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BY

Aline Bütikofer, Sissel Jensen AND **Kjell G. Salvanes**

Norges Handelshøyskole

NORWEGIAN SCHOOL OF ECONOMICS

The Role of Parenthood on the Gender Gap among Top Earners[☆]

Aline Bütikofer[a], Sissel Jensen[a], Kjell G. Salvanes[a,b,*]

[a] *Department of Economics, Norwegian School of Economics, Bergen, Norway*

[b] *CesIfo, CEPR, and IZA*

Abstract

Is the wage penalty due to motherhood larger among highly qualified women? In this paper, we study the effect of parenthood on the careers of high-achieving women relative to high-achieving men in a set of high-earning professions with either nonlinear or linear wage structures. Using Norwegian registry data, we find that the child earnings penalty for mothers in professions with a nonlinear wage structure, MBAs and lawyers, is substantially larger than for mothers in professions with a linear wage structure. The gender earnings gap for MBA and law graduates is around 30%, but substantially less for STEM and medicine graduates, 10 years after childbirth. In addition, we provide some descriptive statistics on the role of fertility timing on the child earnings penalty.

1. Introduction

In recent decades, gender differences have converged in relation to labor force participation, paid hours of work, hours of work at home, lifetime labor force experience, and occupations [1, 2]. In addition, women have outnumbered men in higher education for several decades [see, e.g., 3]. However, despite a considerable decrease in the gender wage gap, substantial gender inequality persists in many industrialized countries. Recent literature has shown that the convergence in earnings has been slower in the upper part of the earnings distribution, where middle-aged men remain dominant in the highest earning occupations [4, 5, 6, 7]. Moreover, in 2016, only 5% of the largest publicly listed companies in the European Union had a female CEO and only 7% had a female chairperson on the board [8].

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[*] Corresponding author

Email address: Kjell.Salvanes@nhh.no (Kjell G. Salvanes)

A large and growing literature suggests that the career paths of women are negatively affected by childbearing [see, e.g., 9, 10] and that the gender wage gap increases at the onset of parenthood [4, 11, 12, 13, 1]. There are several potential explanations for this divergence in wages postbirth. First, there is empirical evidence that the labor force participation of women changes at both the extensive and the intensive margin postbirth [11, 12]. Second, [14] document a strong tendency for job changes to more family-friendly firms following childbirth. Finally, [1] and [15] present evidence of heterogeneity in child wage penalty for college-educated women across majors. They argue that the production structure or work organization differs across industries; in particular, [1] documents that in some occupations, increasing the number of hours worked per month has a large effect on earnings, indicating a disproportionate and strongly convex earning structure. Hence, there is a very large increase in compensation for workers who can work for long hours and particular hours, even though they may not have a higher level of human capital than other workers. One reason for this is that, in some professions, e.g., trial lawyers or consultants, the roles cannot be easily performed by other workers who are not close substitutes. Hence, there is a high demand and, correspondingly, high compensation for personalized services and face-to-face time in these sectors. As a result, some professions have a highly nonlinear or convex wage structure. If mothers of young children prefer more flexible hours and shorter workdays, sectors with a nonlinear wage structure, such as professions in the finance and consulting sector, are less attractive and, therefore, mothers might be willing to trade lower pay for more flexible work hours. Hence, the wage penalty for motherhood might be much stronger in sectors with a nonlinear wage structure. On the other hand, in science, medicine, and pharmacy, tasks are less personalized, working hours are better regulated, and the wage structure is more linear [15]. Thus, the wage penalty for motherhood might be less pronounced in these professions.

In this paper, we extend the most recent literature from the US, which documents that the largest child earnings penalties occur among highly skilled women [16, 4, 17]. More specifically, [1] and [15] present evidence of heterogeneity in child wage penalty for college-educated women across majors. We extend this work by using rich, population-wide register data to compare the effect of parenthood on the careers of high-achieving women relative to high-achieving men in a set of high-earning professions, which differ with respect to the convexity of wage structures. We analyze the effect of having a first child by examining how career trajectories are affected by the sudden increase in time constraints, following the approach of [11]. The career effect is calculated as the percentage change in annual pretax earnings following childbirth, relative to the year before the event. We use rich Norwegian population-wide, register data to compare the effect of parenthood on the careers of high-achieving women relative to high-achieving men in a set of high-earning professions. We define high achievers as men and women who have completed a graduate degree in one of four professional areas – an MBA, law, medicine, or science, technology, engineering and mathematics (STEM) – who rank among the top 20% earners compared with others with the same degree and from the same graduating cohort,

in any of the first three years after graduation. Hence, we focus on a subset of the population with very high potential earnings who are likely to end up in professions with different wage structures.

Norway and other Nordic countries are particularly interesting to study, as a substantial gender wage gap remains in these countries, despite the fact that they are at the forefront of implementing various gender-equalizing policies. These policies include extensive parental leave programs, universal day care, and generous sickness leave insurance [18, 19]. In international rankings, Norway is ranked number one in terms of opportunities for women [20]. Gender differences in labor force participation rate have steadily decreased in recent decades. In particular, the participation rate of women with young children (six years old or younger) has increased dramatically to about 80%, and is currently almost at the same level as the participation rate of women without children. Moreover, the median unconditioned earnings gap between men and women has narrowed steadily since 1980 (see panel (a) of Figure 1) and is currently around 75%. However, this general picture contrasts with the low representation of women in the upper part of the earnings distribution. Panel (b) of Figure 1 counts the number of men per woman at different parts of the upper tail of the earnings distribution. Although the number of men per woman has decreased in the top 10%, 5%, and 1% income percentiles, men remain substantially overrepresented in the top income percentiles.

A significant challenge to our study is that the ordinary least squares (OLS) method produces biased estimates because of either omitted variables or reverse causality. For instance, women (and couples) may have different priorities or preferences that affect both family and career choices. Further, the parenthood decision may be endogenous if it depends on current and expected earnings trajectories. Restricting the sample to men and women with children, the estimated gender gap following childbirth is independent of expected wage trajectories after birth for men and women, and only depends on potential omitted variable bias [12]. Then, the identifying assumption is reduced to parallel pretreatment trends for men and women. Note that we are not estimating the differential gender effect of childbirth on earnings compared with those who do not have a child; we are studying the gender difference in earnings for those who have children. However, when we compare the effect of parenthood across the four professional degrees, we cannot rule out differences due to selection into certain educations or professions. To some degree, we control for selection on important observables by restricting the sample to high earners in the first three years following graduation. In addition, all four degrees are considered elite areas of education, and entry to them requires the highest grade point average (GPAs) from high school. Moreover, we present pre-childbirth trends for our samples of high-achieving men and women. Nevertheless, this part of the analysis must be considered as documenting the heterogeneity in the (causal) child penalty across top earners in professions with different expected wage schedules and work flexibility.

We find that the gender gap pattern following childbirth is similar for those with MBA and law degrees,

and that it contrasts starkly to the pattern for STEM and medicine professionals. Our results suggest that women in professions with more nonlinear wage structures, such as MBAs and lawyers, suffer from a larger and more persistent child earnings penalty – more than 20% after 10 years – in contrast to women in professions with a more linear wage structure, such as STEM and medicine. Note that our results are only indicative of the causal effects of having a child on the gender gap, as the choice of education and profession is endogenous. We do control for important observables by focusing on elite professions and high performers in the labor market in the first three years after graduation, but there may well be unobservable differences across individuals who select different professions. That said, the child earnings penalty for MBA and law graduates seem to be more sensitive to the timing of fertility and career orientation than it is for parents with a STEM or medical degree.

Figure 1 here.

As mentioned above, we exploit population-wide Norwegian administrative data for our analysis. Using administrative data has several advantages for this type of analysis. First, the data are rich in terms of outcomes and allow us to identify the type of degree that an individual received. Second, we can study a large number of cohorts. Finally, to perform an analysis on narrow groups by graduate degrees and determine those who are on an early career track in the first years after graduation, we need to identify individuals' income percentiles. This requires population-wide administrative income records [21].

We find that the child earnings penalty for mothers in professions with a nonlinear wage structure, i.e., MBAs and lawyers, is substantially larger than for mothers in professions with a linear wage structure. The gender earnings gap for MBAs and lawyers is more than 20% after 10 years, in contrast to about 5% percent for STEM and medicine graduates. Moreover, we find that the child wage penalty differs for early career track and non-early career track women. Early career track female lawyers experience a large and long-lasting earnings loss compared with their male counterparts, whereas the child earnings penalty for non-early career track lawyers almost disappears after 10 years. Conversely, for women with MBAs, the child earnings penalty converges faster for early career MBAs than for non-early career MBAs. For medicine and STEM graduates, there is no difference in the convergence rate of the child earnings penalty during the first 10 years after childbirth. In addition, we find that the timing of fertility is an important determinant of the child earnings penalty.

The remainder of the paper is structured as follows. Section 2 provides an overview of the related literature. Section 3 discusses our early career track sample and the identification strategy. Section 4 describes the data. Section 5 presents the empirical findings. Section 6 concludes.

2. Literature

The paper is related to the general literature that emphasizes the importance of parenthood on gender differences [see, e.g., 22, 13, 4, 16, 23, 1]. Moreover, the paper is linked to the literature on female labor supply and fertility, which utilizes exogenous variations in family size, arising from twin births, sibling-sex mix, miscarriages, infertility, and IVF treatments, to estimate the effect of children on female labor supply [see, e.g., 24, 10, 9, 25, 26, 27].

The paper relates most strongly to the large literature on gender inequality in the labor market [surveyed by 28, 29, 2]. There are various explanations for gender inequality: the early literature on the gender wage gap focused on the role of labor market experience, education, and discrimination [28]. However, women have increased their productivity-enhancing characteristics during the last decades. As the gender wage gap has persisted even after gender differences in educational attainment have disappeared and after substantial increases in female labor force participation and women's working hours, it has become apparent that education and experience cannot explain the remaining gender differences in wages. Moreover, there is little evidence that antidiscrimination policies have reduced the gender wage gap [30, 31]. This suggests that the explanation for remaining gender inequality lies elsewhere. More recently, experimental evidence has shown gender differences in willingness to compete, risk preference, and negotiation behavior [32, 33, 34, 30, 35]. Furthermore, [36] argue that the taste for competition explains subsequent gender differences in earnings and industry choice among high-ability MBA graduates and that the relation between the taste for competition and earnings persists over time. However, [1] points out that the experimental evidence on willingness to compete and risk preference has not yet been applied to market outcomes. That is, these experiments do not focus on occupations that reward competition the most, such as partners in a firm or senior managers. Moreover, the fact that men and women with the same education have the same earnings profiles in the first year following graduation is an indication that differences in willingness to compete, risk preference, and negotiation behavior may not be among the main explanations for the gender wage gap early in the career.

The contribution of this paper is that, using rich, population-wide register data, it extends the most recent papers in this field by comparing the effect of parenthood on the careers of high-achieving women relative to high-achieving men (defined as the top 20% of earners) in high-earning professions, which are found to be different with respect to the convexity of their wage structures. We analyze the effect of having a first child by looking at how career trajectories are affected by the sudden increase in time constraints after childbirth, following the approach of [11]. We draw on insights from the recent literature to form expectations regarding the gender gap following childbirth across the four professional degrees on which we focus. In particular, [1] argues that the production structure and work culture differ across industries, and that the cost of providing more flexible work schedules may

be very different across industries. Hence, firms in some industries have higher wage penalties than others, for lack of flexibility. She documents this by showing that, in some occupations, the number of hours worked per month has a large effect on earnings, indicating a strongly convex earnings structure, i.e., the compensation for working long and particular hours is very large. A reason for this convex structure is that, in some sectors and firms, e.g., in law or consulting firms, professionals cannot easily be substituted by other workers in the firm, even though these other workers have acquired the same amount of human capital. There is a high demand and high compensation for personalized services and face-to-face time in these professions. Thus, some professions have a highly nonlinear or convex wage structure with regard to compensation for working many hours. On the other hand, in science, medicine, and pharmacy, tasks are less personalized and can be more easily handed over to other employees, working hours are better regulated, and the wage structure is more linear [15]. If mothers of young children prefer more flexible hours and shorter workdays, firms and sectors with a nonlinear wage structure, such as those in the finance and business consulting sector, are less attractive. Therefore, mothers might be willing to trade lower pay for more flexible work hours by moving to a lower-paying firm. Hence, the wage penalty of motherhood might be much more severe in professions where firms are more likely to have nonlinear wage structures (MBA and law) than in sectors where linear wage structures are more prevalent (medicine and STEM).

3. Empirical Approach

3.1. Top Graduate Degrees and Early Career Track

We focus on men and women who became parents and, based on their early career, have a high probability of becoming top earners. Therefore, men and women with a graduate MBA, law, STEM, or medical degree are included in our samples. As noted above, entry into these four degree types is highly competitive and requires the highest school-level GPAs. Within each of these four degrees, we restrict our main sample to include only early career track individuals. That is, we restrict the sample to individuals with a graduate MBA, law, STEM, or medical degree who are in the top 20% of earners based on their best rank in the income distribution during the first three years after graduation, relative to their graduation cohort with the same degree.

Graduating from college is a good indicator of high earnings potential. Panel (a) of Figure 2 shows that around 80% of all females and 60% of all males in the top 5% of earners had a college or higher degree in 2010. The share of women with a college degree among the top 5% of earners has increased substantially since the 1980s. The share of men has also increased, but at a much slower rate, and the increase is smaller than for women. Graduate MBA, law, medical, and STEM degrees account for more than half of the college-educated among the top 5% earners, as shown in panel (b) of Figure

2. Thus, these four degree types are the most competitive programs and account for a large share of college-educated top earners. Panels (c)–(f) of Figure 2 plot the proportion of men and women among the top 5% earners who have a graduate MBA, law, medical, or STEM degree. Although the percentage of women among the top 5% earners with a medical degree has remained relatively stable, the percentage of women with an MBA, law, or STEM degree has increased during the last three decades.

Figure 2 here.

However, within these groups, individuals may have different career ambitions and plans for the future. Therefore, we focus on individuals who are on an early career track to single out those with the most promising futures in the labor market. That is, we include all individuals who are in the top 20% of earners, based on their best income rank during the first three years after graduation relative to their graduation cohort with the same degree. Hence, if an individual is among the top 20% of earners in one of the three years after graduation, we define him or her as being on an 'early career track'. Panel (a) of Figure 3 illustrates the association between the earnings rank by degree and cohort during the first three years after graduation and the earnings rank at age 45 for men and women who obtained a college degree. The pattern suggests that for this early track career group there is a positive association between earnings and college degrees. For women, there is a slightly stronger association at the highest levels of the early career earnings rank and the earnings rank later in life. Moreover, the association is weaker for women than for men. In panel (b), we present the association between the earnings rank by degree and cohort during the first three years after graduation, and the earnings rank at age 45 for men and women with an MBA, law, STEM, or medical degree. The association is stronger for individuals with one of the four top graduate degrees, with a higher gradient for women than for men. In particular, individuals who rank in the top 20% of earners early in their career are, on average, close to the 90th earnings percentile at the age of 45. In addition, the association is very similar for men and women. Hence, these descriptive findings support our definition of the early career track sample for both men and women.

Figure 3 here.

To further illustrate this association, we estimate the relationship between an individual's best rank by degree and cohort during the first three years after graduation and the rank in the income distribution achieved at a specific age mid-career:

$$R_{it} = \alpha + \beta_1 ER_i + \beta_2 ER_i^2 + \beta_3 ER_i^3 + \beta_4 ER_i^4 + \gamma X_{it} + \lambda_t + \varepsilon_{it}, \tag{1}$$

where the outcome R_{it} is the rank in the income distribution at a specific age for individual i in year

t, λ_t is a set of year dummy variables, and X_{it} is a vector of individual controls, including age, age squared, and years of education. The explanatory variable of interest is ER_i, which is the best income rank of an individual by degree and cohort during the first three years after graduation. Panel (a) of Figure 4 shows the estimated marginal effects of an increase in the early best rank on the rank in the income distribution at age 45 years for men and women with a college degree or higher. There is a strong relationship between the individual's best income rank by degree and cohort during the first three years after graduation and the income rank at age 45 years. As in panel (a) of Figure 3, the marginal effect increases in the upper two deciles of the early career rank. This suggests that the best income rank during the first three years after graduation within degree and graduation cohorts is a reasonably good predictor of mid-career income rank. In panel (b) of Figure 4, we present the same marginal effect for individuals with one of the four top graduate degrees. Again, the estimated marginal effects resemble the patterns in panel (b) of Figure 3. These findings provide further support for our definition of the early career track sample.[1]

Figure 4 here.

Limiting our sample to individuals with a graduate degree on an early career track allows us to compare men and women who start their working life with similar career prospects.

3.2. Identification

New parents experience a sudden increase in time constraints, which may create incentives to change their labor supply from what was optimal before the birth of their first child. Childbirth causes an unavoidable break in employment for new mothers. In addition, mothers and fathers may respond differently to the event in terms of how they adjust their subsequent working lives. To study the wage impact of having a child, we adopt the event-study methodology suggested by [11]. Let $t = 0$ represent the time when an individual becomes a parent, which may happen at any year s covered by our data, i.e., between 1986 and 2010, and index all years relative to year $t = 0$. We construct a balanced panel of men and women and observe their incomes every year from three years before their first childbirth to 10 years after. That is, we consider a balanced panel of income data for parents who have their first child between 1989 and 2000. We use the following event-study specification, which

[1] In addition, we have estimated the marginal effects at ages 50 and 55. The patterns are very similar for both men and women, independent of the age at which the mid-career wages are measured. However, the relationship is strongest at age 45 for both men and women.

we run separately for men and women ($g = \{m, f\}$), and for each of the four degrees in our study:

$$y_{ist}^g = \alpha^g + \sum_{t=-3}^{-2} \delta_t^g D_t + \sum_{t=0}^{10} \delta_t^g D_t + \sum_k \beta_k^g A_{ist}^g + \lambda_s^g + \varepsilon_{ist}^g, \tag{2}$$

where the outcome of interest, y_{ist}^g, is the annual pretax earnings for individual i in calendar year s and in period t, relative to the year in which the first childbirth occurs. D_t is an indicator variable equal to one if the year of observation is $(-3, -2, 0, \ldots, 10)$, relative to the year of parenthood. Hence, the event time coefficients δ_t^g measure the effect on annual earnings of having a child, relative to the last year before childbirth ($t = -1$). In addition to the set of event time dummies, we include age dummies and year dummies to control nonparametrically for underlying life-cycle and time trends. The inclusion of age dummies will improve the comparison between men and women as, on average, men tend to be about a year older than women when having their first child.

Having estimated the event time coefficients, δ_t^g, we calculate the year-t effect of children as a percentage of the counterfactual outcome, i.e., not becoming a parent. Then, the percentage year-t effect is $P_t^g = \hat{\delta}_t^g / E[\hat{y}_{ist}^g | t]$. Here, $\hat{y}_{ist}^g$ is the predicted counterfactual outcome when we omit the contribution of the event dummy, i.e., $\hat{y}_{ist}^g = \hat{\alpha}^g + \sum_k \hat{\beta}_k^g A_{ist}^g + \hat{\lambda}_s^g$. An underlying assumption for the identification of the effects around parenthood is that the unobserved variables determining individual labor market outcomes change smoothly over time. When this assumption holds, P_t^g measures the effects of parenthood on earnings.

As we condition the sample on having a child, the δ-coefficients only depend on the timing of fertility and not on the decision to have a child. Thus, the identifying assumption is similar to the assumptions in a differences-in-differences setup. That is, we assume parallel trends for the outcome variable in the pretreatment period. This allows us to measure the difference in treatment for men and women. Moreover, we assume that the timing of having a child for both men and women is not determined by expected future shocks that differ across men and women in the absence of having a child [12, 11]. If this fails, the identification fails. In Figure 5 and 6, we plot the average yearly income for men and women with one of the four top graduate degrees who became first-time parents between 1989 and 2000. The difference between Figure 5 and 6 is that we restrict the sample to early career track men and women, which is the sample we use for the event-study analyses. The black solid and dashed lines show the average income for men and women in the balanced panel, whereas the gray solid and dashed lines show the average income for the unbalanced panel of men and women who have their first child between 1989 and 2000. Note that there is a level difference in the pay for men and women in the years before parenthood. However, the prebirth trends, i.e., the average income growth patterns

prior to the first childbirth, are parallel.[2] Hence, for the core part of our analysis, we have very tight identification when it comes to controlling for omitted variables.

Figure 5 and 6 here.

Note that the identification assumptions based on [11] and [12] are valid when we compare child wage penalties within each profession, except for the case of MBAs, where the effect of childbearing is potentially overestimated. However, we are identifying a treatment effect of the child wage penalty with a specific interpretation. Our sample consists of women who have selected parenthood, implying that the interpretation of the causal effect is a treatment effect on the treated and not an average treatment effect of having a child for the population as a whole. Moreover, we rely on a window of three years' prebirth trend but, clearly, the decision regarding career and children may be made earlier than this window. To account for this to some degree, we extend the prebirth trend to a five-year window for all four professions. The trends remain parallel for early career track individuals, with the exception of MBAs, as shown in Figure 5 (gray solid and dashed lines).

When comparing the effect of the child penalty across professions, we rely on the same identification assumptions described above. It is important to note that we cannot rule out a difference in terms of self-selection into certain educations or professions based on later work preferences for flexibility in the job and wages. However, we control for selection on important observables by restricting the sample to the most prestigious educations requiring a top GPA from high school, as well as high achievers in the first three years following graduation (the top 20% of earners from the degree–graduation cohort). Moreover, as documented in Figure 7, with the exception of MBAs, men and women who are high achievers have virtually parallel wage trajectories before having a child – not only within each profession but across all four professions. Therefore, this part of the analysis must be considered as documenting the heterogeneity in the (causal) child penalty for top earners across professions with different expected wage schedules and work flexibility.

For the cohorts that we study, the timing of fertility is clearly an endogenous choice variable for women (or for the couple) and is determined by unobserved preferences and tastes that affect both the timing of fertility and career choices. In addition, the timing decision is affected by expected earnings and future career prospects. A further issue is how we should measure the timing of fertility to avoid confusing the effect of a delay in fertility on earnings with differences in experience. To resolve this issue, we measure the timing of fertility based on the time from graduation, to fix the labor market

[2]We formally test whether the prebirth trends are parallel for each panel in Figures 5 and 6. Note that Figure 6 is based on the sample that we use in the event-study analyses. For each graduate degree, we interact gender with each of the three prebirth periods and jointly test whether the coefficients are significantly different across the prebirth periods. None of the F-test statistics indicates that the trends are significantly different.

experience before having children [37, 38]. However, the issue of fertility as an endogenous choice would have required an instrumental variable, such as the age of menarche or number of miscarriages [10, 25]. As our analysis is already limited to the four professional degrees, the number of miscarriages among this group is too small to allow us to utilize an instrumental variables approach. The direction of the bias using OLS is ambiguous [39, 38]. Moreover, in the data section, we provide detailed balancing descriptions for each subgroup to ensure that we are comparing similar persons (based on observables) even when analyzing subgroups.

4. Data

Our primary data source is the Norwegian registry data, a linked administrative data set that covers the Norwegian population. It is a collection of different administrative registers, including the education register, birth register, and tax and earnings register. These data sets are maintained by Statistics Norway and provide information about educational attainment, labor market status, pretax earnings, and a set of demographic variables (e.g., age and gender), as well as information about family members and fertility.

As we are primarily concerned with the potential disruptive effects that starting a family may have on labor market outcomes, we link the tax register data with the birth register data. We construct a balanced panel that includes all mothers and fathers who had their first child between 1989 and 2000, who we observe annually from three years before their first child is born to 10 years after. Pretax earnings are annual information provided by the employer to the tax authorities. This covers taxable labor earnings, including unemployment benefits and maternity leave benefits, but no other transfers. We use yearly income as the main statistics for individual labor market outcomes.

Education is collected from the national education register, which updates every person's education twice a year based on reports from schools and universities to Statistics Norway. Education is classified according to the Norwegian classification standard (NUS2000), which is close to the International Standard Classification for Education (ISCED97). We define our four top graduate degrees based on educational degrees that require more than four years of study, i.e., masters and doctoral degrees, as well as graduate and postgraduate subjects. A graduate MBA includes graduate studies in economics (NUS2000 3-digit codes 734) and in business and administration (NUS2000 3-digit codes 741). A graduate law degree includes graduate studies in law subjects (NUS2000 3-digit codes 737), and a graduate medical degree includes graduate medical studies (NUS2000 3-digit codes 763). Finally, a graduate STEM degree includes graduate studies in any field within the natural sciences, and vocational and technical subjects (NUS2000 2-digit codes 75). We disregard any postgraduate studies as well as shorter executive courses and degrees at graduate level, and fix the graduation date at the

time that the main graduate degree is completed.

From the earnings and tax register, we compute each individual's earnings rank within their own degree and graduation cohort. Then, the balanced panel described above is divided into a sample of early and non-early career track individuals, where the former are among the top 20% of earners in any of the three first years of their working career. We disregard labor market experience prior to completion of the graduate degree, and assume that the working career starts in the year of completion of the graduate degree. In addition, we limit our regression sample to all men and women who have their first child four years or later into their working career. First, we exclude men and women who have a child while undertaking their degree. Second, because we use the first three years after graduation to define early career track men and women, i.e., the top 20% earners in that timeframe, we also exclude men and women who have their first child during the first three years of their career.

Table 1 provides summary information on the career and demographic characteristics of men and women with an MBA, law, STEM, or medical degree who became first-time parents between 1989 and 2000. We observe the annual income of these individuals for the three years before and the 10 years after their first child is born. The first two columns report summary statistics for all first-time fathers and mothers with any of the top four degrees, whereas columns three and four reports summary statistics for all four types of graduates who are first-time parents on an early career track. Finally, columns five and six restrict the sample to include only the subset of fathers and mothers who have their first child four years or more into their career. We trim all samples by excluding individuals with very large variations in the 14-year window before and after their first child. More precisely, we exclude individuals from the sample if the (within-person) standard deviation of annual earnings over the 14-year window is more than two times the (within-person) mean earnings level over the 14-year window.[3] We observe that men and women have very similar earnings across all three samples and that, on average, both men and women in the most restricted sample have earnings that are above the 90th percentile. However, men are more likely to be in the top earnings percentile and the difference is larger higher up in the distribution. In addition, note that all individuals, both men and women, work full time prior to parenthood in the last two columns, where full-time work is defined in the tax and earnings register as working 30 hours or more per week. Consequently, although we do not have exact information about hours of work, we can infer that the observed earnings before parenthood are based, for the most part, on full-time work and that differences in pay are mainly due to differences in wages and compensation for extra hours of work beyond a full-time workload. The bottom line in Table 1 shows the number of men and women in each of the three sample cuts described above.

[3]This reduces the final sample in columns 5 and 6 for the four top degrees by only four individuals. Ten individuals are dropped from the early career sample in columns 3 and 4, and 55 individuals are dropped from the unrestricted sample in columns 1 and 2.

Table 2 shows how the timing of graduation and parenthood is distributed across the four degrees. The distribution of age at graduation is similar for MBA and STEM degrees, and about one year lower than for law and medical degrees. Age at parenthood is very similar across the four degrees, as is the relative timing of parenthood relative to graduation.

Table 3 provides summary information on the demographic characteristics of the samples of MBA, law, STEM, and medical degree parents that we use for the event study, all men and women on an early career track who have their first child four years or later into their working career. As Table 3 indicates, the patterns for men and women are very similar across all professions. Except for doctors, these individuals work full time and have just above two children at the end of the 10-year window. Moreover, age at graduation and timing of parenthood relative to graduation are very similar across gender and across the four professional degrees.

5. Impact of Becoming a Parent for Top Earners

5.1. Child Earnings Penalty

We aim to analyze the impact of parenthood on income for career-oriented men and women in different professions. We present the results of equation 2 graphically, step by step.

To provide a comparison with previous studies, we begin by presenting the child earnings penalty for all men and women regardless of education level, and for all men and women with any graduate degree, controlling for year and life-cycle patterns, as shown in Figure 8. This allows us to compare the difference in the child wage penalty for individuals with a graduate degree and the rest of the population. Each of the lines in Figure 8 is based on separate regressions of equation 2 and show the event time effects as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. That is, what is plotted is the effect $P_t^g = \hat{\delta}_t^g / E[\hat{y}_{ist}^g | t]$, as explained in section 3.2. The dots in the figure indicate whether the effect is significant at the 5% significance level. Note that the graduates in this figure are not restricted to those on an early career track, nor to one of the four professional degrees on which our analysis focuses.

Figure 8 here.

Figure 8 shows that male earnings are unchanged by childbirth, irrespective of educational attainment. Conversely, there is a strong and persistent child earnings penalty for women for all of the 10 years following childbirth. The loss is smaller for women with a graduate degree. The average loss over a 10-year horizon is 32 percentage points compared with the prebirth ($t = -1$) period for the sample

including all women, and 22 percentage points for the sample of women with a graduate degree. These findings are consistent with previous studies. The persistence of the child earnings penalty for mothers is both an effect of fewer hours worked (part-time work) and, most likely, switching to firms or occupations providing more flexibility and less pay [12]. In our detailed assessment of the four career-oriented professions, we will explicitly examine whether a change in full-time jobs occurs following childbirth.

This paper focuses the effect on the gender gap of having a child for top earners who have completed one of the top four professional degrees. All four groups have very high earnings potential, but individuals are likely to end up in professions with potentially different wage structures. As explained in the introduction, insights from the recent literature enable us to form expectations regarding the gender gap following childbirth across these four professional degrees. In particular, [1] argues that firms in some industries have higher wage penalties that relate to flexibility than do others. Thus, if mothers with young children prefer more flexible hours and shorter workdays, they might be willing to trade lower pay for more flexible work hours by moving to a smaller, less high-powered firm. Hence, the wage penalty of motherhood might be much more severe in professions where firms are more likely to have nonlinear wage structures (MBA and law) than in sectors where linear wage structures are more prevalent (medicine and STEM).

Figure 9 here.

Figure 9 shows variation in earnings around the time that the first child is born for top earners with an MBA (panel (a)), a law degree (panel (b)), a STEM degree (panel (c)) or a medical degree (panel (d)). Individuals graduating with an MBA or law degree are most likely to be recruited by the finance sector, consulting firms, or law firms, which are organizations with highly nonlinear wage structures. For women with an MBA, the initial penalty is about 17% in real earnings, which is smaller than the penalty for all women with a graduate degree. However, there is no convergence between men and women in the 10 years after childbirth, despite an increase in real female earnings in the first few years postbirth for women with MBAs. However, the main reason for the lack of convergence is that men with an MBA degree do not suffer from a child earnings penalty. That is, postparenthood, MBA fathers continue on the same earnings trajectory that they were on prior to having a child. The mean difference in the gender gap after 10 years is about 32%, as shown in Table 4. Note that this is quite different from the pattern observed for all graduates of all fields, where there was some convergence in the gender gap over time following childbirth. The initial penalty for women with a law degree is very similar to those with MBAs. The pattern for men with a law degree is similar to that for men with MBAs, because there is no change in the steep earnings trend. Moreover, for female law graduates, there is no sign of convergence after 10 years. The mean gender gap after 10 years is about 37%, as shown in Table 4.

In contrast, the patterns for top earners with a STEM or medicine degree, which are very similar to each other, differ strongly to the patterns for MBA and law graduates. The initial drop for women is similar for all four professions. However, there is a strong degree of convergence for those with STEM and medicine degrees after some years. Interestingly, the earnings trend for men with a STEM or medicine degree seem to be affected by childbirth, but their earnings levels are not. These men are on a less steep earnings trend prior to childbirth compared to men with MBA or law degrees. Notice that the gender gap following childbirth is much smaller among individuals with STEM and medicine degrees.

In sum, the pattern of gender gap following childbirth is similar for MBA and law graduates, but stands in stark contrast to the pattern for STEM and medicine graduates. In particular, our results suggest that women in professions with more nonlinear wage structures – finance, consulting, and law – suffer from a larger and more persistent child wage penalty than do women in professions with a more linear wage structure – STEM and medicine. Note that, at the time of childbirth, there is an equal number of women and men in full-time positions across the different degrees and that the total number of children among the parents across the four degree types is very similar. In Section 5.2, we explore mechanisms that may explain the differences in the gender gap, such as reductions in full-time work or job transfers to other types of firms.

Next, we focus on the early career track group of men and women with one of the four elite degrees (see Figure 10). We compare early career track individuals with non-early career track individuals with a graduate degree. Hence, we focus on career progress after parenthood for men and women with similar prospects at the outset of their career.

There is one particularly striking difference between men and women across the groups, which relates to early and non-early career track lawyers. Early career female lawyers experience a large and long-lasting earnings loss compared to their male counterparts, whereas the gender gap in child earnings penalty for non-early career track lawyers is considerably smaller. For MBAs, the pattern is the opposite: for early career track MBA graduates, the child earnings penalty converges faster than for non-early career track MBA graduates. For medicine and STEM graduates, there is little or no difference in the convergence rate of the child earnings penalty during the first 10 years after childbirth.

Next, we focus on the most career-oriented individuals. We distinguish between individuals who are in the top 20% of earners (the early career track) versus the top 10% (super career track), based on their best income rank during the first three years after graduation relative to their graduation cohort with the same degree.

Figure 11 plots the earnings trajectories for individuals with one of the four top graduate degrees, comparing the early career track and super career track groups. Again, the most striking result is for

women with a law degree: the loss due to childbirth is larger for women on a super career track than for those on an early career track.[4] Interestingly, for super career track women in medicine, the pattern is the opposite to the pattern for the law professions: after a few years of earnings loss, the earnings of female medical doctors almost overtake those of their male counterparts. This result further suggests that women in professions with more nonlinear wage structures suffer from a larger and more persistent child wage penalty than do women in professions with a more linear wage structure.

Finally, we provide some descriptive evidence of the effect of timing of fertility on gender gap following a childbirth. As discussed above, this is a challenging task in terms of identification. We measure fertility relative to the completion of education to avoid confounding impacts from the age of fertility with differences in work experience. However, we do not solve the issue of endogeneity, which would have required an instrument variables approach. Therefore, these results should be interpreted as descriptive evidence of whether the timing of family formation matters for the earnings loss of the top female earners in these four professions.

We define fertility as delayed if the first childbirth occurs five years or more after the completion of education, whereas the previous results report earning penalties for the first childbirth occurring four years or more into the working career. Figure 12 plots the earnings trajectories for men and women who delay parenthood at least four years versus at least five years into their working career. Note from the descriptive table that the timing of fertility does not differ across professions. For both MBA and law graduates, the initial drop in real wages for women is about the same for the early and late fertility groups, but there is no convergence for the women who give birth later. This result is in line with the findings of [38] for highly educated individuals in Sweden, but it contrasts with the results of earlier studies [39]. For STEM and medicine graduates, there is no difference in terms of wage impacts between the late and early fertility groups. Note that these results are only of a descriptive nature because of the endogeneity problems discussed above.

5.2. Potential Mechanisms

The estimated effect of parenthood on the gender wage gap can be explained by different mechanisms. Career interruptions at the time of childbirth, the mothers' continuing, long-term responsibilities for child rearing, and job changes to more family-friendly firms may affect child penalty. We cannot directly determine which mechanism causes the long-term effect. However, we can study whether mothers change jobs to more family-friendly firms or continue working full time following childbirth.

In Figure 13, we consider a proxy for the family friendliness of a work environment. We follow [11]

[4] In Section 5.2, we provide a more detailed discussion of potential mechanisms.

and define a firm's family friendliness as the share of women with children below 16 years of age in the firm's workforce. Family-friendly policies may attract women with young children and, therefore, the share of female employees with young children may indicate that a firm is family friendly. Our proxy for family friendliness is negatively correlated with earnings, which indicates that women trade off family friendliness against earnings. The outcome is the percentage point change in the firm's family friendliness for men and women relative to the year before childbirth. Men and women are on relatively similar trends prior to the birth of their first child. Figure 13 indicates that changing jobs in the direction of more family-friendly firms is not an important mechanism for three of the four degree areas, with the exception being MBAs. For individuals with a law, STEM, or medical degree, the percentage point change in the firms' family friendliness relative to the year before the first childbirth is relatively stable over time and cannot explain the sharp decrease in women's earnings right after the birth of the first child. For men with an MBA degree, we estimate an increase in the firm's family friendliness relative to the year before first childbirth, which is unlikely to explain the postbirth earnings development. Conversely, for female MBA graduates, we estimate that the firm family friendliness first increases and then decreases four years after the first childbirth. Hence, for women obtaining an MBA, there is some descriptive evidence that switching jobs to more family-friendly firms could be a mechanism explaining the child earnings penalty.

In Figure 14, we consider whether parents work full time, as a proxy for their long-term continuing responsibilities for child rearing. Men and women show the same trend prior to the birth of their first child. Among the early career track mothers, we see a reduction in full-time work for female lawyers of about 20%. This may explain our finding that there is a lack of convergence or even sometimes a decrease in real wage after 10 years for this group. Moreover, there is a similar pattern for women with STEM degrees, but to a much lesser extent.

6. Conclusion

In this paper, we have analyzed the earnings penalty due to parenthood among high-achieving individuals in a set of high-earning professions. In particular, we study the effect of parenthood on the careers of women and men with graduate MBA, law, STEM, or medical degrees. Access to these four study programs is highly competitive, and a substantial share of the individuals in the top of the earnings distribution have one of these graduate degrees. Whereas many MBA and law graduates enter professions with nonlinear wage structures and a less flexible work environment in terms of hours worked and other factors, individuals with a STEM or medical graduate degree are more likely to have professions with linear wage structures and a more flexible work environment [1].

We focus on parents who are on an early career track, i.e., who are among the top earners in their

degree and graduation cohort in the three years after graduation. We find that the gender gap pattern following a childbirth is similar for those with MBA and law degrees, and that it stands in stark contrast to the pattern for STEM and medicine graduates. Our results suggest that women in professions with more nonlinear wage structures, such as those requiring MBA and law degrees, suffer from a larger and more persistent child earnings penalty – of more than 20% after 10 years – in contrast to women in professions with a more linear wage structure, such as STEM and medicine. It should be noted that our results are only indicative of the causal effects of having a child on the gender gap, as the choice of education and profession is endogenous. We do control for important observables by focusing on elite professions and high performers in the labor market in the first three years after graduation, but there may be unobservable differences influencing individuals' selection of different professions. Nevertheless, the child earnings penalty for parents with MBA or law degrees seems to be more sensitive to the timing of fertility and career orientation, than for parents with STEM or medical degrees.

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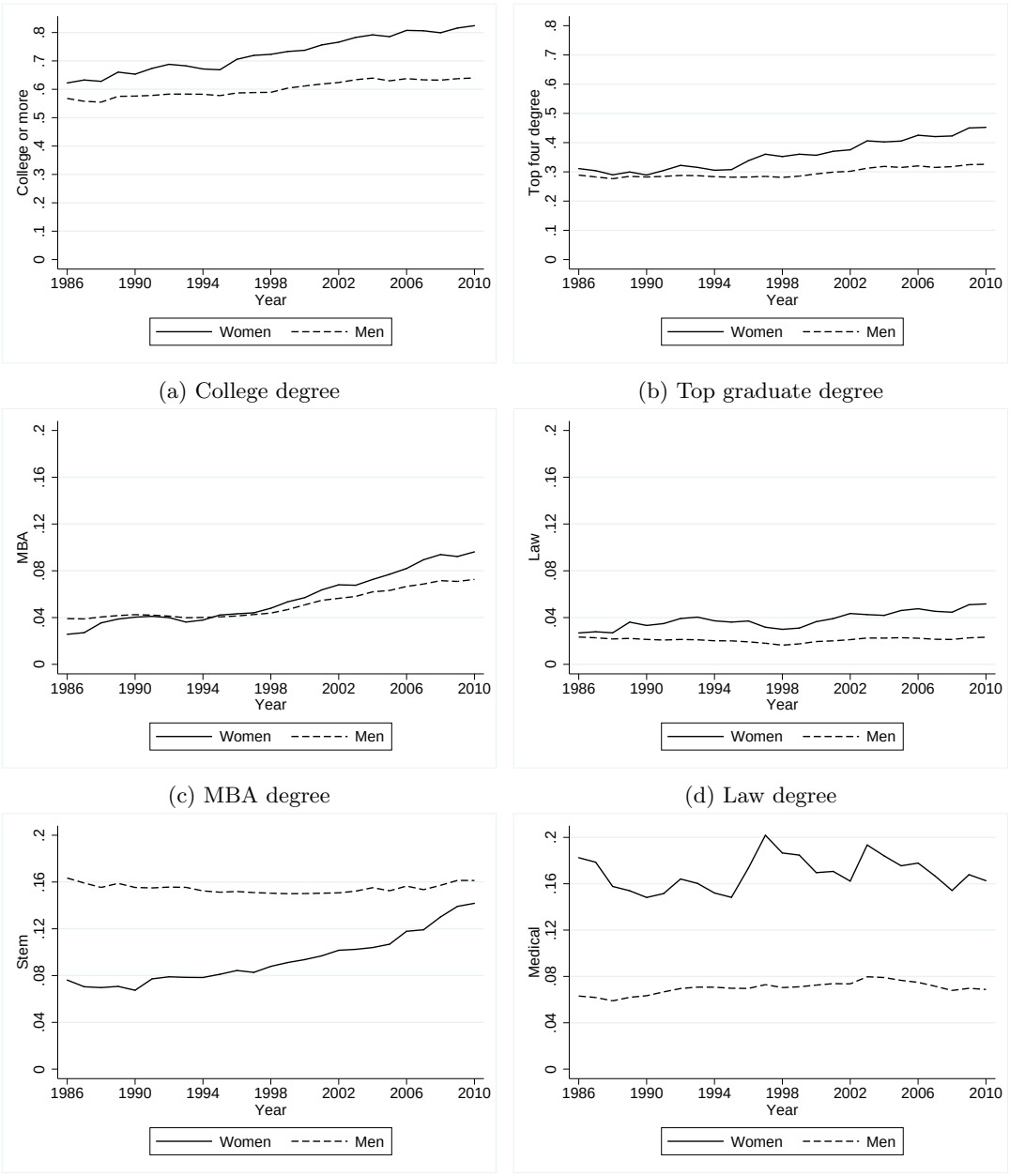
Figures and Tables

(a) Gender gap in earnings

(b) Female representation

Figure 1: Gender gap in earnings in Norway, 1986–2010.

Note: Panel (a) plots the female–male ratio of median yearly earnings from 1985 to 2010. Panel (b) plots the number of men per woman in the top 10%, 5%, and 1% of the earnings distribution from 1985 to 2010. Both panels include earnings data for the working age population (24–64 years).



(a) College degree

(b) Top graduate degree

(c) MBA degree

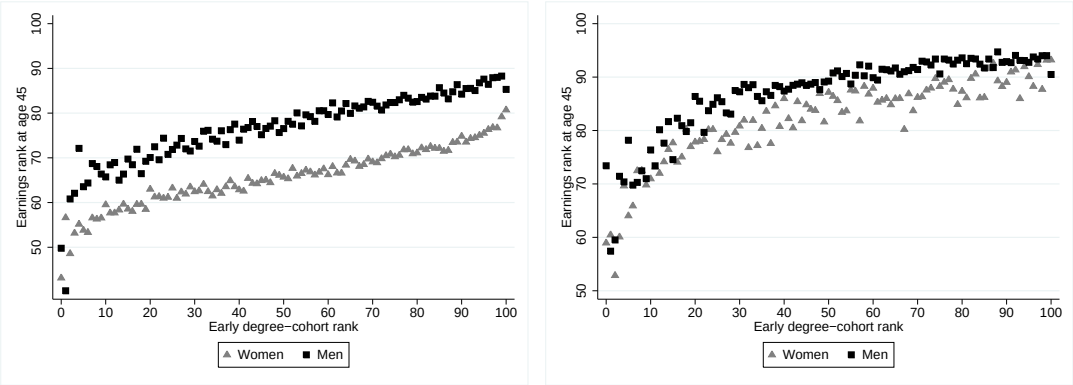
(d) Law degree

(e) STEM degree

(f) Medical degree

Figure 2: Educational attainment among top 5% of earners.

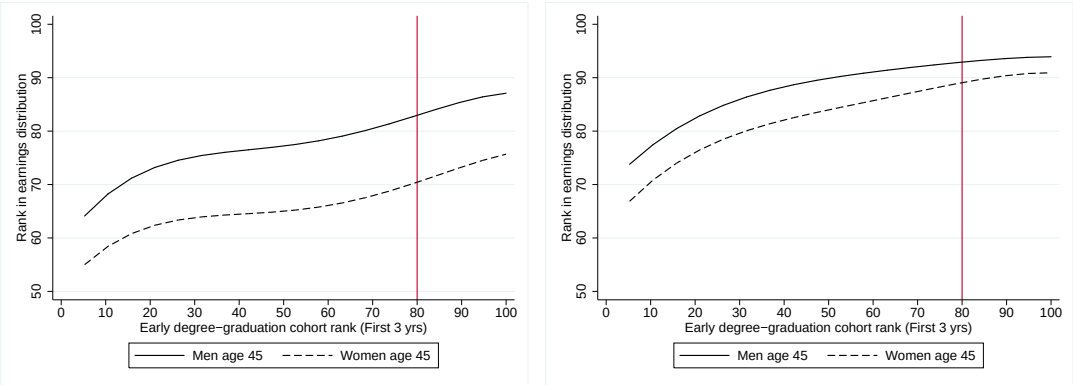
Note: The figures plot the proportion of men and women among the top 5% of earners for each year in the 1986–2010 period with different educational degrees. Panel (a) includes all those with a college or higher degree, panel (b) includes all those with a graduate MBA, law, STEM, or medical degree. Panels (c)–(f) plot each of these four top graduate degrees separately. Note that we use a different scale for panels (a)–(b) than for panels (c)–(f).



(a) College degree (b) Top graduate degree

Figure 3: Association between early career track (degree cohort) and rank in earnings distribution at 45 years of age for men and women.

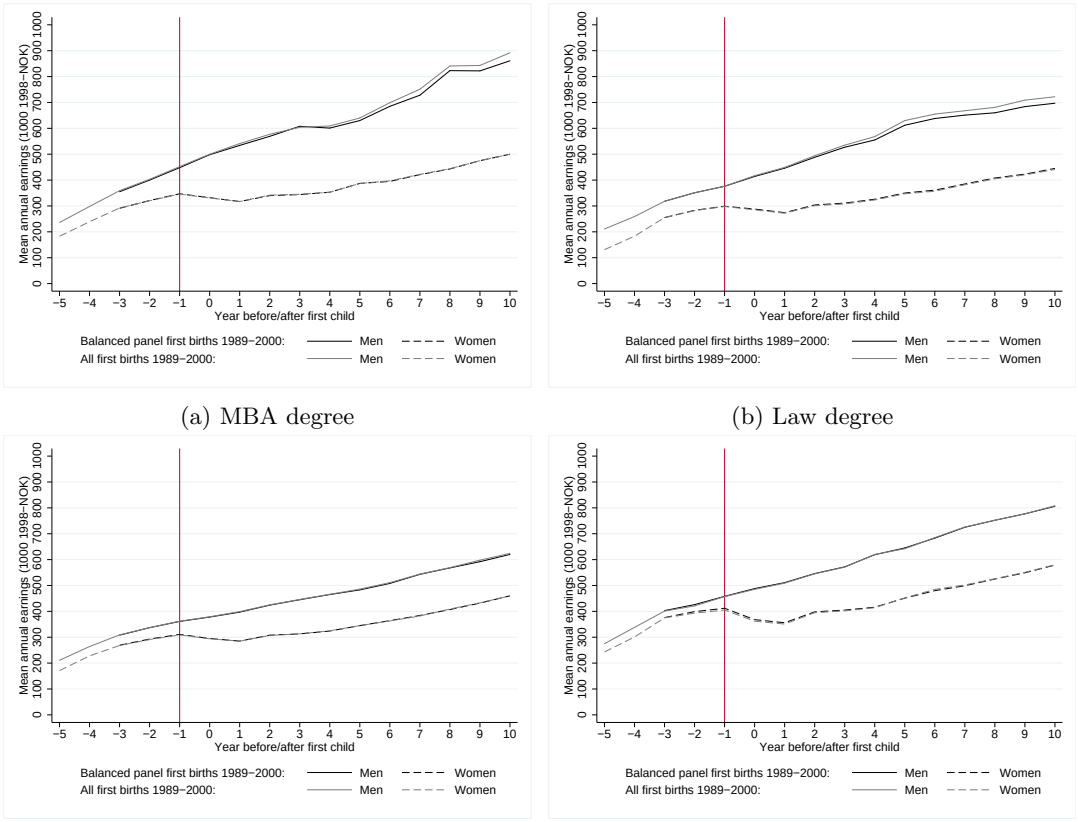
Note: The figures show the association between the earnings rank by degree cohort during the first three years after graduation, and the earnings rank at 45 years of age for men and women with different educational degrees. Panel (a) includes all men and women with a college or higher degree and panel (b) includes all men and women with one of the four top graduate degrees, i.e., an MBA, law, STEM, or medical degree.



(a) College degree (b) Top graduate degree

Figure 4: Marginal effect of an increase in early rank (degree cohort) on rank in earnings distribution (dy/dx), estimated separately for men and women at age 45.

Note: The figures show the marginal effects from OLS regressions of equation 1 for men and women with different educational degrees. Panel (a) includes all men and women with a college or higher degree and panel (b) includes all men and women with one of the four top graduate degrees, i.e., an MBA, law, STEM, or medical degree.



(a) MBA degree

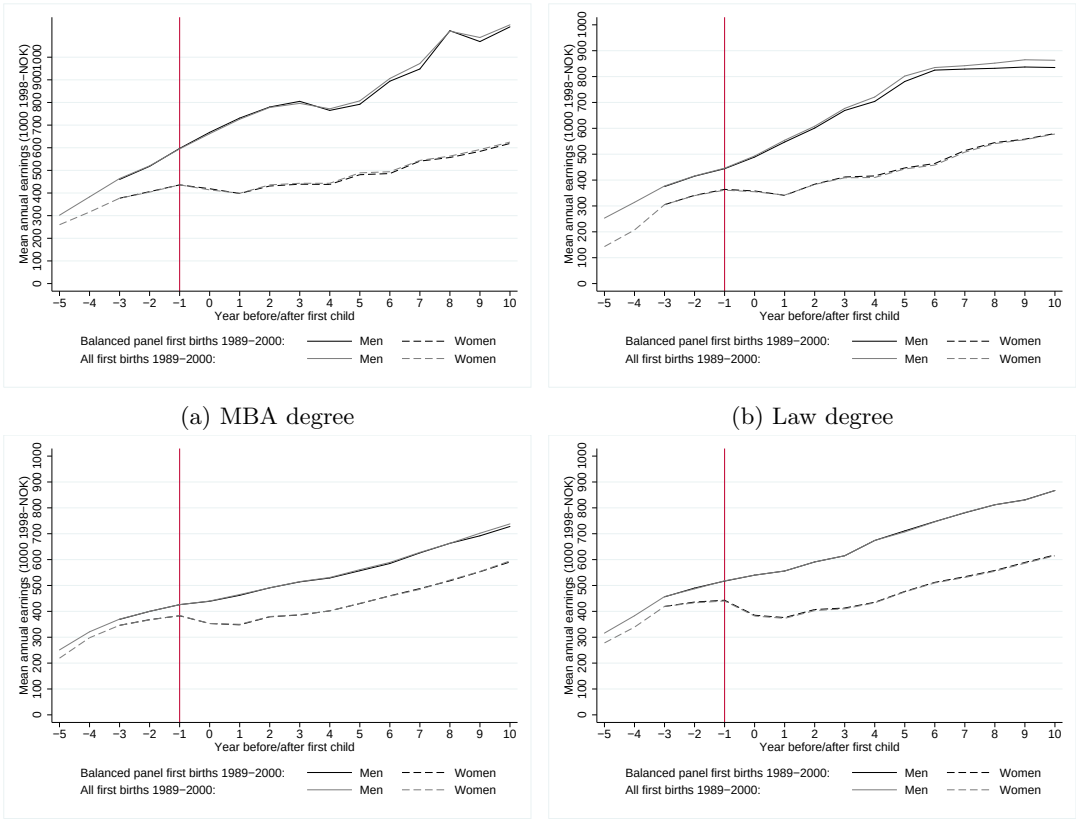
(b) Law degree

(c) STEM degree

(d) Medical degree

Figure 5: Average yearly earnings for men and women relative to the time of their first childbirth.

Note: The figure plots the average yearly earnings for men and women, by different educational degrees, before and after having their first child in the period 1989–2000 (in 1000 NOK in 1998 prices). The black solid and dashed lines show average earnings for a balanced panel of men and women for whom we observe income every year, from three years before the first childbirth to 10 years after. The gray solid and dashed lines show average earnings for all men and women having their first child in the 1989–2000 period, for whom we extend income observations to five years before their first childbirth.



(a) MBA degree

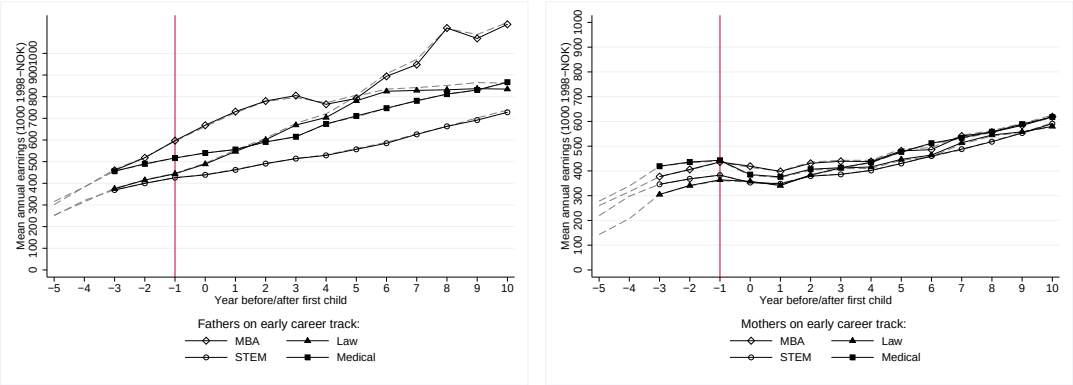
(b) Law degree

(c) STEM degree

(d) Medical degree

Figure 6: Average yearly earnings for men and women on an early career track relative to their first childbirth.

Note: The figure plots the average yearly earnings for men and women on an early career track, by different educational degrees, before and after having their first child in the period 1989–2000 (in 1000 NOK in 1998 prices). The black solid and dashed lines show average earnings for a balanced panel of men and women, for whom we observe income every year, from three years before the first childbirth to 10 years after. The gray solid and dashed lines show average earnings for all men and women having their first child in the 1989–2000 period, for whom we extend income observations to five years before their first childbirth.



(a) Men (b) Women

Figure 7: Average yearly earnings for men and women on an early career track relative to the time of their first childbirth.

Note: The figure plots the average yearly earnings for men and women on an early career track, by different educational degrees, before and after having their first child in the period 1989–2000 (in 1000 NOK in 1998 prices). The black solid and dashed lines show average earnings for a balanced panel of men and women, for whom we observe income every year, from three years before the first childbirth to 10 years after. The gray solid and dashed lines show average earnings for all men and women having their first child in the 1989–2000 period, for whom we extend income observations to five years before their first childbirth.

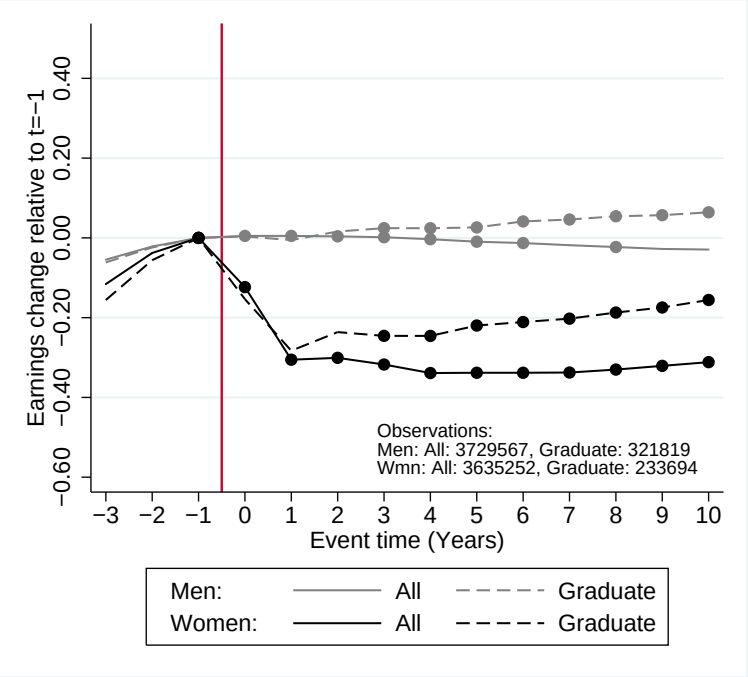
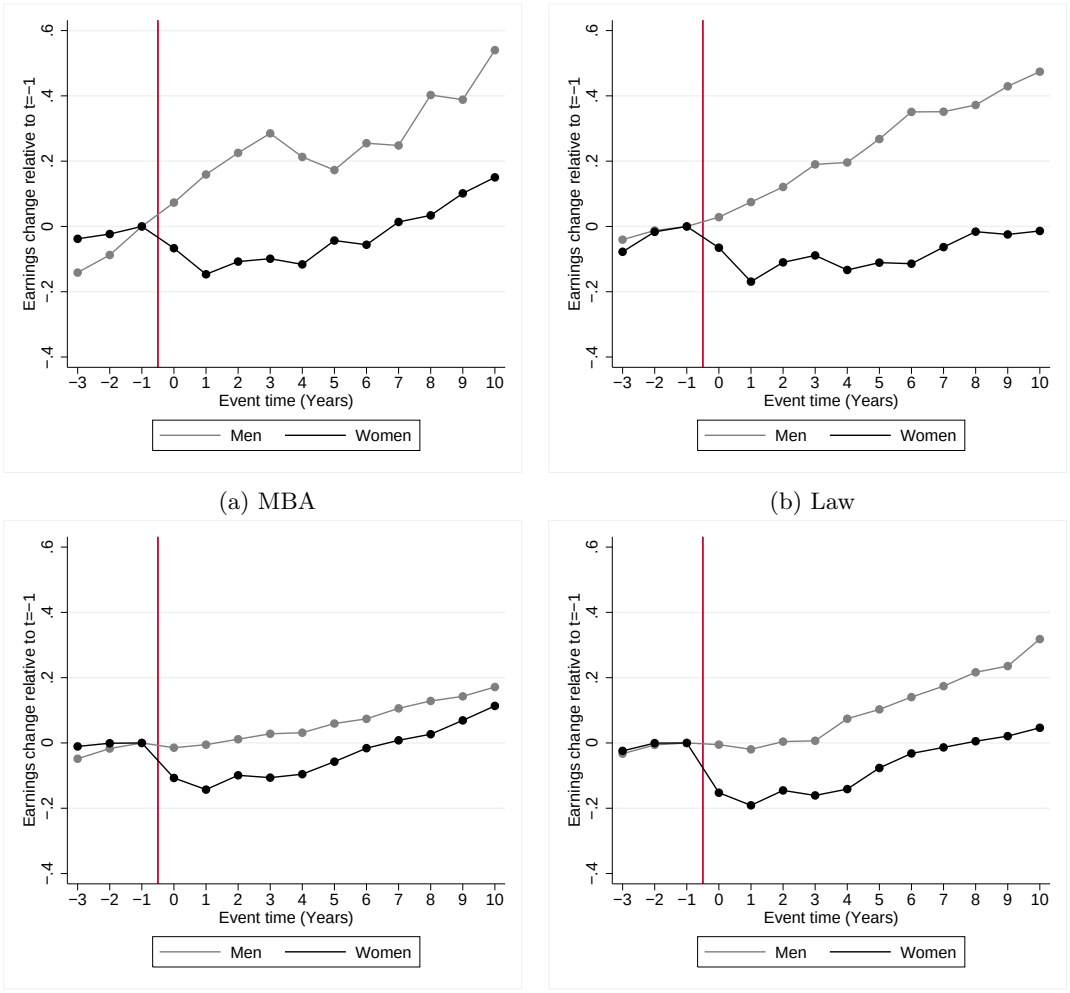


Figure 8: Change in earnings because of first childbirth.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome, when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run the regressions separately for all individuals and for individuals with a graduate degree.



(a) MBA

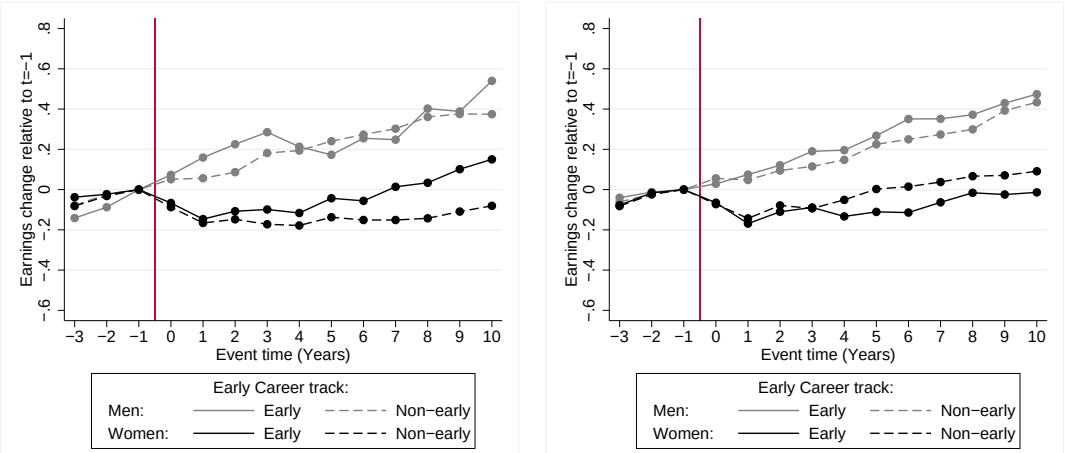
(b) Law

(c) STEM

(d) Medical

Figure 9: Change in earnings around time of first childbirth for parents on an early career track.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run the regressions separately for all degree types for individuals who have either an MBA, law, STEM, or medical degree and who are on an early career track (i.e., in the top 20% of earners within their degree cohort in their early career) and who became parents four years or more after completion of their degree.



(a) MBA

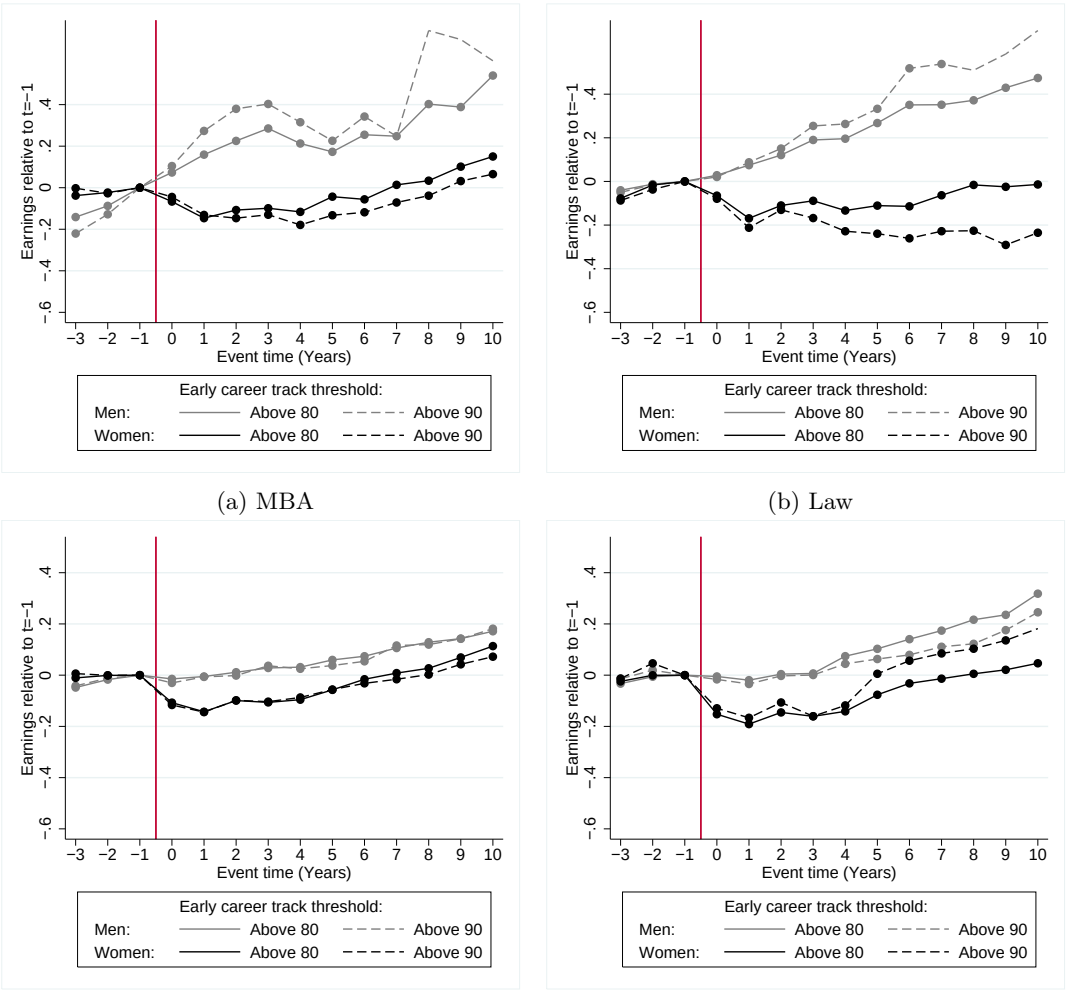
(b) Law

(c) STEM

(d) Medical

Figure 10: Change in earnings around the time of first childbirth for parents on early and non-early career tracks.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run separate regressions for all individuals with either an MBA, law, STEM, or medical degree who became parents before or after 30 years of age based on whether they are on an early career track (i.e., the top 20% earners within their degree cohort who are in their early career) or not (those below the 20% top earners with respect to earnings within their degree cohort in their early career).



(a) MBA

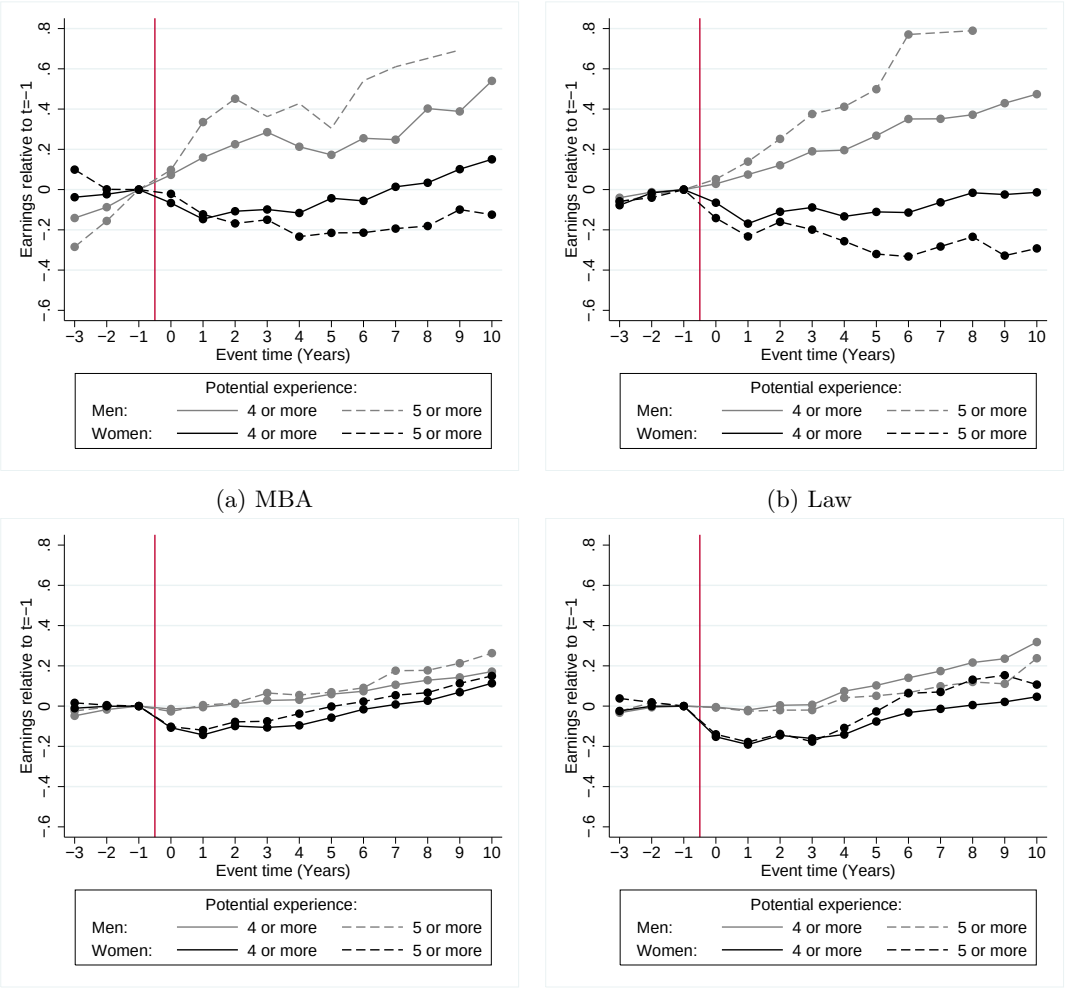
(b) Law

(c) STEM

(d) Medical

Figure 11: Change in earnings around the time of first childbirth for parents on early and super career tracks.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run separate regressions for all individuals with either an MBA, law, STEM, or medical degree who became parents before or after 30 years of age, depending on whether they are on an early career track (the top 20% of earnings within their degree cohort in their early career) or on a super career track (the top 10% of earnings within their degree cohort in their early career).



(a) MBA

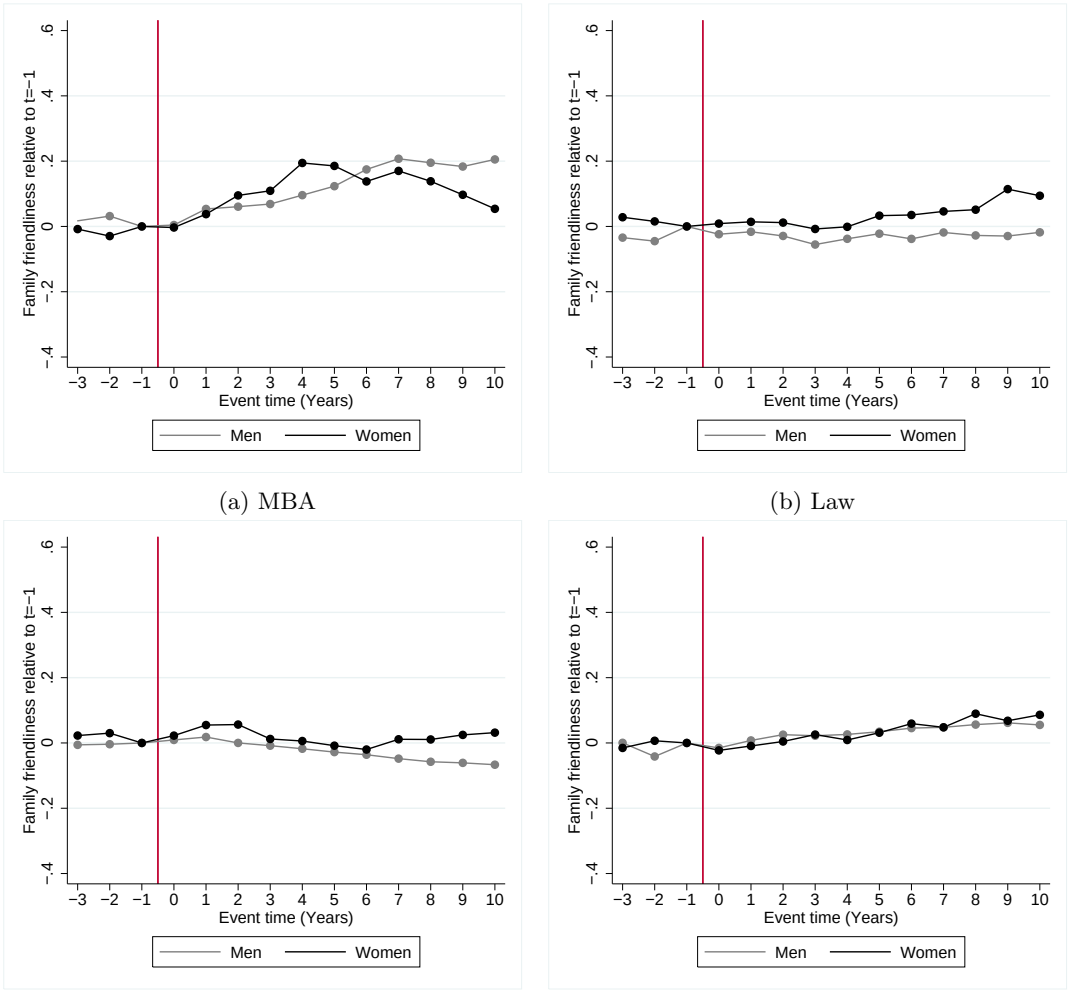
(b) Law

(c) STEM

(d) Medical

Figure 12: Change in earnings around the time of first childbirth for parents on an early career track, who became parents either four years or more than four years, or five years or more than five years, after the completion of their degree.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run separate regressions for all individuals with an MBA, law, STEM, or medical degree who are on an early career track (i.e., in the top 20% of earners within their degree cohort in their early career), depending on whether they became parents four years, five years, or more than five years, after completing their degree.



(a) MBA

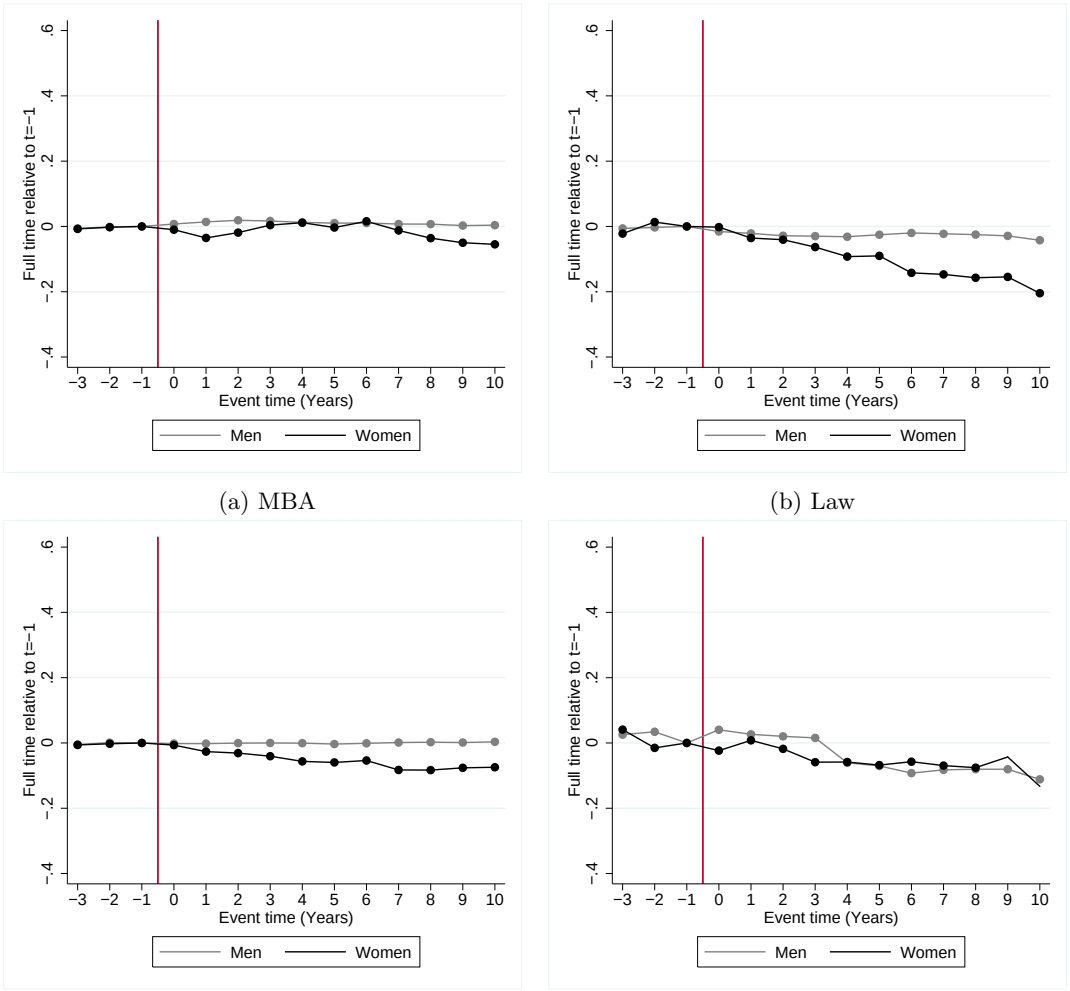
(b) Law

(c) STEM

(d) Medical

Figure 13: Change in the share of women with young children in the firm around the time of first childbirth for parents on an early career track.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run the regressions separately for all individuals with either an MBA, law, STEM, or medical degree who are on an early career track (the top 20% of earners within their degree cohort in their early career) and who became parents four years or more after completing their degree.



(a) MBA

(b) Law

(c) STEM

(d) Medical

Figure 14: Change in the likelihood of working full time around the time of first childbirth for parents on an early career track.

Note: The figure shows the estimated coefficients of the event time dummies in equation (2) as a fraction of the predicted outcome when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The dots indicate that the event time effect is significant at the 5% level. The samples include men and women who became first-time parents between 1989 and 2000, for whom we observe earnings three years prior to childbirth and 10 years after. We run the regressions separately for all individuals with either an MBA, law, STEM, or medical degree who are on an early career track (among the top 20% of earners within their degree cohort in their early career) and who became parents four years or more after completing their degree.

Table 1: Parent characteristics at first child birth $(t-1)$.

	Top-4 Graduate degrees					
	All		Early career		Early career and 4 years experience	
	Men	Women	Men	Women	Men	Women
Rank in earnings distribution	73.35	70.10	78.28	84.07	94.49	92.87
	(26.46)	(25.80)	(25.88)	(21.26)	(7.64)	(8.42)
Share top-10 earners	0.40	0.28	0.58	0.65	0.90	0.83
	(0.49)	(0.45)	(0.49)	(0.48)	(0.29)	(0.38)
Share top-5 earners	0.22	0.12	0.35	0.33	0.62	0.48
	(0.41)	(0.32)	(0.48)	(0.47)	(0.48)	(0.50)
Share top-1 earners	0.03	0.01	0.06	0.03	0.12	0.04
	(0.17)	(0.08)	(0.24)	(0.16)	(0.32)	(0.19)
Earnings (1000 1998-NOK)	275	237	328	335	468	401
	(240)	(142)	(322)	(153)	(409)	(122)
Work full time	0.90	0.87	0.90	0.92	0.98	0.98
	(0.30)	(0.34)	(0.29)	(0.27)	(0.12)	(0.14)
Family friendly firm	0.22	0.28	0.20	0.25	0.20	0.25
	(0.14)	(0.16)	(0.14)	(0.16)	(0.14)	(0.15)
Age at parenthood	30.30	29.29	30.22	30.02	32.79	31.79
	(3.88)	(3.48)	(3.79)	(3.48)	(2.92)	(2.76)
Age at graduation	25.93	25.16	25.89	25.42	26.46	25.92
	(3.07)	(2.99)	(3.15)	(2.90)	(2.08)	(2.03)
Years since graduation	3.05	2.30	2.61	2.90	6.39	5.90
	(4.39)	(4.49)	(4.51)	(4.76)	(2.35)	(2.08)
Parent after graduation	0.76	0.76	0.73	0.82	1.00	1.00
	(0.43)	(0.43)	(0.44)	(0.38)	(0.00)	(0.00)
Number of children (t=10)	2.28	2.25	2.30	2.20	2.20	2.14
	(0.74)	(0.72)	(0.73)	(0.69)	(0.69)	(0.67)
N individuals	17065	9682	6846	1786	3042	961

Note: The table include all mothers and fathers with a MBA, law, STEM or medical degree having their first child between 1989 and 2000, who we observe every year between three years before and ten years after their first child is born. The sample is also restricted to all mothers and fathers on an early career that became parents four years or later after their graduation year. Finally, we exclude individuals for whom the within person standard deviation of annual earnings is more than two times the within person mean of annual earnings over the 14 year long window around first child birth.

Table 2: Distribution of timing of graduation and parenthood across top-4 degrees.

	Mean	P25	P50	P75	P90
MBA (N=5186, female share=0.4)					
Age at graduation	27.0	25	26	28	31
Age at parenthood	29.7	27	30	32	34
Parenthood relative to graduation	2.7	1	3	5	8
Law (N=4131, female share=0.5)					
Age at graduation	28.0	26	27	29	32
Age at parenthood	29.7	27	30	32	35
Parenthood relative to graduation	1.7	-1	2	5	7
STEM (N=14406, female share=0.3)					
Age at graduation	26.7	25	26	28	30
Age at parenthood	30.0	28	30	32	35
Parenthood relative to graduation	3.3	1	3	6	8
Medical (N=3079, female share=0.5)					
Age at graduation	28.3	26	28	29	32
Age at parenthood	30.3	28	30	33	36
Parenthood relative to graduation	2.0	-1	2	5	7
Total (N=26802, female share=0.4)					
Age at graduation	27.2	25	26	28	31
Age at parenthood	29.9	28	30	32	35
Parenthood relative to graduation	2.8	1	3	5	8

Note: The table include all mothers and fathers with a MBA, law, STEM or medical degree having their first child between 1989 and 2000, who we observe every year between three years before and ten years after their first child is born.

Table 3: Parent characteristics at first child birth $(t-1)$ for the main regression sample: Early career men and women on top-four degrees with four years experience or more at parenthood

	MBA		Law		STEM		Medical	
	Men	Women	Men	Women	Men	Women	Men	Women
Earnings (1000 1998-NOK)	597	437	444	365	426	383	517	444
	(874)	(130)	(223)	(164)	(159)	(95)	(159)	(111)
Work full time	0.98	0.99	0.99	0.98	0.99	1.00	0.93	0.92
	(0.14)	(0.11)	(0.12)	(0.12)	(0.08)	(0.05)	(0.26)	(0.26)
Family friendly firm	0.19	0.21	0.28	0.29	0.14	0.17	0.49	0.50
	(0.10)	(0.10)	(0.12)	(0.13)	(0.08)	(0.08)	(0.13)	(0.11)
Age at parenthood	32.57	31.53	33.52	31.76	32.56	31.22	34.00	33.58
	(2.88)	(2.58)	(2.93)	(2.32)	(2.84)	(2.47)	(3.12)	(3.23)
Age at graduation	26.28	25.54	27.17	26.36	26.18	25.34	27.85	27.41
	(2.15)	(1.71)	(1.86)	(1.58)	(1.92)	(1.84)	(2.45)	(2.35)
Number of children (t=10)	2.22	2.11	2.15	2.05	2.19	2.19	2.22	2.15
	(0.67)	(0.58)	(0.68)	(0.71)	(0.68)	(0.65)	(0.79)	(0.75)
N individuals	557	183	343	152	1874	451	268	175

Note: The main regression sample is restricted to include all mothers and fathers on an early career, i.e., who have earnings in the top-20 percentile one of the three first years after completing their degree. The sample is also restricted to mothers and fathers with a MBA, law, STEM or medical degree having their first child between 1989 and 2000, who we observe every year between three years before and ten years after their first child is born. In addition, only individuals who have their first child four years or later after their graduation year are included in the main sample. In addition, we exclude individuals for whom the within-person standard deviation of annual earnings is more than two times the within-person mean of annual earnings over the 14 years long window around first childbirth.

Table 4: Average change over the ten-year post parenthood horizon relative to $t-1$.

MBA		Law		STEM		Medical	
Men	Women	Men	Women	Men	Women	Men	Women
Panel A: Pre-tax earnings							
0.289**	-0.027	0.283*	-0.084	0.075	-0.030	0.125	-0.069
(0.147)	(0.094)	(0.159)	(0.052)	(0.058)	(0.080)	(0.108)	(0.082)
Panel B: Family friendly firm							
0.137**	0.122**	-0.029**	0.039	-0.030	0.018	0.038**	0.041
(0.061)	(0.051)	(0.012)	(0.038)	(0.027)	(0.023)	(0.017)	(0.033)
Panel C: Work full time							
0.010**	-0.018	-0.028***	-0.113**	0.000	-0.058***	-0.052	-0.057
(0.005)	(0.024)	(0.006)	(0.055)	(0.002)	(0.020)	(0.049)	(0.336)

Note: Standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix A.

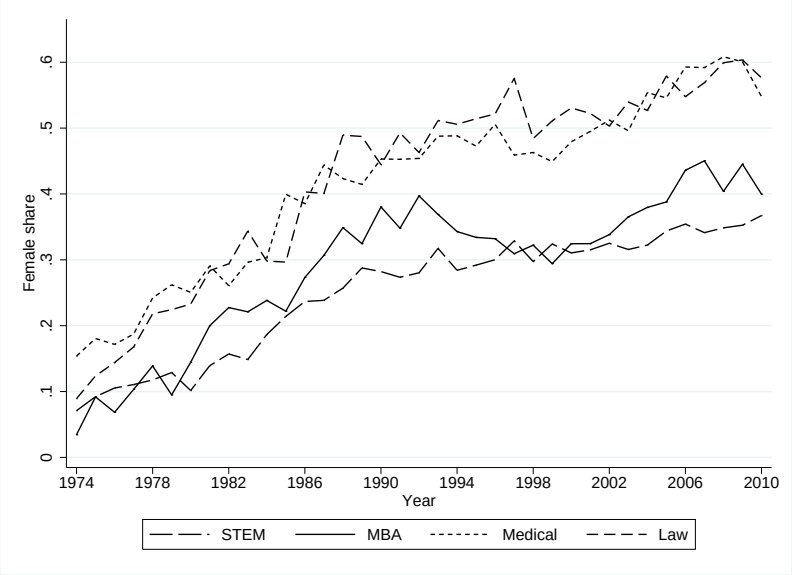


Figure A.15: Female share of the major top-earning degrees.

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NHH

Norges Handelshøyskole

Norwegian School of Economics

NHH
Helleveien 30
NO-5045 Bergen
Norway

Tlf/Tel: +47 55 95 90 00
Faks/Fax: +47 55 95 91 00
nhh.postmottak@nhh.no
www.nhh.no