tend to be more prevalent among lower-ranked employees. Given that our analysis focuses on this category of workers, the model proposed by [Ferreira and Pikulina \(2022\)](#) is relevant to the context of our study.⁵

Finally, to shed some light on the formation and evolution of gender attitudes, we explore the mechanisms through which daughters may affect male managers' personnel decisions towards female employees. One possibility is that managers with daughters are motivated by a private incentive to reduce gender gaps in labor outcomes, as this could benefit their female children. Although pure self-interest motives have been identified as the main mechanisms behind the effect of child's gender on parents' behavior in other studies (e.g. [Doepke and Tertilt, 2009](#); [McGuirk et al., 2017](#)), this is unlikely to be the case in our setting, as the actions of a single manager have hardly any impact on aggregate levels of gender inequality. The remaining explanation is that having daughters alters managers' perceptions of the *social cost* of gender

⁵While further research is needed to determine if these findings hold true for higher-ranked workers, it is worth noticing that a recent study by [Huber et al. \(2018\)](#) shows that the presence of ties in workers' qualifications attenuates the link between discrimination and firm performance even when discrimination is *explicit* and directed towards *employees in leadership positions*. In particular, their paper shows that the expulsion of Jewish managers from Nazi Germany - one of the most dramatic examples of taste-based discrimination in history - resulted in a worsening of firm performance *only* for those firms that employed managers with hard-to-replace characteristics.

inequality, either by increasing their awareness of gender issues, thus shaping their beliefs, or by making them feel closer to women in general, thus affecting their preferences.⁶ While registry data do not naturally lend itself to study changes in preferences and beliefs, its longitudinal nature allows us to shed light on *how quickly* after the birth event the daughter effect emerge and *how it evolves* over time. Specifically, by examining the timing of the daughter effect, we can determine whether managers need prolonged exposure to their daughters' life experiences (e.g., in school or the workplace) before adjusting their perception of the social cost of gender inequality, or whether they experience a discontinuous increase in the salience of gender issues upon the birth of their first daughter. The answer to this question can have important implications, particularly for the design of policies aimed at fostering gender equality in firms.

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 neither self-interest motives nor prolonged exposure to gender issues are necessary to prompt managers to change their behavior towards female employees. Instead, our findings support the idea that managers experience a discontinuous and persistent increase in the salience of gender issues upon the birth of their first daughters, with an associated change in attitudes. However, 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 daughter belong to different age groups, we find that the daughter effect increases with daughters' age, especially from late adolescence onward. This suggest that raising daughters may allow male managers to gradually learn about relevant female traits and the structural and cultural barriers that girls face at school, in the labor market, and society more broadly. Furthermore, we find suggestive evidence that managers with daughters tend to sort into firms with better outcomes for female employees. Taken together, we interpret these results as evidence that the daughter effect works by rapidly and persistently altering men's perception of the social costs associated with gender inequality.

Our work relates to several strands of literature. First, it contributes to the literature investigating the causes of remaining differentials in men 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 body of literature showing 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 highly trained professionals.⁷ Furthermore, by examining the timing of the daughter effect, we contribute to

⁶For example, Shafer and Malhotra (2011) and Borrell-Porta et al. (2018) show that the birth of a female child can lead to changes in men's beliefs and perception of gender roles. Instead, the findings of Oswald and Powdthavee (2010) and Cronqvist and Yu (2017) suggest that fathers of daughters identify more with women when forming their own views and preferences.

⁷In a similar spirit, Carlana (2019) shows that gender attitudes shape also the behavior of teachers, that is

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 (Kuziemko et al., 2018; Bursztyn et al., 2020; Dahl et al., 2021; Corno et al., 2022).

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 overconfidence and risk-aversion, in shaping corporate performance and financial decisions, such as investment, financing, and mergers (Baker and Wurgler, 2013; Malmendier, 2018, provide two recent reviews of this literature).⁸ While this literature has produced ample and compelling 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. First, by recognising that managers inevitably shape the outcomes of the workers they supervise, our paper extends this behavioural framework to studying the role played by managers' attitudes for advancing or hindering gender equality in firms. In doing so, we move beyond existing studies on the relationship between managers' own gender and gender gaps in firms (e.g. Kunze and Miller, 2017; Flabbi et al., 2019), and show 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. Secondly, 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.

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), has confirmed that men 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 research investigating the effect of daughters on firm outcomes, including corporate social responsibility spending, wage policies, and female hiring (Dahl et al., 2012; Cronqvist and Yu, 2017; Calder-Wang and Gompers, 2021).⁹ Unlike these studies, which have found evidence of a daughter effect exploiting either cross-sectional variation or endogenous changes in family size, our empirical approach allows us to isolate the causal effect of managers' child's gender on personnel policies from managers' endogenous mobility. As a result, our paper offers new

another category of highly educated professionals.

⁸Some notable examples in this literature include Malmendier and Tate (2005, 2008); Baker et al. (2012); Graham et al. (2013). A related body of work has focused on the impact of exogenous variation in CEOs past life experiences as well as endogenous variation in CEOs socioeconomic background (e.g. Malmendier and Nagel, 2011; Benmelech and Frydman, 2015; Schoar and Zuo, 2017; Duchini et al., 2020).

⁹Another line of research, that started with the influential study by Washington (2008), has focused on the impact of having daughters on men's behavior in the political arena (Doepke and Tertilt, 2009; Oswald and Powdthavee, 2010).

insights into the mechanisms that underlie the daughter effect, suggesting that it operates by rapidly and persistently altering men’s perceptions of the social cost associated with gender inequality rather than through pure self-interest motives. Finally, by studying the implications of the daughter effect for firm performance, we provide new evidence that a more realistic view of managers, one in which they are sensitive to issues of gender equality, does not necessarily lead to a loss in firm performance.

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 2017.¹⁰ We link individual career histories with longitudinal data on household structure. For each manager in each year, we identify the establishment in which he works, the characteristics of the employees he supervises, and the number, gender, and age of his 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 to childbirth (Kleven et al. 2019).¹¹

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

¹⁰The Danish administrative data is available from 1980, but we had to start our analysis in 1992 as this is the first year in which information on individuals’ occupation - the variable we use to identify managers - becomes available for the entire population.

¹¹The 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.

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.¹² 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.¹³

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 in 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.¹⁴ 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.¹⁵

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.

¹²In 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.

¹³Previous 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).

¹⁴Specifically, managers in the overall sample of single-manager establishments are on average 47.5 years old.

¹⁵More 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 manager-establishment spells.

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.¹⁶ 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. The corresponding shares in the overall population are roughly double, namely 20% and 31% respectively. 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 They are also more likely to work part-time, and to hold only a high-school diploma. These gender differences carry on also at 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:

$$\text{Share F Employment} = \frac{N_f}{N_m + N_f} \quad \text{F Earnings Ratio} = \frac{I_f}{I_f + I_m} \quad (1)$$

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 25% (7%) of all establishment-year observations are characterized by zero female (male) employees. Because we don't always observe employees of both gender 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.

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

¹⁶All the differences showed in column (4) are statistically significant at the 1% level.

¹⁷The earning difference across gender is around 80,700 Danish Krone, which corresponds to approximately 10,850 euros or 13,000 dollars using August 2021 exchange rates.

¹⁸The 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 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.

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:

$$Y_{et} = \alpha + \beta NDaughters_{et} + C_{et} + \chi_{me} + \phi_t + \epsilon_{et} \quad (2)$$

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 ϕ_t and χ_{me} 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 of having 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 manager-establishment spells, denoted by χ_{me} . 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 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, such as firms characterized by more part-time work or a higher share of female managers.²¹ 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 following experiment. Take two single-manager establishments in which the managers have the same 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

¹⁹Note 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.

²⁰Section 3.1 presents evidence in favor of the assumption that - conditional on the decision of having a child - the newborn gender is exogenous.

²¹We show suggestive evidence in line with this hypothesis in section 7.2.

between the changes in labor market outcomes of female employees in treated and control establishments and is captured by β in equation 2. In other words, β 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. 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.²²

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 of having a child, the child's gender is exogenous. This 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 which stipulates that they keep having children until they have at least one daughter.²³ 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.²⁴

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 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

²²The 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.

²³For a more detailed discussion on preferences for a specific child's gender and the sex composition of children see also the discussion in [Clark \(2000\)](#) and [Washington \(2008\)](#).

²⁴Note that sex-selective abortion is illegal in Denmark. Thus, managers cannot recur to this practice to influence the gender of their children.

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 manager’s propensity to take-up paternity leave and his decision to exit the firm in the years following the birth.²⁵

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.²⁶ 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.²⁷ 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.²⁸ 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.²⁹

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

²⁵Existing work (e.g. [Dahl and Moretti 2008](#)) shows that divorce risk is higher among couples with girls than those with boys. While it is not obvious why a differential probability of divorce should affect managers’ personnel decisions, we nevertheless investigate whether the birth of an extra daughter, as opposed to an extra son, influence the probability that managers divorce and find that child’s gender has no effect on this outcome. Results are available upon request.

²⁶There are two factors that can generate a break in the manager-establishment spell. First, a spell breaks if the manager moves to another firm. Second, a spell breaks if the manager stops being the only decision-maker of the establishment, either because the total number of managers increases or because his occupational code changes. For simplicity, we will often refer to spell breaks in terms of managers’ mobility.

²⁷Because, as explained in section 2, all our sample consists in manager-establishment 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.

²⁸The differences between the two bars presented in Figure 3 are never statistically significant.

²⁹Despite 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 \(2021\)](#).

the Table shows, their inclusion does not affect our estimates.³⁰ 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. 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, and thus we can show effects for daughters and sons separately. 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.³¹ We can see that there is a significant increase in female relative earnings and employment in establishments where the manager 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) 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, because the estimates presented in Panel A combine together the effects of the birth of any daughter, we compare managers who experience the birth of their first daughter and managers who already have at least one female child and experience the birth of an additional daughter as opposed to a son. If, as argued by sociologists, having daughters can be instrumental for 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 fathers' behavior. 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.³²

The results are showed 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 establishment where managers already have at least one female child. In 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

³⁰In particular, adding potentially endogenous time-varying controls does not impact the results as odd and even columns are virtually identical.

³¹To improve the readability of our results and as well as increase sample size, the rest of the analysis always pools together all managers and birth events while controlling for family size by means of fixed effects for number of children. Thus, with the exception of Figure 2, our estimates of the daughter effect will be directly displayed as the difference between treated and control establishments, i.e. the coefficient β of equation 2.

³²Note that this analysis differs from the one represented in Figure 2 as the birth of the first female child may follow rather than correspond to the birth of the first-born child.

issues may discontinuously and persistently increase after men experience the birth of their first daughters, which is an 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 2.³³

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 very 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.³⁴ 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.³⁵ To provide 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,

³³In 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.

³⁴Note that without controlling for female workforce characteristics, the effects of female managers are likely to be upward biased because of omitted variables. This can be easily seen by comparing odd and even columns in Table A3.

³⁵In line with this, Figure 3 shows that the timing of creation of a job spell is orthogonal to the gender of managers' newborns.

which, as we discuss in more detail in section 5, may give us some insights about the plausible mechanisms at play.

Second, this methodology enables us to address the pitfalls of two-way 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 absence of a pure control group, the researcher needs to use not-yet-treated units as a control group for already-treated units. Instead, our setting is characterised 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 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 manager-establishment 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 $Y_{me,jt}$ the outcomes of interest for the manager-establishment spell me in year t and event time j , we run the following regression:

$$Y_{me,jt} = \sum_{j \neq -1} [\alpha_j event_{me,j} + \beta_j(event_{me,j} \times treated_{me})] + C_{me,jt} + \chi_{me} + \phi_t + \epsilon_{me,jt} \quad (3)$$

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 ϕ_t , fixed effects for the total number of managers’ children, denoted by $C_{me,jt}$, and fixed effects for manager-establishment spells χ_{me} . We let the event time j run from 3 years before the birth to 5 years after and we omit it when $j = -1$.³⁶ Thus the coefficients β_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 β_j for both the female earnings ratio and the share of female employment, allows us to graphically inspect the presence of differential pre-trends 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. To limit any concern related to the break of job spells right after the birth event, Figure A1 in the Appendix replicates the event study analysis on a balanced sample between event time -1 and +1. Results are very similar to those we obtain on the full sample

³⁶We chose the event time window $[-3; +5]$ because it allows us to observe at least 1,000 distinct manager-establishment 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.

of job spells.³⁷

Figure 4 and Figure A1 also show 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 discuss how the timing underlying the estimated results can help us understand the channels driving the daughter effect.

5 The timing of the effects and plausible mechanisms

This study builds upon existing research which suggests that daughters have a positive impact on men’s attitudes towards gender (e.g., Warner 1991; Shafer and Malhotra 2011; Borrell-Porta 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 explanation is 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. In contrast, managers with sons lack this additional incentive. Under this scenario, we would expect men with daughters to behave differently from those with sons only if their actions could directly benefit their female children. Although self-interest motives have not been formally tested in the empirical literature on daughters, they may plausibly underlie some of the results observed in previous studies, especially those examining men’s behavior in the context of voting.³⁸ Instead, this channel is unlikely to be the main driver underlying our results, as the actions of a single manager have hardly any impact on aggregate levels of gender equality.

The remaining explanation is that having daughters permanently alters men’s perceptions of the *social costs* of gender inequality. According to this view, we should expect to observe a lasting shift in managers’ propensity to implement policies that promote gender equality, regardless of their private incentives. The evidence presented in Section 4.1 lends support to this alternative explanation. Firstly, the effects become apparent upon the birth of the manager’s first daughter, further corroborating the notion that self-interest motives are unlikely to be the main driver behind our results, as daughters are still in their infancy when the effects emerge. Secondly, the effects persist throughout the manager’s subsequent years at the firm, consistent with a lasting shift in their perception of the social costs associated with gender inequality.

³⁷Because of our relatively small sample size, we do not perform the event study analysis on a fully balanced panel of manager-establishment spells. However, by replicating the analysis on a balanced sample between event time -1 and +1 we not only impose a symmetric length of the job spell around the birth event, but also minimize any concern related to the drop in the survival rate between time +1 and 0 shown in Figure 3. Figure A2 of the Appendix instead shows results obtained by more closely replicating 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 in Figure 4, 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 and managers who do not have any female child and experience the birth of an extra son. The results look very similar but are generally smaller than those we obtain in Figure 4 where we include only the never treated in the control group. This suggest that in our context issues related to dynamic treatment effects are likely to be limited and, if anything, they bias downward the results.

³⁸For example, Washington (2008) found that having daughters increases Congressmen’s propensity to vote liberally on reproductive rights bills. The differential behavior of Congressmen with daughters may be motivated by self-interest, given that modifying legislation on reproductive rights can directly benefit their female children.

However, it should be noted that the relatively short time window analyzed in the event-study may not be sufficient to conclude that managers experience a permanent shift in their behavior. We therefore test whether the estimated effects persist in the long-run in a cross section of managers whose oldest daughters belong to different age groups. More specifically, we run the following regressions, which compares female relative outcomes across single-manager establishments depending on the age group of the managers' oldest daughter while controlling for managers' and firms' characteristics:

$$Y_{et} = \alpha + \beta_1 D_{et}^{0-5} + \beta_2 D_{et}^{6-15} + \beta_3 D_{et}^{16-21} + \beta_4 D_{et}^{22+} + C_{et} + MGR'_{et} \delta + WORK'_{et} \gamma + \eta_j + \lambda_l + \phi_t + \epsilon_{et} \quad (4)$$

D^{a-b} are dummies equal to one if the manager's oldest daughter is between a and b years old, C_{et} are fixed effects for the total number of children of the manager employed in establishment e at time t , MGR is a vector of manager characteristics, while $WORK$ is a vector of workforce characteristics aggregated at the establishment-year level.³⁹ Finally η_j , λ_l and ϕ_t are respectively fixed-effects for industry (at the 5-digits level), municipality, and year.

The β 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 MGR .⁴⁰ Figure 5 plots the β 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.

Taken together, the results regarding the timing of the daughter effect provide new insights into the mechanisms underlying the link between having daughters and changes in men's behavior. First, they suggest that the daughter effect does not operate through private incentives, but rather, it rapidly and persistently alters men's perception of the social costs associated with gender inequality.⁴¹ This is a novel finding in the empirical literature studying the effect of

³⁹We 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.

⁴⁰We 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 shown in Figure A3 of the Appendix.

⁴¹As discussed in Section 7.2, we find suggestive evidence that managers with daughters are also more likely to sort into female-friendly firms, providing additional support for the hypothesis that daughters induce a

daughters on fathers' behavior and, interestingly, it differs from the results found by [McGuirk et al. \(2017\)](#). In their study, which is, to the best of our knowledge, the only formal investigation of the relevance of these two mechanisms in explaining the effect of a child's gender on parents' behavior, the authors found that having a draft age son decreases politicians' pro-conscription voting. However, support for conscription recovers once the legislator's son ages out of eligibility, suggesting a temporary shift in legislators' behavior driven by self-interest motives rather than a permanent ideological shift, as found in our study.

Second, we provide evidence that men do not require prolonged exposure to their daughters' life experiences to become concerned about gender inequalities. Rather the birth of their first daughter can immediately increase the salience of gender issues. This can happen both because following the birth of their first daughters fathers invest more effort in learning about the social costs of gender inequality, resulting in a change in their beliefs, and because they may feel more connected to women in general, leading to a change in their preferences.⁴² This evidence has important policy implications, as it suggests that targeted interventions that increase the salience of gender issues in firms may induce managers to take personnel decisions promoting gender equality in the workplace.

At the same time, our cross-sectional results 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) could be explained by a process of "learning through exposure". 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. This gradual learning process could contribute to a sustained change in managers' perception of the social cost associated with gender equality.

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

permanent shift in their fathers' sensitivity to the issue of gender equality.

⁴²Although the differential effect of daughters on beliefs and preferences has not been formally investigated, previous studies have found evidence consistent with a change in beliefs ([Shafer and Malhotra, 2011](#), e.g.), as well as with a change in preferences [Cronqvist and Yu \(2017\)](#). From a theoretical perspective, models of selective attention and learning through noticing ([Schwartzstein, 2014](#); [Hanna et al., 2014](#); [Bordalo et al., 2017](#)) could help rationalize the rapid effects of daughters on men's beliefs, while effects on men's preferences would be consistent with models of group identity and social preferences [Chen and Li \(2009\)](#); [Klor and Shayo \(2010\)](#).

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 hypothesis, 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 have an affect on 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.

The results of 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 the labor force, or the overall proportion of employees who work part-time, as opposed

to full-time, who have young children, or who have completed post-secondary education.⁴³ In contrast to the results of Table 3, the first five columns of Table 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. 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.

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

⁴³Note that in Table 3 the shares used as 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 these two shares sum up to one and thus we only show the effects on one of the two.

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 to control establishments. Taking stock of these results and going back to the interpretation of our baseline effects, the analysis presented so far in this section 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 are mainly unaffected.

Next, we turn to investigate if the observed change in hiring patterns can rationalize also 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 *female 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.⁴⁴ 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 be 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 with respect to 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 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 female 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

⁴⁴Table 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.

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 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

Beside 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.⁴⁵ 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 on 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.⁴⁶

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

⁴⁵Because 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. In particular, 65% of the times we observe only two distinct occupations within an establishment-year observation. Therefore, we proxy for promotions using earnings growth. This is in line with previous work; see among others ?, [Bronson and Thoursie \(2019\)](#), and [Cullen and Perez-Truglia \(2019\)](#).

⁴⁶This 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 primarily by slowing the wage growth for male employees. See for example [Benedsen et al. \(2019\)](#) for evidence on Denmark and [Duchini et al. \(2020\)](#) for evidence on the UK.

can be considered for a promotion is small.

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. In particular, 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 effects 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 measure firm performance in terms of employment, sales per worker, 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 employment and sales per worker, while the estimates for value added per employee correspond an increase in labor productivity of about nine thousands Danish Kroner (equivalent to approximately 1,200 euro or 1,400 US dollars). In particular, our results imply that we can exclude with 90% probability economically meaningful effect, either positive or negative, i.e. negative effects larger than 2,223 Kroner (equivalent to 299 euro or 347 dollars) and positive effects larger than 20,825 Kroner (equivalent to 2,799 euro or 3,246 dollars).

The absence of an economically meaningful effect on firm performance is consistent with our evidence on the margins of adjustments, which indicates that treated managers are able to substitute men by hiring comparable female workers. In particular, the insignificant effect on performance may reflect the fact that, in the context we study, hiring frictions are relatively low, as managers can alter the gender-mix of the workforce without affecting any other characteristic of the workforce. These results imply that when managers face minor frictions in replacing comparable workers of the opposite gender, there is no trade-off between equity and

efficiency. In other words, hiring more women can promote gender equality without incurring any additional cost to the firm. Although these conditions may not be broadly generalizable, it is worth noting that a recent study by [Huber et al. \(2018\)](#) arrived at a similar conclusion in a very different context that involved explicit discrimination against workers in leadership positions. Specifically, the authors find that the expulsion of Jewish managers from Nazi Germany resulted in a worsening of firm performance only for those firms that employed managers with hard-to-replace characteristics.

The results presented in this section can be rationalized using a model of discrimination in which indulging in discriminatory behavior has no direct payoff consequences for the firm. For example, [Ferreira and Pikulina \(2022\)](#) develop a model of subtle discrimination in which managers discriminate only when choosing between equally qualified candidates. In this setting, breaking ties in favor of one group (e.g. men) has no direct consequences for firm profits in the short run. While [Ferreira and Pikulina \(2022\)](#) note that candidates' ties in qualifications are common in most settings and that subtle biases can frequently influence managerial decisions, such ties are more likely to arise when comparing lower-ranked employees. Given that our analysis focuses on this category of workers, the model proposed by [Ferreira and Pikulina \(2022\)](#) seem particularly relevant to the context of our study.⁴⁷

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 the 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 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

⁴⁷Our results can also be rationalized using models of employers discrimination that allow for frictions in job search (e.g. [Black 1995](#)). In particular, because employers forgo profit when a vacancy remains unfilled, indulging in discrimination will be more costly when it is more difficult for a firm to fill a vacancy, for example due to the high level of human capital specificity required. Again, the fact that we focus on lower-ranked employees imply a low cost of discrimination in our setting.

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 manager-establishment 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 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 investigate whether the results vary depending on how large are the margins of adjustment, as proxied by whether, the year before the birth event, the establishment employed a higher or lower share of female workers with respect 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 through 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 female labor market outcomes will improve more when we look at treated 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 have to 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.⁴⁸ Because of the very rapid improvement in

⁴⁸For 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

women's labor outcomes during the 20th century, it is possible that men born in the first rather than second half of the century have different views about gender issues as well as different aspirations for their daughters. In other words, as women's economic prospects have been gradually improving, parents' perceptions of gender issues has likely changed over time, and, as a result, managers born in more recent decades may be more likely to make more extensive adjustments to their personnel decisions following their daughters' births.

Second, even if managers born in different periods react with the same intensity to the birth of a female child, the effects might still vary across them because of supply-side considerations. In particular, it is reasonable to expect that the personnel decisions of managers born in recent years will be less constrained by frictions coming from women's labor-supply, which - as suggested by the results shown in Panel A of Table 10 - can potentially limit the daughter effect.

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 are shown in Table 11. The first thing to notice is that, consistent with the fact that women's position in the labor market has improved over the last decades, Table 11 indicates that the average values of both female relative earnings and employment are higher in more recent years. Second, in line with our hypothesis, the Table shows that the daughter effect on female labor market outcomes is stronger if the manager was born after 1964. Finally, the more muted effects found for managers born towards the first half of the 20th century can help us rationalize why we still observe gender inequality in labor outcomes in spite of the fact that men have been having female children for millenniums.

7.2 Long-run effects

So far our analysis has mostly focused on what happens *inside* the establishment where the manager experiences the birth. In this section instead, we investigate if the daughter effect persists throughout a manager's careers by testing whether, in the medium-long run, treated and control managers are observed working in different types of firms. If, as discussed in Section 5, daughters permanently change their fathers' perception of the social costs associated to gender inequality, they may as well increase their propensity to work in firms characterised by better outcomes for female employees.

To test for this, we follow the sample of managers who experienced a birth event and we look at whether, 5 to 10 years after the break of the job spell during which they experienced

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. 200 years later, and thanks to the expansion of political rights through female suffrage, 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 [...]. And that's personal for me. I've got two daughters and I expect them to be treated just like anybody's sons."

the birth event, treated and control managers are employed in firms with a different workforce composition, particularly in terms of female employees' characteristics.

To facilitate the interpretation of our analysis on long-term effects, we first examine whether the gender of the child influences the career paths of managers five to ten years after they leave the firm of the birth event. Specifically, if we find that treated and control managers have comparable career trajectories, it would alleviate concerns that any potential long-term disparities in gender equality between the two groups are solely attributable to differences in their work histories. Hence, we examine whether having a daughter affects the likelihood of the father holding a managerial position or working in a multi-manager firm over the long term.

The results - which are shown in the top panel of Figure 6 - indicate that treated and control managers are equally likely to hold an executive position and to work in a multi-manager firm. Because this evidence suggests that treated and control managers have, also when they move firm, the same decision-making power over personnel practices, we can rule out that potential long-run differences in female outcomes at the firm-level are driven by a differential ability of treated and control individuals to affect the human-resource practices of their organizations. Given this results, we test for the effects of child's gender on women's relative labor outcomes in the long-run without conditioning on whether the firms are single- or multi-manager establishments nor on whether the father's himself remains in a managerial position.

The results on long-run effects on workforce composition are displayed in the bottom panel of Figure 6. The graph shows that treated and control managers are employed in firms where female employees exhibit different labor outcomes. In particular, not only these firms are characterized by higher female earnings and employment, but also by a higher proportion of employees working part-time and by a higher share of managers who are women. Because these outcomes have been previously used to proxy for the female-friendliness of a workplace (e.g. [Kleven et al. 2019](#)), we conclude that treated managers are more likely to be employed at firms characterised by a higher female presence and by better opportunities for female workers.

These long-run differences in the workforce composition might be driven by two main factors. The first is persistence, by which we mean that the birth of the manager's first daughter persistently changes managers' human-resource practices and positively affects women's labor outcomes also in firms in which treated managers are subsequently employed. The second factor is endogenous sorting, i.e. the possibility that managers who experienced the birth of a daughter may, in the years following the birth event, prefer to be employed at establishments characterised by a higher presence of female workers or better opportunities for female employees.

While we cannot perfectly distinguish between these two explanations, we argue that endogenous sorting is likely to explain at least part of the potential differences between treated and control managers in the long-run. Indeed, 5 to 10 years after the break of their spells, managers are observed filling an executive position 47% of the time and they are employed in multi-manager establishments 25% of the time. These statistics imply that treated and control managers are often not in the best position to be able to directly affect personnel outcomes at the firm-level, thus suggesting that it is unlikely that long-run differences in firms'

characteristics are exclusively driven by the persistence channel.

Taking stock, this evidence indicates that the effects of daughters on female employees' labor market outcomes are not only restricted to the establishment where the birth happened. Instead, we find positive effects on female outcomes also in the medium-long run, unconditionally on the type of establishment (single- vs multi-manager) and on the managerial status of treated and control individuals. This evidence suggests that daughters may have a persistent effect on their fathers human-resource practices and on their preferences for the type of workplace they want to be employed at, attesting to the importance of being able to control for managers' endogenous sorting when looking at the role of executives in driving firms' outcomes.

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.

We can exclude that the daughter effect has economically meaningful impacts on firm performance (i.e. changes in value-added per employee larger than -300 or +3,000 euro).

The lack of a significant effect on firm performance is consistent with our earlier finding that managers can improve gender equality at no extra cost for the firm, i.e. 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. This results can be rationalized with theories of discrimination in which discriminatory behavior affects managerial decisions only when choices are payoff-irrelevant (e.g. [Ferreira and Pikulina, 2022](#)).

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, we provide suggestive evidence that the persistence of the daughter effect in the long run can be partly attributed to a higher likelihood of male managers with daughters to sort into firms with better outcomes for female employees. Taken together, these findings suggest that the daughter effect does not result from changes in male managers' private incentive, but rather from a discontinuous and persistent change in their 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, 2019](#)), 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 to gender inequality may also be required. In line with this, our analysis shows that personnel policies and firm-level gender inequality change following a shift in managers' gender attitudes. Furthermore, we show that a more realistic view of managers, one in which they are sensitive to issues of gender equality, does not necessarily lead to a loss in firm performance.

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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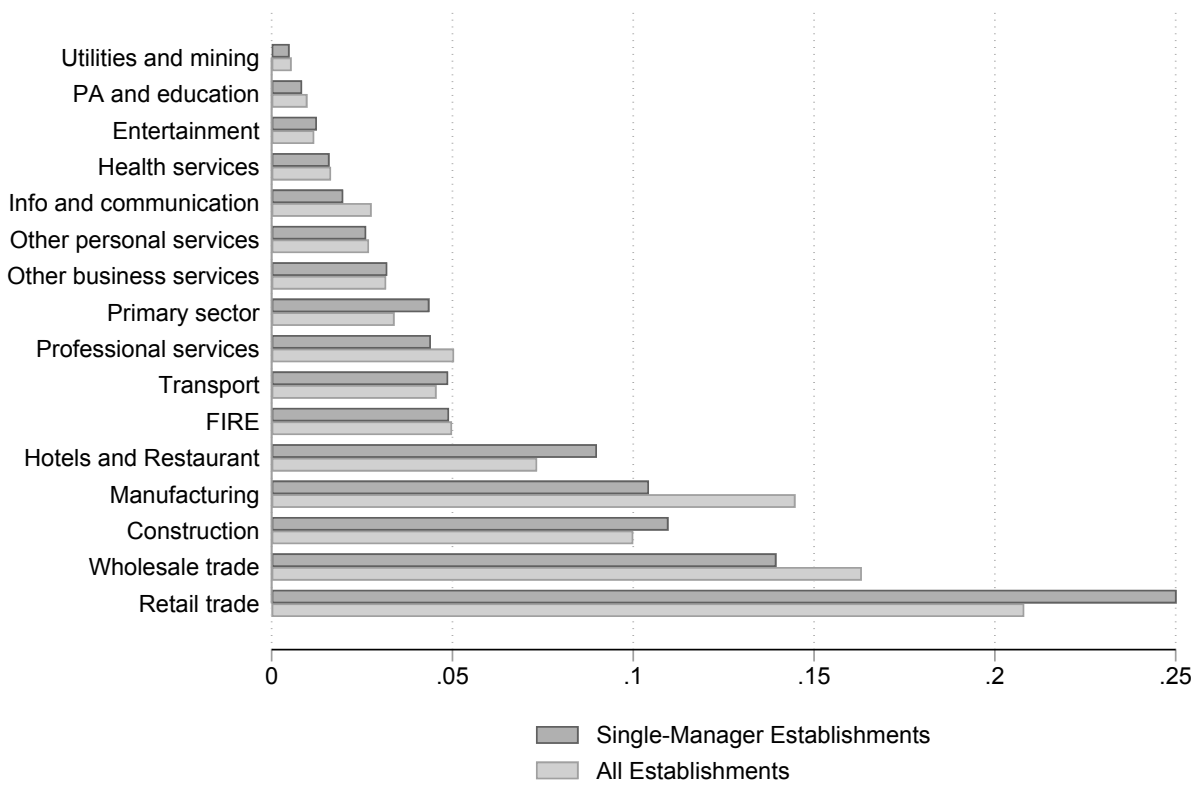
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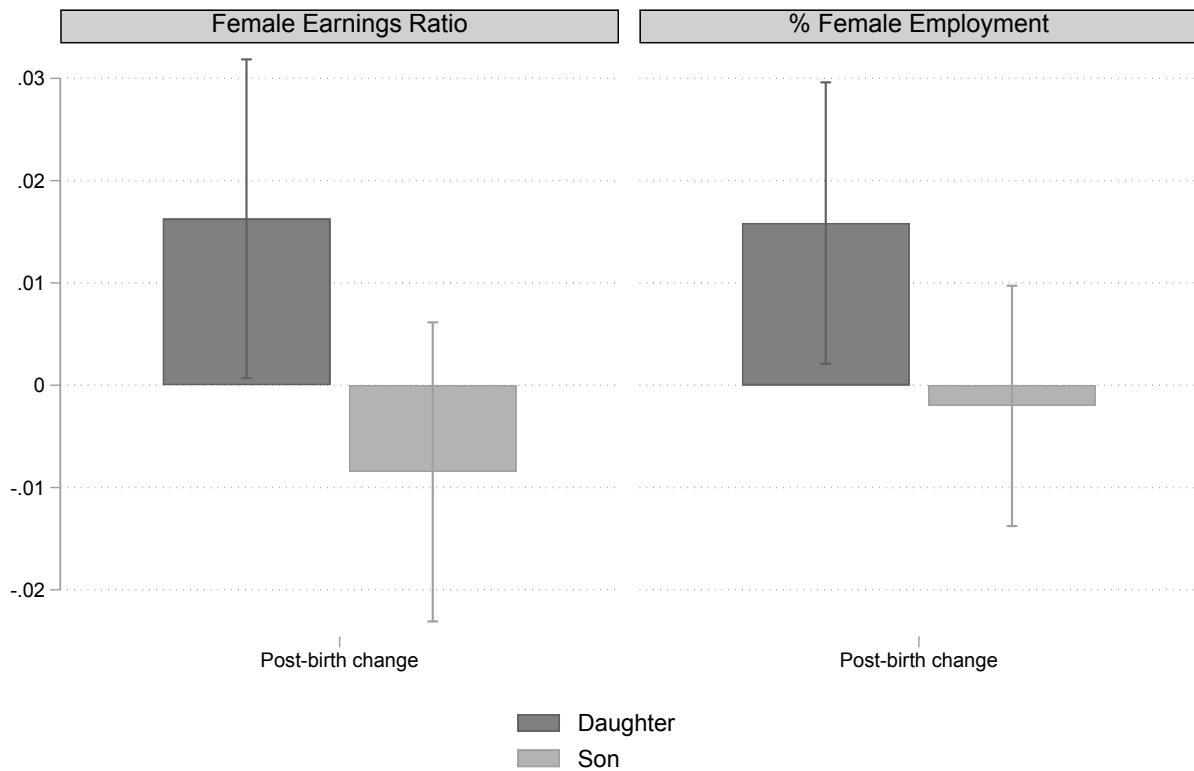
Figures

Figure 1: Industry distribution of establishments



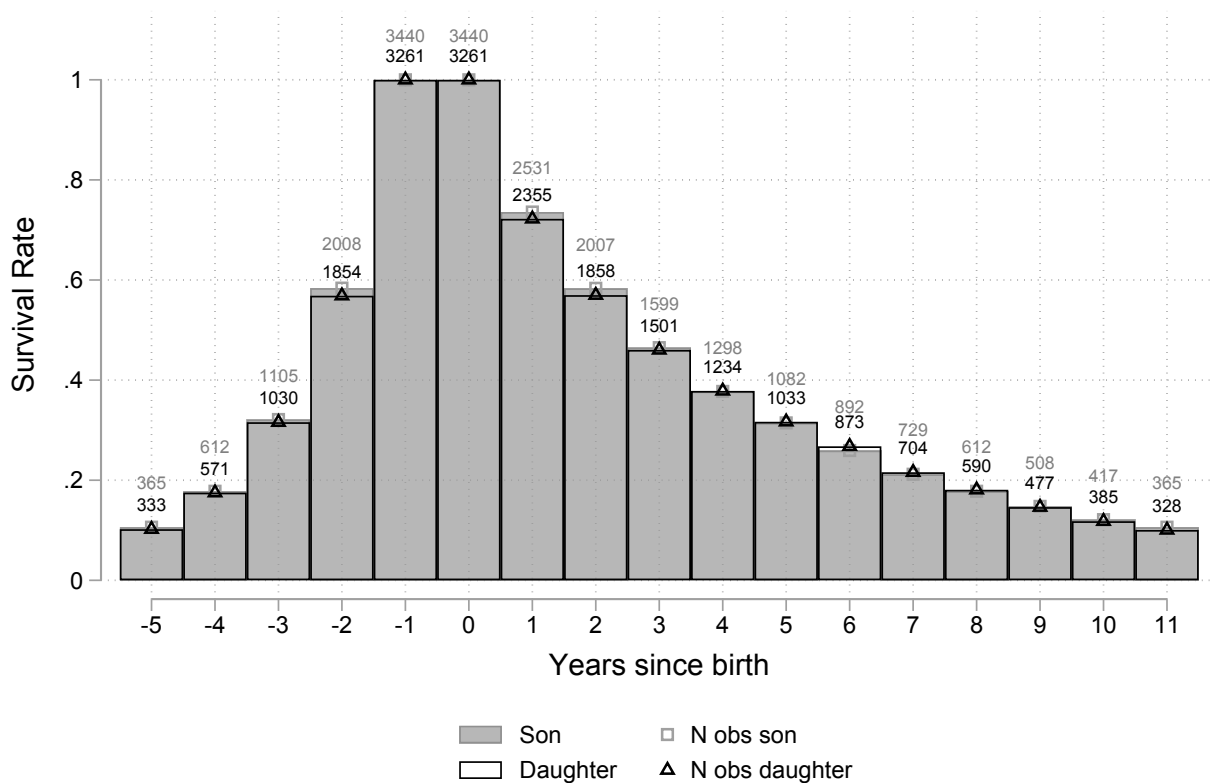
This Figure shows the share of single-manager establishment-year observations by industry and compares it to the corresponding share for the overall sample of establishments.

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



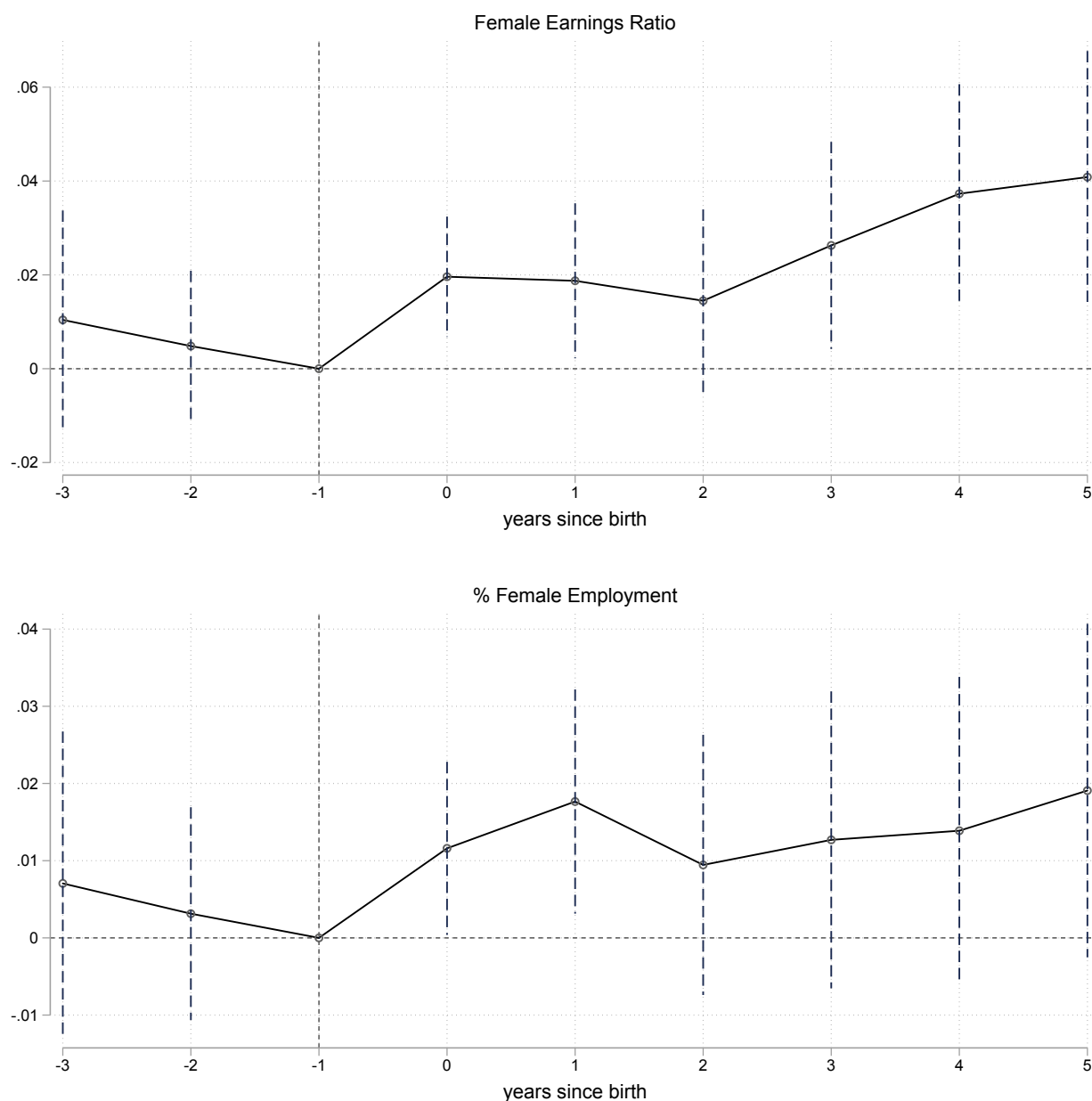
This Figure shows the magnitudes and the 95% confidence intervals of the coefficients obtained from two regressions estimated on the sub-sample of managers who have zero children and experience the birth of their first child. In particular, the dark and light gray bars shows changes in the female earnings ration and the share of female employment depending on the gender of the manager first-born. The relative daughter effect, captured by the coefficient β 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



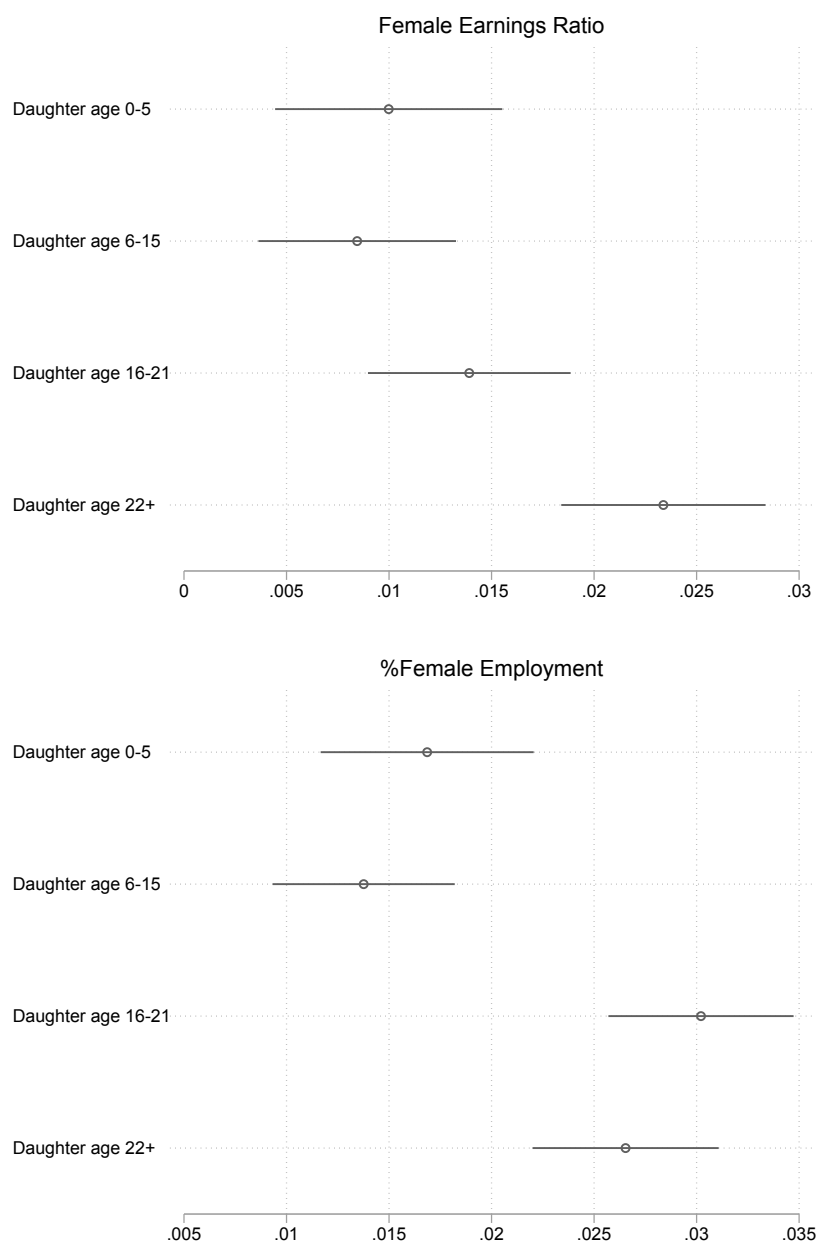
This Figure shows the inverse of the probability of observing a break in manager-establishment spells over time. More specifically, the y-axis shows the number of manager-establishment spells observed in a given year before/after the birth as a share of the total number of spells used for identification. 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



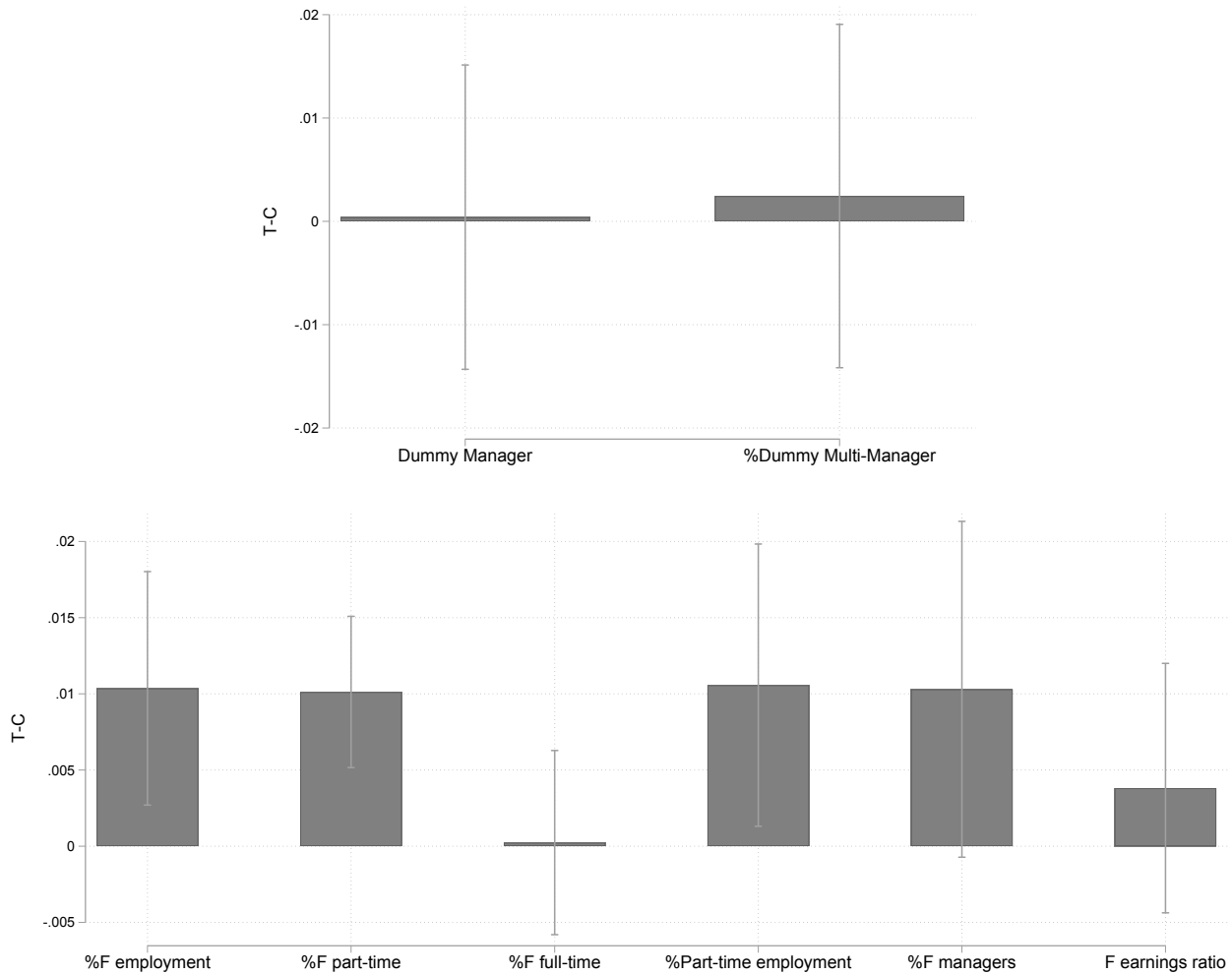
This Figure plots difference-in-difference coefficients and 95% confidence intervals from estimating equation 3 using the sample of establishments in which managers experienced the birth of their first daughter (treated group) and in which managers experience the birth of an extra son and do not have any daughter (control group). This definition of the control group accounts for the pitfalls of two-way fixed-effects estimators highlighted in recent studies (e.g. [De Chaisemartin and d’Haultfoeuille 2020](#); [Goodman-Bacon 2021](#)) 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 β_1 , β_2 , β_3 , and β_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 on the sample of managers experiencing a birth event and uses data 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 is measured as in equation (1), (ii) share of female employees who work part-time (iii) full-time) is defined as the total number of female workers working part-time (full-time) over the total number of workers, (iv) share of part-time employment is defined as the total number of employees of either gender working part-time over the total number of workers, (v) share of female managers is defined as the total number of female managers divided by the total number of managers, (vi) female earnings ratio is 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	Male Employees	Female Employees	Difference	Establishments
	(1)	(2)	(3)	(4)	(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					0.25
% 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 2021, 1 Danish Krone corresponds to 0.13 euros and 0.16 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	0.0095** (0.00458)	0.0098** (0.00456)	0.0075* (0.00387)	0.0079** (0.00385)
Panel B				
First Daughter	0.0168*** (0.00596)	0.0172*** (0.00594)	0.0102** (0.00500)	0.0100** (0.00497)
Additional Daughters	0.0048 (0.00641)	0.0051 (0.00633)	0.0023 (0.00535)	0.0031 (0.00528)
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. *** p<0.01, ** p<0.05, *p<0.1.

Table 3: Effects on female workforce characteristics

	Share of female employees that:															
	Top earner is a woman		Have earnings 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	0.0218**	0.0216**	0.0099**	0.0093**	0.0218**	0.0216**	0.0083*	0.0076*	0.0019	0.0024	-5.52e-05	-1.80e-06	0.0091**	0.0082**	0.0011	0.0018
	(0.0102)	(0.0101)	(0.00418)	(0.00415)	(0.0102)	(0.0101)	(0.00467)	(0.00413)	(0.00409)	(0.00340)	(0.00346)	(0.00304)	(0.00400)	(0.00375)	(0.00470)	(0.00451)
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. *** p<0.01, ** p<0.05, *p<0.1.

Table 4: Effects on overall workforce characteristics

	Share of employees that:											
	Are working full-time		Have youngest child age 5 or less		Have post secondary education		Average age		Average tenure		Log labor costs per employee	
	(1)	(2)	(3)	(4)	(5)	(6)						
First Daughter	0.0013 (0.0054)	-9.11e-05 (0.0051)	-0.0008 (0.0056)	-0.0004 (0.0037)	-0.0007 (0.0060)	-0.0014 (0.0056)	0.0097 (0.1476)	-0.0478 (0.1104)	0.0171 (0.0429)	0.0034 (0.0409)	0.0030 (0.0094)	0.0014 (0.0080)
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. *** p<0.01, ** p<0.05, *p<0.1.

Table 5: Effects on hiring and separation rates

	(1)	(2)	(3)	(4)
Panel A				
	% Female hirings		% Female separations	
First Daughter	0.0155** (0.0075)	0.0153** (0.0075)	-0.0105 (0.0081)	-0.0107 (0.0081)
Panel B				
	% Total hirings		% Total separations	
First Daughter	0.0062 (0.006)	0.0082 (0.058)	0.0014 (0.058)	0.0030 (0.058)
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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Effects on the characteristics of female hires

	Share of female hires that:											
	Have earnings above the 90th pct		Are working full-time		Are working part-time		Have pre-school aged child		Have post secondary education		Have lower education	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First Daughter	0.0075*** (0.0024)	0.0074*** (0.0024)	0.0051* (0.0027)	0.0052* (0.0027)	0.0034 (0.0028)	0.0039 (0.0027)	0.0020 (0.0016)	0.0020 (0.0015)	0.0049** (0.0022)	0.0048** (0.0021)	0.0036 (0.0033)	0.0043 (0.0032)
Observations	48,766		48,766		48,766		48,766		48,766		48,766	
R-squared	0.31	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. *** p<0.01, ** p<0.05, *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	Log Earnings Gap
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
First Daughter	0.0170** (0.00855)	0.0148* (0.00899)	0.0148 (0.0291)	-0.0152* (0.00860)	-0.0207** (0.00855)	-0.0391* (0.0202)	-0.0212** (0.00980)	-0.0142 (0.0112)	-0.0599 (0.0402)
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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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	0.0018 (0.0103)	0.0006 (0.0104)	-0.0010 (0.0081)	0.0000 (0.0081)	0.0006 (0.0107)	-0.0011 (0.0108)	-0.0119 (0.0087)	-0.0109 (0.0086)
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 in 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: Effects on firm performance

	Log Employment		Log Sales per Employee		Value Added per Employee	
	(1)	(2)	(3)	(4)	(5)	(6)
First Daughter	0.0072 (0.0192)	0.0086 (0.0187)	0.0014 (0.0163)	0.0004 (0.0158)	9,301 (7,005)	8,761 (6,892)
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 value-added 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. *** p<0.01, ** p<0.05, *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								
	Low		High		Low		High	
First Daughter	0.0040 (0.0056)	0.0044 (0.0055)	0.0180** (0.0078)	0.0176** (0.0085)	0.0160** (0.0073)	0.0169** (0.0072)	0.0194** (0.0095)	0.0186** (0.0094)
Panel B: %F pre-birth								
	Below industry average		Above industry average		Below industry average		Above industry average	
First Daughter	0.0112** (0.0054)	0.0114** (0.0054)	0.0080 (0.0089)	0.0081 (0.0088)	0.0192*** (0.0075)	0.0204*** (0.0074)	0.0121 (0.0093)	0.0123 (0.0093)
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	0.22		0.52		0.31		0.51	
Mean Panel B	0.19		0.56		0.28		0.54	

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 in 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. *** p<0.01, ** p<0.05, *p<0.1.

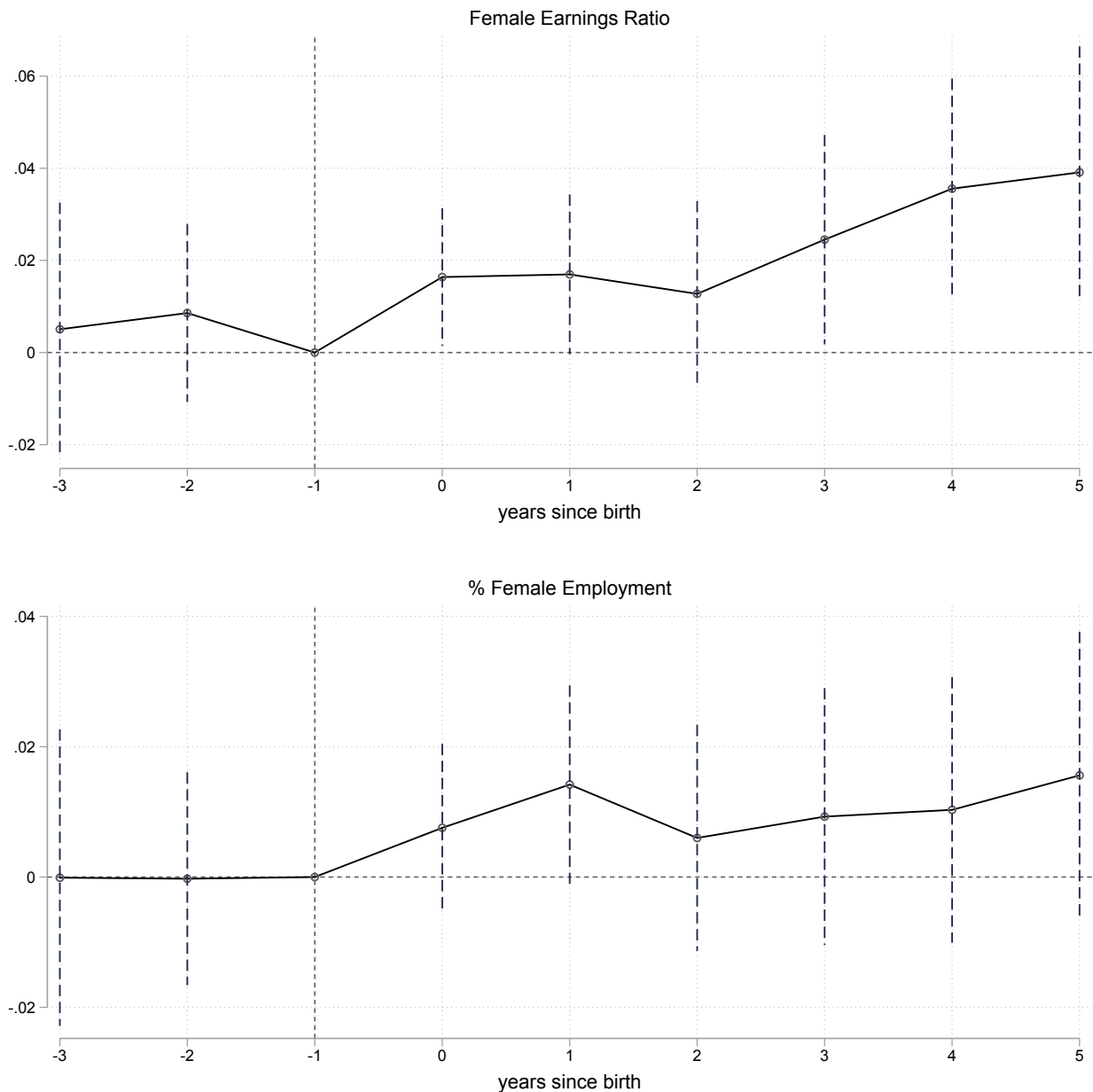
Table 11: Heterogeneous effects depending on managers cohort of birth

	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	0.0087 (0.0098)	0.0107 (0.0098)	0.0221*** (0.0074)	0.0208*** (0.0073)	0.0004 (0.0080)	0.0019 (0.0081)	0.0172** (0.0063)	0.0153** (0.0062)
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	0.38		0.40		0.33		0.35	

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. *** p<0.01, ** p<0.05, *p<0.1.

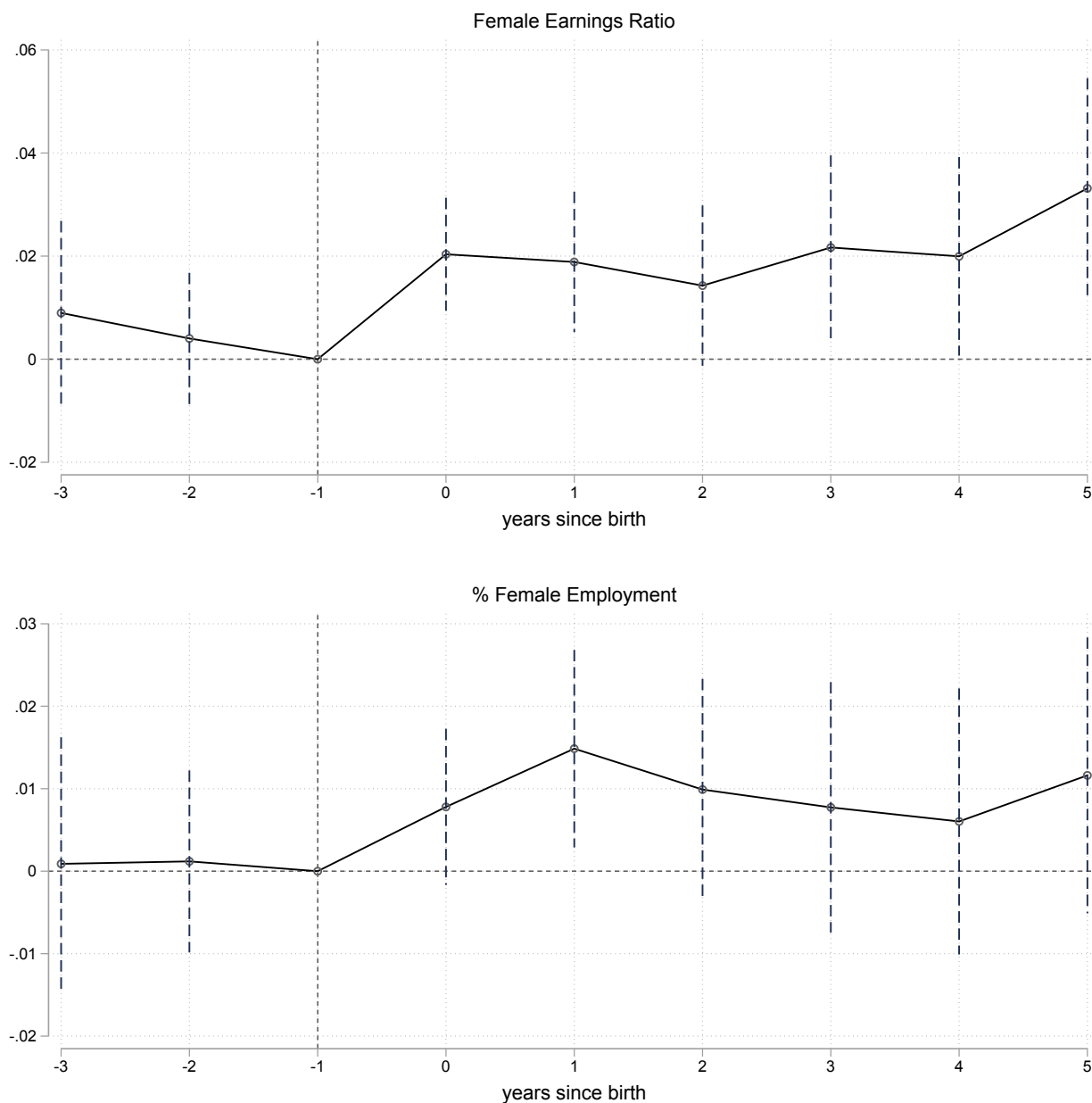
Appendix

Figure A1: Event study estimates: baseline outcomes and balanced sample



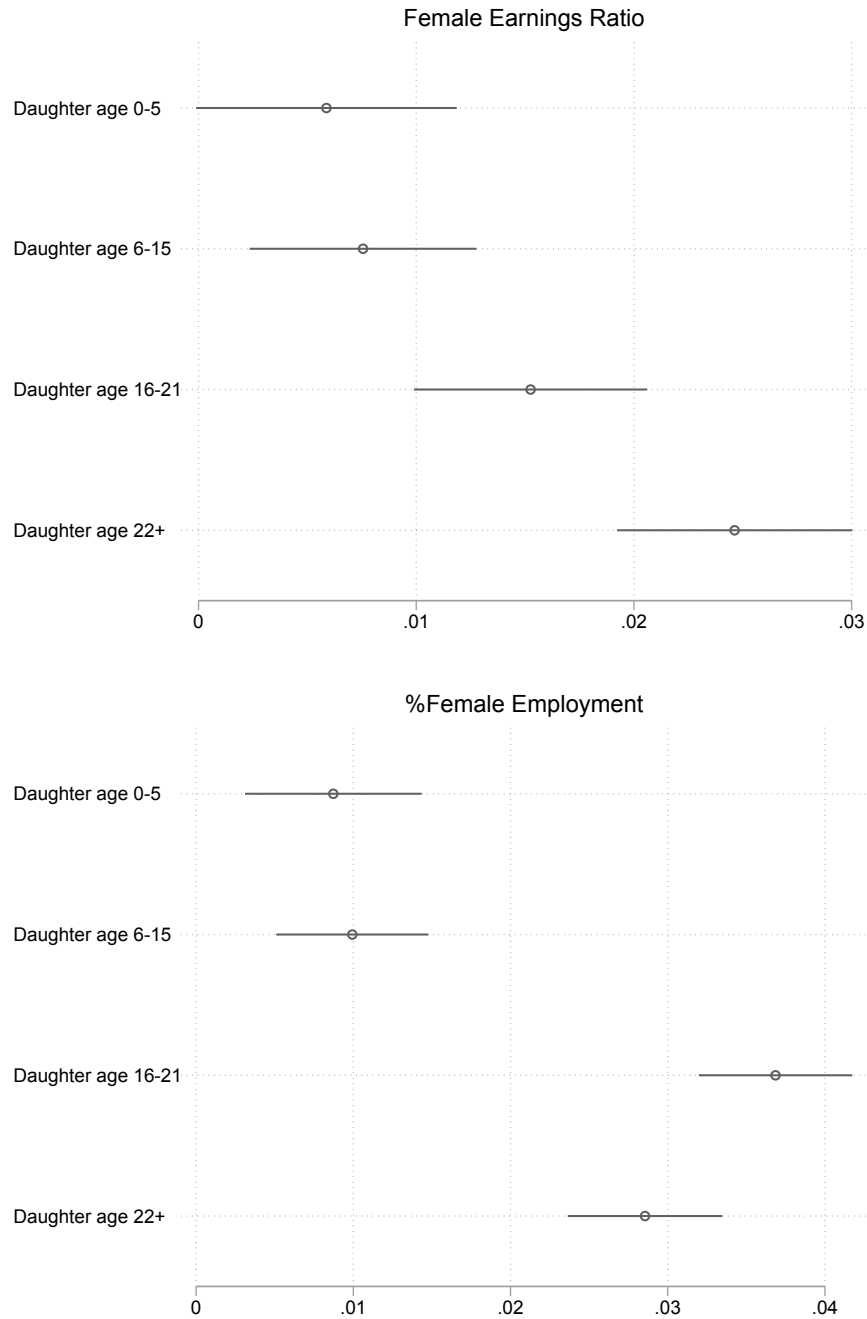
This Figure plots difference-in-difference coefficients and 95% confidence intervals from estimating equation 3 using the sample of establishments in which managers experienced the birth of their first daughter (treated group) and in which managers experience the birth of an extra son and do not have any daughter (control group). This definition of the control group accounts for the pitfalls of two-way fixed-effects estimators highlighted in recent studies (e.g. [De Chaisemartin and d’Haultfoeuille 2020](#); [Goodman-Bacon 2021](#)). 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 estimated on a balanced sample of spells between -1 and +1. 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: baseline outcomes and broader control group



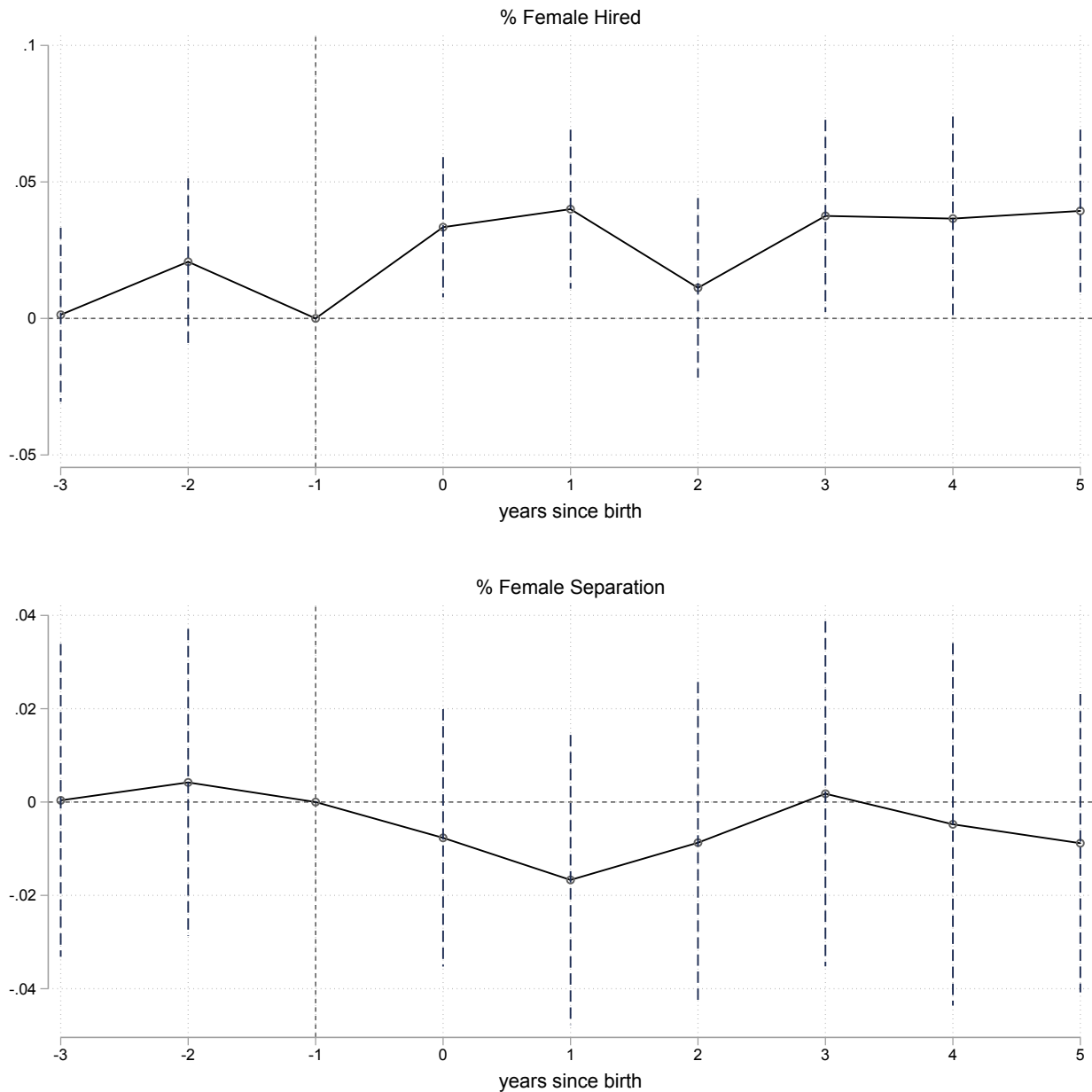
This Figure plots difference-in-difference coefficients and 95% confidence intervals from estimating equation 3 where we define as treated the group of managers who experienced the birth of their first daughter and as control everybody else, i.e. managers who already have a daughter and experience the 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 A3: Effects by age of oldest daughter - Robustness



This Figure plots the coefficients β_1 , β_2 , β_3 , and β_4 from equation (4) and their 95% confidence intervals. Rather than controlling for managers' age distribution like we did in Figure 5, this figure 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: hirings 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). This definition of the control group accounts for the pitfalls of two-way fixed-effects estimators highlighted in recent studies (e.g. [De Chaisemartin and d’Haultfoeuille 2020](#); [Goodman-Bacon 2021](#)). 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	1.002*** (0.0156)	0.0263 (0.0230)	1.003*** (0.0229)	0.0145 (0.0325)	0.0104 (0.00909)	-0.0212 (0.0151)
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 first-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	0.0042 (0.0104)	0.0041 (0.0104)	-0.0538 (0.2548)	-0.0545 (0.2538)	-0.3562 (0.5582)	-0.3879 (0.5620)
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, ** p<0.05, *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*** (0.00214)	0.0361*** (0.00142)	0.101*** (0.00206)	0.0496*** (0.00117)
Observations	622,894	622,894	622,894	622,894
R-squared	0.321	0.622	0.504	0.816
Year, municipality and industry FE	YES	YES	YES	YES
Controls for managers' characteristics	YES	YES	YES	YES
Controls for overall workforce characteristics	YES	YES	YES	YES
Controls for female workforce characteristics		YES		YES
Mean		0.458		0.430

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. *** p<0.01, ** p<0.05, *p<0.1.

Table A4: Effects on the characteristics of female separations

	Share of female separations that:											
	Have earnings above the 90th pct		Are working full-time		Are working part-time		Have pre-school aged child		Have post secondary education		Have lower education	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First Daughter	0.0028 (0.0024)	0.0027 (0.0024)	0.0029 (0.0028)	0.0030 (0.0027)	-0.0032 (0.0026)	-0.0028 (0.0025)	-0.0009 (0.0016)	-0.0008 (0.0016)	0.0006 (0.0022)	0.0005 (0.0022)	-0.0010 (0.0031)	-0.0003 (0.0030)
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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.