Parenthood and the Gender Gap in Commuting

BY Aline Bütikofer, René Karadakic and Alexander Willén

DISCUSSION PAPER

Institutt for samfunnsøkonomi
Department of Economics

SAM 11/2023
ISSN: 0804-6824
May 2023

Parenthood and the Gender Gap in Commuting

Aline Bütikofer, René Karadakic and Alexander Willén*

May 25, 2023

Abstract

Childbirth increases the opportunity cost of commuting and makes it difficult for both parents to work far away from home. Using detailed Norwegian register data, we show that the commuting patterns of men and women diverge immediately after childbirth and that those differences persist for at least a decade. We show that this divergence in commuting exposes mothers to more concentrated labor markets with fewer job opportunities and establishments of lower quality. These findings help explain the child penalty documented in the prior literature and have important implications for the design of policies seeking to address the remaining gender wage gap.

JEL Classification: J16, J22, J42, J61
Keywords: Commuting, Gender Wage Gap, Parenthood

*Bütikofer: aline.buetikofer@nhh.no; Karadakic: rene.karadakic@nhh.no; Willén: alexander.willen@nhh.no. Address all authors: Department of Economics, Norwegian School of Economics, Helleveien 30, 5045 Bergen, Norway. The authors gratefully acknowledge comments by Kjell G. Salvanes, and Katrine V. Løken, seminar participants at the Norwegian School of Economics and participants at the EALE, EEA, ESPE, and UEA meetings. This work was partially supported by the Research Council of Norway through project No. 275800 and through its Centres of Excellence Scheme, FAIR project No. 262675.

1 Introduction

There has been a clear reduction in the gender pay gap over the past several decades. However, labor market differences between men and women remain substantial, in particular among individuals in high-paying occupations (see Blau and Kahn, 2017). As females have surpassed males in terms of educational attainment, and closed the work experience gap in most OECD countries, these remaining differences cannot be explained by differences in traditional human capital inputs. The causes of the remaining gender differences in labor market outcomes, therefore, remain actively debated.

While a growing body of work discusses the importance of gender differences in psychological traits such as the willingness to compete (Azmat, Calsamiglia and Iriberri, 2016; Niederle and Vesterlund, 2007), another strand of literature highlights the importance of gender differences in preferences for job amenities and characteristics. Among the amenities that women value more than men are, for example, flexible work arrangements (Goldin and Katz, 2016; Mas and Pallais, 2017), family friendliness of establishments (Hotz, Johansson and Karimi, 2017), and commuting distance (Le Barbanchon, Rathelot and Roulet, 2019). Hence, women might be willing to forgo higher wages for certain job amenities and are therefore less likely to benefit from large bonuses or local labor market expansions (Bütikofer, Løken and Willen, 2019). Gender differences in the career cost of children represent another likely cause for the persistent gender pay gap (Adda, Dustmann and Stevens, 2017; Bertrand, Goldin and Katz, 2010). A growing number of studies shows that childbirth leads to significant long-term declines in earnings for mothers but not fathers (Angelov, Johansson and Lindahl, 2016; Kleven, Landais and Søgaard, 2019; Kuziemko et al., 2018).[1] While some of the child penalty appears to emerge from new mothers switching to more family-friendly employers and falling behind in occupational rank, these child penalties might also operate through gender differences in the preferences and opportunity costs of commuting immediately following childbirth.

In this paper, we extend the literature on child penalties by studying to what extent parenthood affects the commuting behavior of mothers and fathers. The rationale underlying our analysis is that childbirth increases the opportunity cost of commuting and makes it difficult for both parents to work far away from home. This is especially the case as the morning and evening commutes usually coincide with periods of the day during which the child needs to be tended to. A decline in the willingness to commute will

[1] This phenomenon is true even after accounting for the potential endogenous timing of childbirth (Bensnes, Huitfeldt and Leuven, 2020).

reduce the number of available jobs and expose the individual to a higher concentration of firms. This will not only increase the likelihood of job mismatch, but it may also push wages down due to increased exposure to concentrated labor markets and monopsony power (Dodini et al., 2020).

The increased opportunity cost of commuting may be much higher for mothers than for fathers, as childcare and housework responsibilities tend to fall disproportionately on mothers (see Ramey, 2009, for an overview). In addition, recent work in labor economics has documented a significant trade-off between commuting and earnings and revealed that there are significant gender differences in the willingness to commute – in particular for mothers of young children (Le Barbanchon, Rathelot and Roulet, 2019; Petrongolo and Ronchi, 2020).

To perform our analysis, we follow the pre-existing literature and adopt a quasi-experimental approach based on event studies around the birth of the first child (see, e.g., Kleven, Landais and Søgaard, 2019). We exploit rich Norwegian register data to identify all first-time parents between the years 1990 and 2000 and their residence and workplace postcodes. We follow these parents four years before and ten years after the year of childbirth. Using Microsoft's BING Distance Matrix API service to measure the driving distance between residence and workplace, we investigate changes in commuting distance and commuting probability around the birth of the first child for mothers relative to fathers.

Examining the relationship between childbirth and parental commuting behavior in Norway is particularly interesting. First, while the country often is portrayed as one of the most gender-equal countries in the world, the gender gap in commuting is similar to the OECD average, and there has been little gender convergence over the past decade. Specifically, between 1992 and 2019 the gender gap in commuting only decreased by 6 percentage points, from 41 to 35 percent. Second, similar to other Western countries, Norway has seen an increase in the average commuting time over the past decades, potentially augmenting the labor market implications of the observed gender difference in commuting. Specifically, large transportation surveys show that the average commuting distance in Norway has doubled since 1990, from 10 to 20 kilometers (Statens vegvesen, 2019; Hjorthol, Øystein Engebretsen and Uteng, 2014; Stangeby, 1987). Finally, the rich Norwegian employer-employee data, and therefore data on commuting distances, labor market concentration, and establishment quality and characteristics, can be linked to birth records as far back as the early 1980s. Combined with detailed individual-level data on employment, earnings, occupations, and family composition, this enables us to overcome several of the data limitations that have limited prior research from examining

this question.

Our analysis generates three sets of key results. First, similar to the existing literature, we confirm the presence of large child penalties in earnings and hourly wages. That is, earnings of men and women trend similarly prior to the birth of the first child, quickly diverge after childbirth, and do not converge for at least the first ten years post-childbirth. Second, using the driving distance between residence and workplace, we reveal a similar pattern with respect to commuting. Specifically, the commuting patterns of men and women evolve similarly prior to the birth of the first child, quickly diverge after childbirth, and do not converge for at least the first ten years after childbirth. Third, we show that this divergence in commuting distance exposes mothers to more concentrated labor markets with fewer job opportunities and lower-quality employers. Moreover, we provide suggestive evidence on the link between the commuting penalty and the earnings penalty by examining the earnings penalty effect stratified by the size of the commuting penalty experienced by the individual. Overall, the results demonstrate that those individuals who experienced the smallest commuting penalty also experienced fewer adverse job opportunity effects, smaller adverse establishment quality effects, a smaller change in labor market concentration, and a significantly smaller child earnings penalty. These results provide strong suggestive evidence that changes in the commuting behavior of mothers at the onset of childbirth is closely linked to the motherhood earnings penalty documented in the prior literature.

This paper contributes to the rich and growing literature on gender differences in labor market outcomes (see Bertrand, 2011; Goldin, 2014; Olivetti and Petrongolo, 2016; Blau and Kahn, 2017). In particular, the paper bridges two strands of the literature on the gender wage gap. First, we contribute to the growing evidence on the presence of child penalties for mothers by uncovering a new mechanism—gender differences in commuting—through which these child penalties may operate (see, e.g., Angelov, Johansson and Lindahl, 2016; Kleven, Landais and Søgaard, 2019; Kuziemko et al., 2018). That is, we show that sharp changes in the commuting behavior of women relative to men after childbirth may explain a significant amount of the child penalty documented in the previous literature. Second, we add to the burgeoning literature that relates gender differences in willingness to commute to the gender wage gap (Le Barbanchon, Rathelot and Roulet, 2019; Petrongolo and Ronchi, 2020). In particular, we show that childbirth greatly amplifies gender differences in commuting behavior, exposing mothers to a smaller and more concentrated labor market and augmenting the gender wage gap. These findings have important policy implications for how we design maternal protection and family policies and stress the importance of carefully-designed transporta-

tion infrastructure for eliminating gender differences in labor market outcomes among parents.

The rest of this paper proceeds as follows: In Section 2, we describe the institutional background. In Section 3, we introduce the data and provide variable definitions. In Section 4, we present our empirical estimation approach and discuss the assumptions underlying this approach. In Section 5, we show the results from our analysis. Section 6 concludes.

2 Institutional Background

Similar to other Nordic countries, Norway has a generous welfare system with comprehensive public social insurance. Family policies play a central role in the country's social safety net. These policies serve to protect parents and children from adverse shocks as well as ensure a gender-balanced division of labor within the household. While, for example, cash benefits to poor families aim to shield parents from adverse shocks, an increasing number of maternal protection and paternity leave policies encourage mothers to participate in the labor market and fathers to get further involved with childcare. Among such policies are subsidized and broadly available childcare and after-school programs (Black et al., 2014; Havnes and Mogstad, 2015), generous maternity leave policies with employment protection (Carneiro, Løken and Salvanes, 2015; Dahl et al., 2016), and non-transferable paternal leave (Dahl, Løken and Mogstad, 2014). Moreover, during recent decades, Norway has also introduced laws protecting women against discriminatory employment practices and introduced gender quotas for board representation at public limited liability companies (Bertrand et al., 2019).

Gender differences in labor market outcomes have greatly converged during the past decades across all Nordic countries (Ahrsjö, Karadakic and Rasmussen, 2023). For example, men and women have almost identical labor market participation rates and most women return to the labor force after the birth of a child. Nevertheless, there is still a non-negligible and persistent wage difference between men and women in Norway; the median annual earnings of women is only 75 percent of the median annual earnings of men (Bütikofer, Jensen and Salvanes, 2018). In addition, females are much more likely to work part-time than men (36.8 percent compared to 12.5 percent), more likely to work in the public sector (70.1 percent of public employees are females), and less likely to hold leadership positions (35.3 percent of individuals in leadership positions are females) (Riise, Willage and Willen, 2020).[2] Finally, women in the Nordic countries

[2]In Figure B5 we show the shares of women and men in different industries defined following the

also face a substantial child penalty when becoming mothers, though these penalties are somewhat smaller than those in the US and the UK (Kleven et al., 2019). Thus, while Norway has come further than most countries in achieving gender equality in the labor market, several challenges remain.

Labor markets in the Nordic countries have grown in size during the past decades. In Norway, the average commuting distance and the likelihood of commuting across municipalities are both trending upward. For example, over the past thirty years, the daily commuting distance in Norway has doubled and currently more than 33 percent of all workers commute across municipalities. Most of these individuals work across municipalities but within the same aggregated labor market.[3] However, the number of long-distance commuters is also on the rise. About 70 percent of all cross-municipality commuters commute by car. This share is somewhat smaller for commuters in and around the largest cities, where it is relatively more common to commute by bus and train. Commuters are predominantly male and work in the private sector (see Statens vegvesen, 2019; Hjorthol, Øystein Engebretsen and Uteng, 2014; Stangeby, 1987). Understanding how these trends in commuting behavior interact with the child penalties mothers face after childbirth, may help us better understand which policy tools that can be utilized to further close the gender pay gap.

3 Data and Definitions

3.1 Norwegian Register Data

Our primary data come from matched employer-employee registers covering the universe of Norwegian residents between 1986 and 2010. These data contain detailed information on every individual's employer and enable us to identify both place of work as well as place of residence. A unique personal identifier enables us to merge this data with information from various administrative registers, such as the education register, the family register, the earnings register, and the social security register. The longitudinal nature of the data enables us to follow individuals over time, and unique family identifiers enable us to link parents and children.

Our data provide detailed earnings and employment information for each individual

Norwegian adoption of one-digit ISIC codes (Statistics Norway, 1983). This figure shows that a large share of women works in the sector *Community, Social, and Personal Services* which covers public sector employment, teaching, and the healthcare sector.

[3]Labor markets are aggregations of municipalities based on commuting patterns. The 46 local labor markets in Norway cover the entire country and consist on average of nine municipalities (Bhuller, 2009).

in the country. Labor earnings are measured as annual pre-tax labor income and include regular labor income, income from self-employment, and benefits received while on sick leave, being unemployed, or on parental leave. The data further contain information on hours worked in three broad categories (0–19h, 20–29h, 30+h per week). We use this information to construct a proxy for hourly earnings by dividing labor earnings by the median value in the hours worked interval. For individuals in the 30+h interval, we assume they are full-time workers and assign them a value of 37.5h per week. Employment status is defined based on the individual's status in the labor register. The matched employer-employee data additionally provides unique establishment identifiers and industry affiliations, which we use to construct measures of labor market concentration, establishment quality, and industry earnings premia. Education is measured as the normalized length of the highest attained education one year prior to becoming a first-time parent. In addition to labor market characteristics, the data provide us with a broad set of demographic and socioeconomic characteristics.

In terms of sample construction, we start by identifying all individuals who became first-time parents between 1990 and 2000. We then restrict the sample to parents who are observed every year between four years before having a child and ten years after. This is similar to existing literature on the child penalty, and enables us to construct a balanced panel of parents over a long period of time (e.g., Bütikofer, Jensen and Salvanes, 2018). We do not impose any restrictions on the relationship status of the parents. Similar to Petrongolo and Ronchi (2020), our main analysis sample requires individuals to be in employment for at least 8 out of 15 years around the birth of their child. This yields a total sample of 154,091 first-time mothers and 193,219 first-time fathers spanning the period from 1986 to 2010. Summary statistics for our samples are provided in Table B1.

3.2 Commuting Behavior

This paper examines the impact of parenthood on the commuting behavior of mothers and fathers. Crucial to this analysis is the ability to observe both the individual's place of residence as well as the individual's place of work. For the majority of our data, this is available at the postcode level. We observe 5,028 unique postcodes in our sample and, on average about 115 individuals live within a postcode in 1995.

It should be noted that some postcodes were discontinued between 1980 and today, and we therefore cannot construct geo-coded postcodes for all individuals and firms at all times. Moreover, we do not observe all postcodes for large companies with multiple plants within a municipality. When postcode information is missing, we rely on

municipality-level measures.[4]

We focus on two commuting measures: (i) the probability of commuting to work and (ii) commuting distance. The first measure is how Statistics Norway defines commuters. That is, commuters in our sample are defined as individuals whose workplaces are located in municipalities different from their municipalities of residence. Since previous literature has found that commuting distance is inversely related to job satisfaction and subjective well-being (Chatterjee et al., 2020), we also consider commuting distance. As discussed above, we rely on an aggregate municipality measure if geo-coded postcodes are not available. This aggregate measure cannot identify within-municipality commuting. Hence, we abstract from within-municipality commuters, something that will attenuate our results, thus biasing them toward zero. We set commuting distance to zero for individuals who do not fall in our commuting definition.

Exploiting information on the longitude and latitude of each postcode from data collected by Bolstad (2020), we use Microsoft's BING Distance Matrix API service to construct distance measures of each individual's commute. This measure is based on the distance between the center of the workplace postcode and the residence postcode. For instances in which we do not observe postcodes and have to rely on municipality information instead, we set coordinates to the respective administrative center of the municipality. The driving distance we measure is based on current infrastructure and assumes that the individual commutes by car as about 70 percent of people in Norway commute by car to work (Statens vegvesen, 2019; Vågane, Brechan and Hjorthol, 2011; Stangeby, 1987).

3.3 Survey Data

In addition to the Norwegian administrative data, we also provide additional evidence on commuting behavior from a large representative survey we ran in June of 2021. The survey was designed to capture how men and women trade off commuting with respect to different types of job amenities. The sample consists of a representative group of Norwegians aged between 25 and 50.[5] In addition to information on demographics, family status, and job characteristics, the survey includes several questions designed to understand how men and women trade off their commuting time with other types of job amenities, such as their salary, flexible work schedules, telecommuting, and career development. For this paper, we will only focus on the commuting time and salary

[4]Municipalities are harmonized to the 2019 structure with 422 municipalities.

[5]Summary statistics for the most important variables and characteristics in the survey are presented in Appendix Table B2.

trade-off. The questions designed to capture these trade-offs were inspired by questions presented in Mas and Pallais (2019). The main survey question which captured the commuting/salary trade-off is the following:

Imagine that you are applying to a new job in the same line of work as your last job, and you are offered two positions. Both positions are identical to your last job in all ways, and to each other, except in terms of commuting time and how much they pay. If you currently do not have a job, think about the last job you had.

- ***P1:*** *Commuting time is 20 minutes (one way), the job pays the same as your last job*
- ***P2:*** *Commuting time is 40 minutes (one way), the job pays X more than your previous job.*

In the above example, X is replaced with a monetary amount (in NOK). This monetary amount is calculated as a random percentage of their monthly reported salary, $\gamma \in [10, 20, 30, 40, 50, 60]$. The idea behind this approach is that we want to understand how willingness to trade off commuting versus salary changes across the earnings distribution. By randomly assigning γ we are able to orthogonalize salary increases from other covariates in the sample, enabling us to examine the pure effect of a higher salary on the willingness to commute.

3.4 Labor Market Concentration

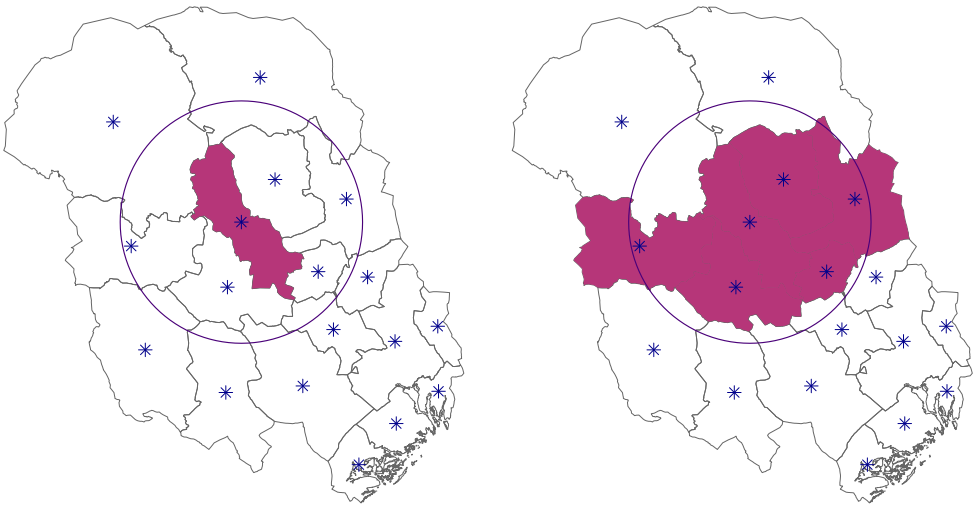
To examine if the change in commuting behavior has an impact on the job opportunities available to the individual, we rely on three distinct measures of labor market concentration: the number of establishments, the number of jobs, and a conventional Herfindahl-Hirschman Index (HHI). Each of these measures captures slightly different dimensions of labor demand and helps us develop a comprehensive understanding of how changes in commuting distance impact an individual's labor market opportunities and outside options.

First, we focus on the number of establishments that employ workers of similar types. Specifically, we calculate the number of establishments at the year-distance-industry-education level.[6] To define an individual's labor market, we draw a circle between the individual's place of residence and workplace, letting the distance between the workplace and the place of residence act as the radius of that circle. All municipalities that

[6]Education is categorized into three groups: high school school or less (less than 12 years of education), more than high school (but no Bachelor degree, 12 to 14 years of education), and at least a Bachelor degree (15 or more years of education). The reason for including the education dimension in addition to the industry is based on work by Dodini et al. (2020) that demonstrates that industry alone is not a great measure for labor market concentration because workers can switch across industries. Including the education dimension allows us to account for this to a certain extent.

fall within this circle are considered to belong to the individual's local labor market (see Figure 1 for an illustration). In other words, we use an individual's revealed commuting preference as a proxy for the individual's local labor market. The geographic boundaries of the labor market will therefore vary across individuals and time depending on the distance between the individual's workplace and place of residence in that year. Hence, this measure provides information on how much employer concentration the individual faces in its labor market. This provides a helpful proxy for how concentrated labor demand is.

Second, we focus on the number of jobs. We calculate the number of newly employed individuals, including job-to-job transitions, at the year-distance-industry-education level. This measure complements the above measure by providing a count for how common the industry-employment cell is in the individual's labor market and acts as a proxy for the labor market opportunities available to the individual. Hence, different from the number of establishments, this measure takes the size of the industry-education cell into account.



(a) Commuting Radius (b) Individual-Specific LLM

Figure 1: Illustration of Individual-Specific Local Labor Markets (LLM)

Note: The figure shows how local labor markets are constructed using the revealed commuting behavior of individuals. The radius around the highlighted area in Panel 1a indicates the observed commuting distance. All municipalities whose administrative municipality center (blue marked stars) falls within this radius are then counted towards the individual's local labor market in the particular year. This is indicated by the highlighted area in Panel 1b.

Finally, we construct an HHI at the year-area-industry-education level. We construct the HHI by first constructing year t, area a, industry j, and education e specific employ-

ment shares for each establishment f. These shares are then used to construct the HHI as the sum of squared employment shares across all establishments within a year-area-industry-education cell:

$$HHI_{jaet} = \sum_{f=1}^{N} s_{fjaet}^2 \text{ where } s = \frac{emp_{fjaet}}{\sum_{f=1}^{N} emp_{fjaet}} \tag{1}$$

The HHI ranges from 0 to 1, where 1 indicates a single monopsonistic establishment in the market. Hence, the HHI measures the concentration of labor demand for a given industry-education group across establishments in the labor market. Figure B1 displays the average HHI in each municipality in 1995.[7] The figure shows that the concentration in the largest cities of Norway is considerably lower than that in more rural parts of the country. There are also differences across industry-education cells. Moreover, nurses and teachers mostly face a higher concentration than, for example, lawyers. Therefore it is important to take the educational degrees into account.

3.5 Establishment Quality

To investigate whether changes in commuting behavior and labor market concentration impact the quality of an individual's employer, we construct measures of establishment quality following measures suggested in previous literature: establishment size, share of workers employed full-time, and average establishment earnings Dustmann et al. (see, e.g., 2020). The three measures we focus on each capture slightly different dimensions of establishment quality. Taken together, these measures help us understand the potential mechanisms behind the motherhood penalty in earnings.

The first measure is establishment size. Establishment size has been used extensively to measure establishment quality, in particular for individuals in the early stages of their careers. Oreopoulos, Von Wachter and Heisz (2012) show that individuals starting their careers at larger employers suffer from fewer negative labor market consequences in comparison to those that start at smaller firms. Additionally, larger firms are associated with higher wages in the short-term, as well as better training which results in improved opportunities for career progression and earnings in the long-run (Arellano-Bover, 2024). The second measure we use is the share of employees within the establishment that are employed for at least 37.5 hours a week. The last measure is the average hourly earnings of individuals at the establishment.

[7] The HHI in Figure B1 is based on our main sample and includes observations in the year 1995, which implies that it captures the HHI for individuals at different times relative to parenthood.

All establishment quality measures are constructed from the matched employer-employee data available between 1986 and 2010. We condition this sample on individuals with non-zero hourly earnings and who have non-missing establishment identifiers.

To construct the establishment quality measures, we follow a leave-one-out approach, which ensures that the measures are net of the impact of the particular individual under investigation. This allows us to abstract from changes in establishment quality due to changes in labor market characteristics of the individual whose establishment quality we want to observe.

In the year prior to childbirth, the median establishment size for men was 51 and the median establishment size for women was 64. The average hourly earnings for men was 214,700 NOK and the average hourly earnings for women was 211,100 NOK. The main difference in establishment characteristics between men and women is shown in the full-time share within the establishment. Men, on average, work at establishments with the share of employees working full-time being approximately 84%. For women, this share is only 69%.[8]

4 Empirical Method

We follow the pre-existing literature and adopt a quasi-experimental approach based on event studies around the birth of the first child (Kleven, Landais and Søgaard, 2019; Bütikofer, Jensen and Salvanes, 2018; Kuziemko et al., 2018). Specifically, we estimate versions of the following model separately for mothers and fathers:

$$y_{ist}^g = \alpha^g + \sum_{t=-4}^{-2} \delta_t^g D_{it} + \sum_{t=0}^{10} \delta_t^g D_{it} + \sum_k \beta_k^g A_{ist}^g + \lambda_s^g + \varepsilon_{ist}^g \;\; \forall\, g \in [m, f], \tag{2}$$

where y_{ist}^g is an outcome for individual i in calendar year s and relative time t. Relative time is relative to the birth of the child, such that children are born when $t = 0$. The variable D_{it} is a relative time dummy taking the value of 1 if the individual was observed in relative time t, and zero otherwise. The δ_t^g coefficients identify both relative pre-treatment trends as well as time-varying treatment effects of parenthood. We omit δ_{-1}^g such that all estimates are relative to the year prior to childbirth. The variable A_{ist}^g is a set of age dummies, which allows us to non-parametrically control for underlying life-cycle trends. Equation 2 also includes a full set of calendar year fixed effects λ_s^g, allowing us

[8] In Figure A1 we provide information on the distribution of establishment quality measures for our main commuter sample by sex and time relative to parenthood.

to account for any systematic shocks across years due to factors such as business cycle fluctuations and infrastructure improvements.

After having estimated Equation 2 and obtained a full set of relative time coefficients δ_t^g, we compute the specific relative time t effect as a fraction of the counterfactual outcome of not entering parenthood. We do this by re-scaling the relative time estimate in year t with predicted values of the counterfactual outcome at the same relative time. The relative time t effect as a fraction of the counterfactual outcome can then be written as $P_t^g = \hat{\delta}_t^g / E\left[\hat{y}_{ist}^g \mid t\right]$, where $\hat{y}_{ist}^g$ is the predicted counterfactual outcome obtained from estimating a modified version of Equation 2 in which the relative time dummies are excluded: $\hat{y}_{ist}^g = \hat{\alpha}^g + \sum_k \tilde{\beta}_k^g A_{ist} + \lambda_s^g$. Provided that the unobserved variables which determine labor market outcomes evolve smoothly over time, P_t can be interpreted as the effect of parenthood on the outcome relative to the year before parenthood (Kleven, Landais and Søgaard, 2019).

$$\text{Child Penalty} = \mathbb{E}[P_t^m - P_t^f \,|\, t \geq 0] - \mathbb{E}[P_t^m - P_t^f \,|\, t < 0]. \tag{3}$$

In addition to the main event study figures, we provide an overview of the overall child penalty following Kleven (2022). This child penalty is defined as the difference between the relative male and female parenthood effect averaged separately over the post-parenthood and pre-parenthood time. The difference between these two averages is then defined as the overall child penalty, as presented in Equation 3.

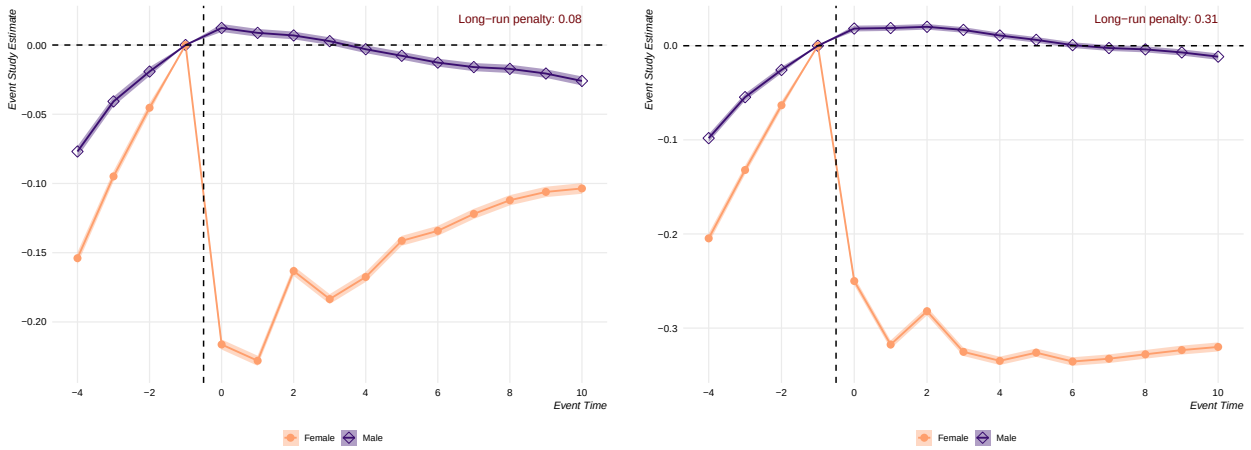
5 Results

In this section, we present our main results. We start by introducing results on employment and earnings, which we discuss in comparison to other Scandinavian countries (Angelov, Johansson and Lindahl, 2016; Kleven, Landais and Søgaard, 2019), the United States, the United Kingdom (Kuziemko et al., 2018; Kleven, 2022), and to a wider range of Western economies (Kleven et al., 2019). We then discuss our results on the parenthood gap in commuting and how they are corroborated by the results we obtain from survey data. Finally, we investigate the implications of changes in commuting behavior for the type of labor market that the individual is exposed to, both in terms of labor market concentration as well as in terms of establishment characteristics and quality.

5.1 Employment and Earnings Responses to Parenthood

In Figure 2, we show event studies for the effect of childbirth on the extensive (Panel 2a) as well as the intensive margin (Panel 2b) of labor supply for both men and women.

Similar to the findings in other OECD countries, Panel 2a shows that there is an immediate and sharp drop in the extensive margin of labor supply for women while there is very little change in the employment probabilities of men. In terms of magnitude, the effect is comparable to that which has been found in Denmark (Kleven, Landais and Søgaard, 2019). Although the initial post-childbirth gender gap in employment (20 percentage points) shrinks over time, it remains substantial ten years after childbirth (7 percentage points).



(a) Extensive Margin

(b) Intensive Margin

Figure 2: Labor Supply Relative to Parenthood

Note: The figure shows the estimated coefficients of the event time dummies, obtained from 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 shaded areas indicate the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years before childbirth and 10 years after. Long-run penalties represent the difference between the male and female estimate at $t = 10$ and are indicated in the top-right corner of each panel. Intensive margin employment is hours worked which are available in three broad categories 0, 10, 25, and 37.5 hours per week.

In terms of the intensive margin of labor supply (hours worked), Panel 2b also reveals an immediate and sharp drop for women while there is very little change in the hours worked for men. In contrast to the extensive margin result, however, the initial post-childbirth gender gap in hours remains stable over the entire ten-year post-childbirth period, showing no signs of convergence during our analysis period. That the gender gap in hours worked relative to childbirth does not converge over time suggests that

it is not only driven by the extensive margin response shown in Panel 2a, but also by a strong shift from full-time to part-time work. Overall, women reduce their hours by approximately 30 % relative to their pre-parenthood labor supply. It is important to note that these strong differences in labor supply responses cannot be explained by the physical impact of delivering a child, including the potentially accompanying health implications (Kleven, Landais and Søgaard, 2020).

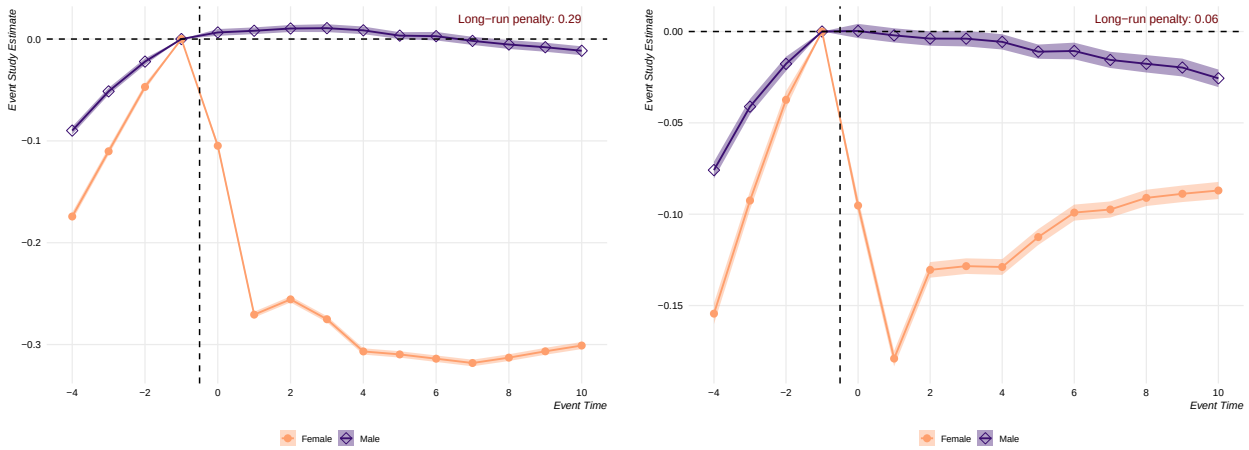
Figure 3 show event study plots for annual earnings (Panel 3a) and hourly earnings (Panel 3b) for both men and women. Panel 3a confirms the results from the existing literature: the earnings of men and women are trending similarly before childbirth, and diverge abruptly following childbirth. Specifically, there is a sharp discontinuous drop in female earnings at the onset of parenthood while no such drop is observed among men. This differential drop in earnings across genders persists even ten years after childbirth and results in a long-run penalty of approximately 29%. Even though the initial earnings response is smaller than what has been found for neighboring Sweden, the long-run penalty is slightly larger (Kleven et al., 2019).[9] Compared to the US and UK, Norwegian women experience a significantly smaller earnings penalty, a difference that is usually argued to be caused by differences in gender norms across countries.

Panel 3b demonstrates that the general pattern of results with respect to annual earnings extends to hourly earnings as well, though the long-run gender gap in hourly earnings is considerably smaller (about 6 percent). [10] This implies that the large drop in female earnings following childbirth is not only driven by females dropping out of the labor market and working fewer hours but also by females earning less conditional on hours worked. This is consistent with prior literature, which has found that both extensive and intensive margin effects are important for explaining the child penalty in earnings (Kleven et al., 2019; Bütikofer, Jensen and Salvanes, 2018).

As discussed above, the intensive margin effects could operate through several different channels. One such channel relates to differential changes in preferences for job amenities and attributes such as commuting distance to the workplace. Specifically, parenthood increases the opportunity cost of commuting and makes it difficult for both parents to work far away from home. Since both childcare and housework responsibilities tend to fall disproportionately on mothers, this increased opportunity cost may be much higher for the mother than for the father.

[9]The overall child penalty in Norway for our main sample also aligns very closely with findings by Andresen and Nix (2022) who find a long-run penalty of approximately 24% for Norway estimated on first-time parents with children born between 2001 and 2014.

[10]The hourly earnings penalty is similar if we restrict the sample to individuals who are employed throughout the entire sample period (see e.g. Figure B3).



(a) Earnings

(b) Hourly Earnings

Figure 3: Earnings Relative to Parenthood

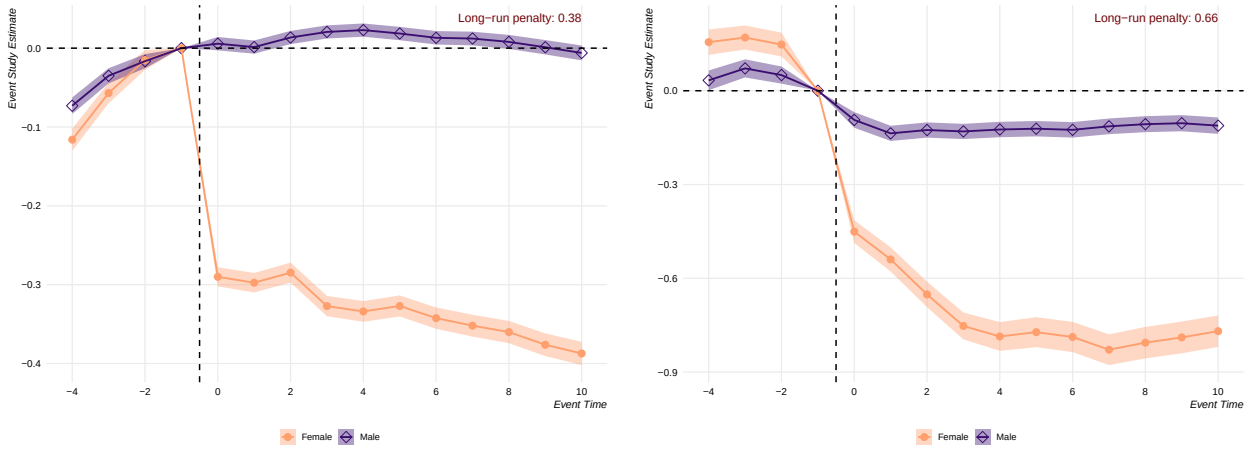
Note: The figure shows the estimated coefficients of the event time dummies, obtained from Equation 2, as a fraction of the predicted outcome, when omitting the contribution from event dummies in each year relative to the birth of the first child. Coefficients are estimated separately for men and women. The shaded areas indicate the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years before childbirth and 10 years after, and who are employed for at least 8 out of 15 years around childbirth. Long-run penalties represent the difference between the male and female estimate at $t = 10$ and are indicated in the top-right corner of each panel.

5.2 Commuting Behavior in Response to Parenthood

To examine the commuting effect of parenthood, Figure 4 shows the event study results for the full set of parenthood effects (P_ts) with respect to the probability of commuting across municipality borders (Panel 4a) and commuting distance (Panel 4b), both for men and women.

The results from the commuting analysis mirror the child penalty in earnings documented in Figure 3. In other words, the probability of commuting (Panel 4a) is trending similarly for men and women prior to childbirth, and diverges abruptly following childbirth. Specifically, there is a sharp discontinuous drop in female commuting at the onset of parenthood (approximately 30 percentage points) while no such drop is observed among men. This differential drop in commuting across genders persists even ten years after childbirth and is partially explained by the extensive margin labor supply effect shown in Figure 2. However, the long-run gender gaps in commuting probability and commuting distance are also present for individuals who are employed over the entire sampling period; it is not only a mechanical effect caused by the extensive margin

employment effects.[11]



(a) $\mathbb{P}$(Commuting) (b) Commuting Distance

Figure 4: Commuting Behavior Relative to Parenthood

Note: The figure shows the estimated coefficients of the event time dummies, obtained from 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 shaded areas indicate the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years prior to childbirth and 10 years after, and who are employed for at least 8 out of 15 years around childbirth. Long-run penalties represent the difference between the male and female estimate at $t = 10$ and are indicated in the top-right corner of each panel.

In addition to the commuting probability, Panel 4b provides estimates for the parenthood effect on commuting distance, thereby providing a more complete understanding of the gender gaps in commuting following parenthood. Although women cut back on very long commutes already in the year before childbirth (the year of conception and pregnancy in some cases), the trends in the commuting distance four to two years prior to childbirth are very similar for men and women. Commuting distance drops both for men and women in the year of childbirth. However, this drop is significantly larger for mothers than for fathers, and the difference persists for ten years after the birth of the first child. The overall commuting distance decline is to some degree driven by changes in labor supply, but similar effects are found also among individuals who are employed over the entire sampling period.[12] Taken together, Figure 4 suggests that both mothers and fathers adjust commuting distances in response to parenthood, but women do so

[11] In Table B3 we provide an overview of these child penalty measures for different sample specifications.

[12] Note that the commuting drop for always employed mothers is only one-third of the size of the total drop. However, individuals with employment throughout the sample period are a highly selected group.

much more strongly than men.

To better understand the mobility dynamics of the commuting effect—whether it is driven by mothers moving to jobs closer to their residences or by mothers moving residences closer to their jobs—we take a more detailed look at individuals who commute before having their first child and stop commuting during the two years after the birth of the first child.[13]

Among the still-employed mothers, about 46 percent changed residence municipality in the two years after childbirth, and about 54 percent change their workplace municipality (relative to the year before childbirth).[14]. This suggests that the change in commuting behavior observed in Figure 3 is primarily driven by individuals shifting workplace municipality closer to their residence municipality, though both channels appear to matter.

With respect to fathers, about 41 percent change residence municipality in the two years after childbirth and 55 change the workplace municipality. These results suggest that the commuting effects for men and women are both primarily driven by individuals shifting workplace municipalities closer to their residence municipality, though the commuting effects (and the share of workers who change their commuting behavior) are much larger for women than for men.

In addition to the evidence in Figure 4, the results from our survey also suggest that there is a change in the way women and men trade off commuting versus earnings after they become parents. Utilizing the survey data presented in Section 3, we run the following regression to determine gender differences in willingness to commute:

$$y_i = \alpha + \beta_1 \text{Female}_i + \beta_2 \cdot (\gamma_i \times \text{Male}_i) + \beta_3 \cdot (\gamma_i \times \text{Female}_i) + \tau X_i + \varepsilon_i \tag{4}$$

where y_i is a dummy variable equal to one if individual i selected position two, which involves a salary increase by γ percent in exchange for a doubling in the commuting time.[15] Male and Female are dummy variables equal to one if a person is male and female respectively. The variable γ_i is the continuous threshold variable, which was randomized across individuals. Additional control variables to improve the precision of our estimates are included in X_i, where we control for residence county, baseline commuting time, level of education, and the monthly salary of an individual.[16]

[13]Note that some of the individuals who stopped commuting after childbirth are no longer employed. Two years after childbirth, this share is about 43 percent among women and 28 percent among men.

[14]About 17 percent of the still employed mothers change both workplace and residence municipality

[15]In Figure B2 we provide results for the share of men and women choosing position two for each of the different threshold values. The graph indicates a general gender difference, but no significant difference in the trend of the fitted lines.

[16]All control variables are balanced across the randomized threshold γ.

The results obtained from estimating Equation 4 on the full sample, a sample consisting of childless individuals, and a sample consisting of individuals who have at least one child, are presented in Table 1. The table provides three interesting results.

First, the results show that women on average are significantly less likely to accept an increased commute for higher monetary compensation, suggesting a general distaste for longer commutes regardless of the compensation they would be offered for this increase in commuting time.

Table 1: Survey Results: Commuting Preferences

	Full Sample	**No Children**	**With Children**
Constant	0.385***	0.451***	0.325***
	(0.038)	(0.059)	(0.050)
Female	-0.103***	-0.076**	-0.122***
	(0.022)	(0.033)	(0.029)
Threshold × Male	0.007***	0.006***	0.007***
	(0.0004)	(0.0006)	(0.0005)
Threshold × Female	0.008***	0.007***	0.008***
	(0.0003)	(0.0005)	(0.0005)
N	10,008	4,210	5,798
R^2	0.104	0.092	0.118

Note: The table presents results from estimating Equation 4 for different sample specifications. The full sample consists of 10,008 representative Norwegians in the age range 25 to 50 who where individually surveyed about their labor market preferences and conditions during late June 2021. Column one includes the full sample, column two only individuals without children and column three those with at least one child. Significance thresholds: ***: 0.01, **: 0.05, *: 0.1.

Second, the table reveals a substantial parenthood effect on the willingness to accept a longer commute (comparing the point estimate on *Constant* and *Female* for the childless (Column 2) and the parent sample (Column 3)). Specifically, both men and women are significantly less likely to opt for increased commute time to secure a higher monetary payoff in the presence of a child. Childless men are approximately 13 percentage points more likely to accept a doubling in commuting time and childless women are approximately 17 percentage points more likely to accept a doubling in commuting time, compared to individuals with children. Both the relative and the absolute percentage point reduction in the probability to choose a longer commute for higher compensation in the presence of children is significantly larger for women than men.

Third, the interaction of the gender dummies with the threshold variables indicates that increasing the compensation does not have significantly different effects for men and

women. We interpret this to mean that men and women do not differ in their responsiveness of commuting changes as a function of the amount of monetary compensation that they receive, but rather that they differ in the general distances they are willing to commute conditional on their income compensation.

The differential change in commuting behavior among men and women means that women are restricting their local labor markets to a much smaller geographic area after childbirth. Such geographic restrictions may result in females facing a more concentrated market with fewer job options, reducing the probability of finding high-paying jobs and moving up the career ladder. To examine this in detail, Figure 5 provides estimates of the full set of P_ts with respect to the three concentration measures discussed in Section 3.

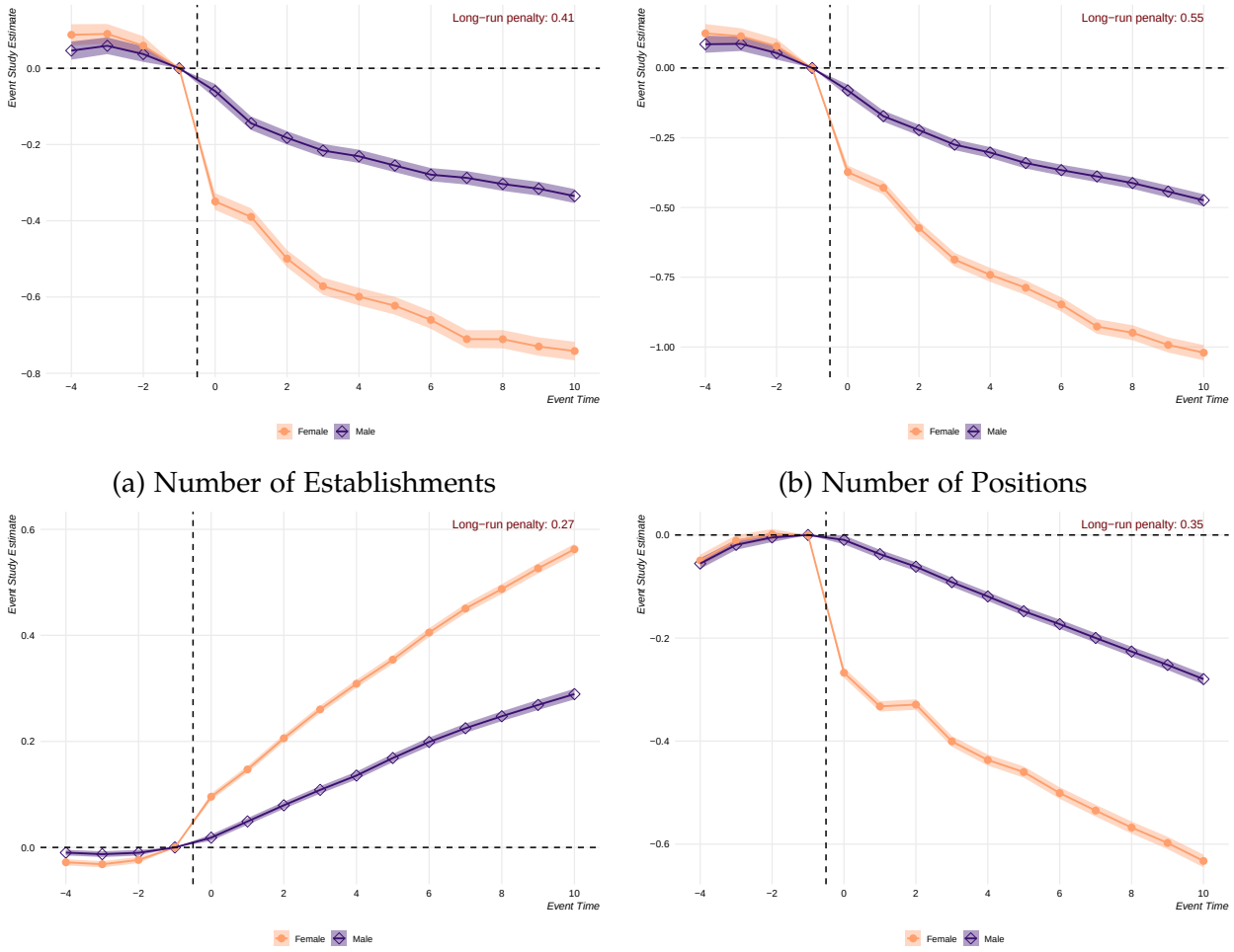
In Panel 5a, we provide evidence on the development of the number of establishments within education-industry-area cells, in which we proxy the local labor market area using the revealed commuting distance of individuals.[17] Similar to the commuting distance measure, we see that the number of establishments evolves similarly for men and women prior to parenthood and then drops abruptly for both. However, the discontinuous drop after childbirth is significantly larger for women. This means that the outside options available to mothers and fathers, as measured by the number of establishments in their industry-education-area cell, decline substantially following parenthood. However, the drop in outside options is much greater for mothers. For example, five years post-childbirth, mothers have experienced a 60% reduction in the number of potential establishments where they can work, while men only have experienced a 25% reduction in the number of potential establishments where they can work.

In addition to the number of establishments, we also construct a measure that captures the number of job positions that were filled within the industry-education-area cell. The number of positions is used as a proxy for the job opportunities within an education-industry cell in a given local labor market. To construct this measure, we once again rely on the revealed commuting measure to construct individual-specific local labor markets. The results from this exercise are provided in Panel 5b.

Looking at Panel 5b, there is an abrupt and immediate decline in the number of positions within the local labor market for women and a much smaller decline for men. This result mirrors that related to the number of establishments shown in Panel 5a. Five years after childbirth, women see a significantly larger reduction in the number of

[17] Note that individuals who do not commute are assigned the number of establishments/positions within the residence municipality's education-industry cell. This avoids having a large number of missing observations due to non-commuting and should be considered a conservative approach.

potential positions filled in their education-industry-area cell.



(a) Number of Establishments

(b) Number of Positions

(c) Herfindahl-Hirschman Index

(d) $\mathbb{P}$(Urban Workplace)

Figure 5: Labor Market Conditions Relative to Parenthood

Note: The figure shows the estimated coefficients of the event time dummies 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 and the regressions include industry-fixed effects. The shaded areas indicate the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years prior to childbirth and 10 years after. Municipalities defined as urban are the following (ordered by size): Oslo, Bergen, Trondheim, Stavanger, Fredrikstad, Drammen, Kristiansand, Tromsø, Bodø, and Hamar

In addition to the number of establishments and the number of positions filled within the industry-education-area cell, we also construct individual-specific HHIs as discussed in Section 3. The main advantage of this measure is that it captures supply and demand side factors simultaneously. The results from estimating our event study design using HHI as the outcome variable are shown in Panel 5c. Note that non-commuting and

unemployed individuals are assigned the HHI of their residence municipality for the industry they were last employed in.

Our HHI results reveal that labor market concentration evolves in a very similar fashion for men and women prior to childbirth. However, immediately after childbirth, we observe a strong and monotonic divergence in the HHI, with females becoming exposed to much more concentrated markets than men. Specifically, ten years after childbirth women are exposed to a labor market concentration that is 27% greater than that of men. This effect is comparable to moving from a municipality with a median labor market concentration to the 40th percentile.

A substantial part of the reductions in labor market concentration is driven by the fact that women are much less likely to work in urban municipalities (see Panel 5d). Urban municipalities offer a significantly larger amount of jobs, have considerably more establishments, and have lower labor market concentration (Dodini et al., 2020). Taken together, the results in Figures 4 and 5d imply that parenthood leads mothers to change their commuting behavior and that this has a negative effect on the labor market opportunities available to them, providing strong suggestive evidence of an additional pathway through which the child penalty operates.

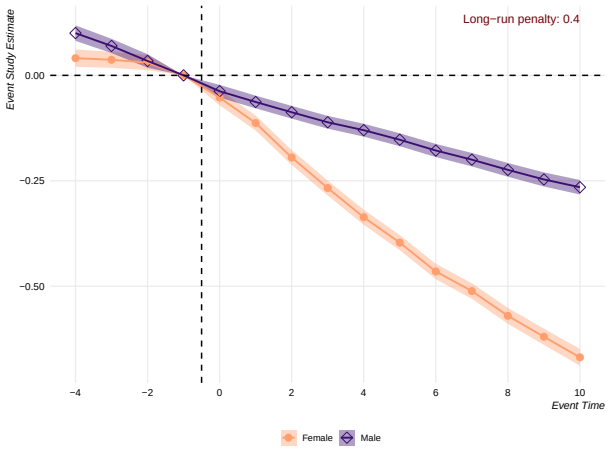
5.3 Parenthood and Establishment Quality

In the previous section, we showed results suggesting a link between women's change in commuting behavior and their local labor market opportunities. Those results can be interpreted as extensive margin measures of job opportunities. These results inform us about the number of job options that women and men have as a result of their revealed commuting preferences. An additional margin, which we have not yet investigated, is how commuting potentially impacts intensive margin job opportunities – the quality of employers.

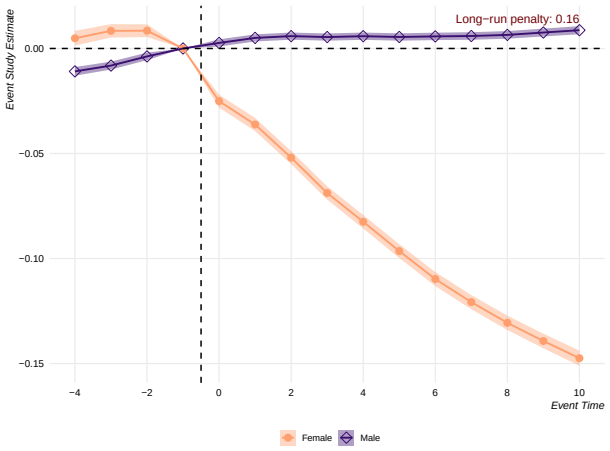
The impact on the quality of employers could operate through two main channels. First, the overall reduction in the number of jobs and establishments could lead to fewer high-quality labor market options. Second, an increase in labor market concentration will improve the employers' bargaining power over the employees and potentially lead to a decline in the quality of the workplace (e.g., as measured by average hourly earnings within the establishment). Although we are unable to separately identify these two channels, they are important to keep in mind when thinking about how reductions in commuting may translate into the quality of establishments.

In Figure 6, we present event study results of the full set of parenthood effects (P_ts)

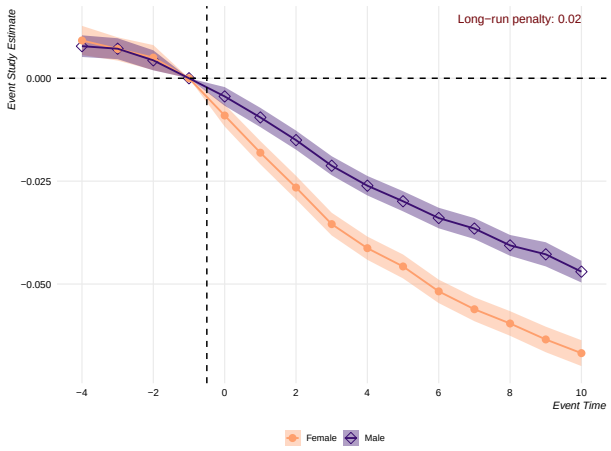
for three different measures of establishment quality: establishment size, full-time share, and average hourly earnings.



(a) Establishment Size



(b) Full-Time Share



(c) Average Hourly Earnings

Figure 6: Establishment Quality Relative to Parenthood

Note: The figure shows the estimated coefficients of the event time dummies, obtained from 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 and the regressions include industry-fixed effects. The shaded areas indicate the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years prior to childbirth and 10 years after, and who are employed for at least 8 out of 15 years around childbirth. Long-run penalties represent the difference between the male and female estimate at $t = 10$ and are indicated in the top-right corner of each panel.

In terms of establishment size, Panel 6a shows that men experience a slight downward trend prior to childbirth and that this trend appears to continue in a linear fashion following childbirth.[18] With respect to women, the pre-parenthood establishment size

[18]The male trend in Panel 6a even slows down lightly after the birth of the first child.

trend is flat. However, there are strong and monotonic declines in establishment size immediately following childbirth, making women much more likely to work in small firms relative to men after parenthood. In the long run, the establishment size gender gap amounts to 40%.

The size of the establishment at which a worker is employed, particularly during the early years of the worker's career, has significant implications for lifetime earnings. Specifically, there are multiple mechanisms through which establishment size has been found to matter for future earnings. For example, larger firms offer better on-the-job training (Lynch and Black, 1998), and apprenticeship training in larger firms protects from unemployment later in life (Müller and Neubäumer, 2018). Arellano-Bover (2024) provides IV estimates suggesting a 10% increase in first-employer size increases life-time earnings by 1.17%. This suggests that firm size changes in response to parenthood may be an important pathway through which the child penalty in earnings emerges.

As a second measure of establishment quality, we use the full-time share of an establishment. Full-time jobs generally allow for a higher degree of job security and come with a higher level of job amenities. In Panel 6b, we show that the full-time share for both men and women is very stable prior to childbirth. With respect to men, this trend does not appear to change significantly in response to childbirth. With respect to women, however, we see a sharp and discontinuous drop in the full-time share at the start of parenthood. Ten years after childbirth, women are working in establishments with a 15% smaller full-time share compared to the year prior to parenthood. This finding is in line with Hotz, Johansson and Karimi (2017), who find a significant shift towards more family-friendly employers post-parenthood for women but not men.[19]

The final measure of establishment quality we consider is the development of average hourly earnings at the establishment in response to parenthood. Panel 6c demonstrates that there is no significant differential trend in the average hourly earnings of men and women prior to parenthood. Following parenthood, both men and women experience a drop in the average hourly earnings at the establishments in which they are employed. However, this drop is considerably larger for women, leading to a long-run gender parenthood penalty of approximately 2%. Taking the pre-parenthood average hourly earnings of mother's establishments as a basis, this would correspond to an annual salary loss of 8,400 NOK for a full-time worker.

Taken together, this subsection has demonstrated that the quality and characteristics of the establishments that men and women work at decline sharply at the onset of par-

[19]Family-friendly employers in their setting offer a larger degree of temporal flexibility which is well in line with the opportunity to reduce or work fewer hours per week to accommodate childcare.

enthood. However, these declines are considerably larger for women, and this pattern is robust to focusing only on always-employed. Thus, not only does the gendered effect on commuting result in a reduction in outside options and increased exposure to concentrated markets, but it also leads to a widening of the gender gaps in terms of the quality of the employers that men and women work for. While speculative, we argue that the overall reduction in establishment quality is likely a combination of both a decline in labor market options due to a preference for shorter commutes as well as due to a higher demand for family-friendly employers, both meant to accommodate the increased demand for household work that comes with childbirth.[20]

Table 2: Child Penalty by Quintile of Commute (Distance) Penalty

	Bottom Quintile of Commute Penalty **(1)**	**Top Quintile of Commute Penalty** **(2)**	**Difference** **(3)**
Earnings Penalty	0.138	0.360	0.222
Hourly Earnings Penalty	0.010	0.156	0.146
HHI Penalty	0.123	0.237	0.114
Number of Establishments Penalty	0.160	0.693	0.533
Full Time Share Penalty	0.021	0.153	0.133

Notes: The table presents the overall child penalty for different outcome variables and sample specifications by following the procedure presented in Equation 3. Column (1) presents results for the child penalty for individuals with a distance penalty in the bottom quintile of their respective sex. Column (2) presents analogous child penalties for the top quintile. Column (3) presents the difference.

How much of the child penalty can be attributed to the changing labor market conditions induced by the commuting penalty found in this paper? Even though it is not possible to directly link the commuting penalty identified in this paper to the earnings penalty, we can provide suggestive evidence by examining the wage penalty effect stratified by the size of the commuting penalty experienced by the individual. To this end, we divide individuals into (gender-specific) quintiles of the child commuting penalty and re-estimate our main results for individuals in the top and the bottom quintiles. Focusing on the child penalties, as defined in Equation 3, the results from this exercise are shown in Table 2.[21] Overall, the results demonstrate that the individuals who experienced the smallest commuting penalty also experienced fewer adverse job opportunity

[20]The argument regarding a higher demand for family-friendly workplaces would additionally contribute to a reduction in establishment quality disproportionately affecting women after parenthood if establishment quality and family friendliness are negatively correlated. This has been documented in a very similar setting (see Hotz, Johansson and Karimi (2017)).

[21]We split individuals into quintiles of the distance penalty they experience and then separately estimate our main event-study specification for the top and bottom quintile.

effects, smaller adverse establishment quality effects, a smaller change in labor market concentration, and a significantly smaller child wage penalty. These results provide strong suggestive evidence that changes in the commuting behavior of mothers at the onset of childbirth is closely linked to the motherhood wage penalty documented in the prior literature.

6 Conclusion

A burgeoning literature has shown that differences in the willingness to commute between males and females represent an important reason for the persistence of the gender wage gap (Le Barbanchon, Rathelot and Roulet, 2019). We extend this literature by investigating whether these differences in commuting behavior increase with parenthood and contribute to the large child penalties experienced by mothers but not fathers (Kleven, Landais and Søgaard, 2019). Using administrative data from Norway and a quasi-experimental event study approach, our paper documents that the large wage drops mothers face after the birth of the first child coincide with a sharp decline in the probability to commute and commuting distance after childbirth.

First, we document large decreases in earnings for women relative to men after the birth of the first child. Although this effect is partly explained by changes in labor force participation and hours of work, mothers' hourly wages also decrease significantly after childbirth. Second, we show a sharp discontinuous drop in female commuting and commuting distance at the onset of parenthood while no such drop is observed among men. This differential drop in commuting behavior by gender persists even ten years after childbirth. Third, we discuss how these differential changes in commuting behavior among men and women result in mothers facing a more concentrated labor market with fewer job options. We find that by reducing the commuting distance, women start working in labor markets with fewer jobs and firms in their industry-education cells after childbirth, and their labor markets are becoming increasingly more concentrated than the labor markets of fathers. In addition, we show that establishment quality also declines sharply after childbirth for women. Moreover, our analysis indicates that mothers who experienced the largest commuting penalty also experienced more adverse job opportunity and firm quality effects, and a significantly larger child earnings penalty. Together, these results imply that parenthood leads mothers to change their commuting behavior and that this has a negative effect on the labor market opportunities available to them.

Our results suggest that gender differences in commuting behavior represent a likely

mechanism underlying the child penalty in earnings. Hence, when designing policies aimed at eliminating gender differences in labor market outcomes, gender differences in willingness to commute should be considered. Such policies could include the planning and collocation of transportation and childcare infrastructure as well as incentive schemes for remote work and telecommuting.

References

Adda, Jérôme, Christian Dustmann, and Katrien Stevens. 2017. "The Career Costs of Children." *Journal of Political Economy*, 125(2): 293–337.

Ahrsjö, Ulrika, René Karadakic, and Joachim Kahr Rasmussen. 2023. "Intergenerational Mobility Trends and the Changing Role of Female Labor." *arXiv preprint arXiv:2302.14440*.

Andresen, Martin Eckhoff, and Emily Nix. 2022. "What causes the child penalty? Evidence from adopting and same-sex couples." *Journal of labor economics*, 40(4): 971–1004.

Angelov, Nikolay, Per Johansson, and Erica Lindahl. 2016. "Parenthood and the gender gap in pay." *Journal of Labor Economics*, 34(3): 545–579.

Arellano-Bover, Jaime. 2024. "Career Consequences of Firm Heterogeneity for Young Workers: First Job and Firm Size." *Journal of Labor Economics*, forthcoming.

Azmat, Ghazala, Caterina Calsamiglia, and Nagore Iriberri. 2016. "Gender Differences in Response to Big Stakes." *Journal of the European Economic Association*, 14(6): 1372–1400.

Bensnes, Simon, Ingrid Huitfeldt, and Edwin Leuven. 2020. "Event Studies, Endogenous Timing and the Child Penalty."

Bertrand, Marianne. 2011. "Chapter 17 - New Perspectives on Gender." In . Vol. 4 of *Handbook of Labor Economics*, , ed. David Card and Orley Ashenfelter, 1543 – 1590. Elsevier.

Bertrand, Marianne, Claudia Goldin, and Lawrence F. Katz. 2010. "Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors." *American Economic Journal: Applied Economics*, 2(3): 228–55.

Bertrand, Marianne, Sandra E Black, Sissel Jensen, and Adriana Lleras-Muney. 2019. "Breaking the Glass Ceiling? The Effect of Board Quotas on Female Labour Market Outcomes in Norway." *Review of Economic Studies*, 86(1): 191–239.

Bhuller, Manudeep. 2009. "Inndeling av Norge i arbeidsmarkedsregioner." Statistics Norway Notater 2009/24.

Black, Sandra E., Paul J. Devereux, Katrine V. Løken, and Kjell G. Salvanes. 2014. "Care or Cash? The Effect of Child Care Subsidies on Student Performance." *The Review of Economics and Statistics*, 96(5): 824–837.

Blau, Francine D., and Lawrence M. Kahn. 2017. "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature*, 55(3): 789–865.

Bolstad, Erik. 2020. "Norske postnummer med koordinatar." *https://www.erikbolstad.no/postnummer-koordinatar/?postnummer=0010#forklaring*, Accessed: 2020-04-01.

Bütikofer, Aline, Sissel Jensen, and Kjell G Salvanes. 2018. "The role of parenthood on the gender gap among top earners." *European Economic Review*, 109: 103–123.

Bütikofer, Aline, Katrine V. Løken, and Alexander Willen. 2019. "Building Bridges and Widening Gaps: Efficiency Gains and Equity Concerns of Labor Market Expansions." Norwegian School of Economics, Department of Economics Discussion Paper Series in Economics 19/2019.

Carneiro, Pedro, Katrine V. Løken, and Kjell G. Salvanes. 2015. "A Flying Start? Maternity Leave Benefits and Long-Run Outcomes of Children." *Journal of Political Economy*, 123(2): 365–412.

Chatterjee, Kiron, Samuel Chng, Ben Clark, Adrian Davis, Jonas De Vos, Dick Ettema, Susan Handy, Adam Martin, and Louise Reardon. 2020. "Commuting and wellbeing: a critical overview of the literature with implications for policy and future research." *Transport Reviews*, 40(1): 5–34.

Dahl, Gordon B., Katrine V. Løken, and Magne Mogstad. 2014. "Peer Effects in Program Participation." *American Economic Review*, 104(7): 2049–2074.

Dahl, Gordon B., Katrine V. Løken, Magne Mogstad, and Kari Vea Salvanes. 2016. "What Is the Case for Paid Maternity Leave?" *The Review of Economics and Statistics*, 98(4): 655–670.

Dodini, Samuel, Michael Lovenheim, Kjell G. Salvanes, and Alexander Willén. 2020. "Monopsony, Skills, and Labor Market Concentration." CEPR CEPR Discussion Paper DP15412.

Dustmann, Christian, Attila Lindner, Uta Schönberg, Matthias Umkehrer, and Philipp Vom Berge. 2020. "Reallocation effects of the minimum wage." *Centre for Research and Analysis of Migration Discussion Paper*, 7: 20.

Goldin, Claudia. 2014. "A Grand Gender Convergence: Its Last Chapter." *American Economic Review*, 104(4): 1091–1119.

Goldin, Claudia, and Lawrence F. Katz. 2016. "A Most Egalitarian Profession: Pharmacy and the Evolution of a Family-Friendly Occupation." *Journal of Labor Economics*, 34(3): 705–746.

Havnes, Tarjei, and Magne Mogstad. 2015. "Is universal child care leveling the playing field?" *Journal of Public Economics*, 127(C): 100–114.

Hjorthol, Randi, Øystein Engebretsen, and Tanu Priya Uteng. 2014. "Den nasjonale reisevaneundersøkelsen 2013/2014." Samfredselsdepartementet Nøkkelrapport.

Hotz, V. Joseph, Per Johansson, and Arizo Karimi. 2017. "Parenthood, Family Friendly Firms, and the Gender Gaps in Early Work Careers." National Bureau of Economic Research Working Paper 24173.

Kleven, Henrik. 2022. "The geography of child penalties and gender norms: Evidence from the United States." National Bureau of Economic Research.

Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaard. 2019. "Children and gender inequality: Evidence from Denmark." *American Economic Journal: Applied Economics*, 11(4): 181–209.

Kleven, Henrik, Camille Landais, Johanna Posch, Andreas Steinhauer, and Josef Zweimüller. 2019. "Child Penalties across Countries: Evidence and Explanations." *AEA Papers and Proceedings*, 109: 122–26.

Kleven, Henrik Jacobsen, Camille Landais, and Jakob Egholt Søgaard. 2020. "Does Biology Drive Child Penalties? Evidence from Biological and Adoptive Families."

Kuziemko, Ilyana, Jessica Pan, Jenny Shen, and Ebonya Washington. 2018. "The Mommy Effect: Do Women Anticipate the Employment Effects of Motherhood?" National Bureau of Economic Research, Inc NBER Working Papers 24740.

Le Barbanchon, Thomas, Roland Rathelot, and Alexandra Roulet. 2019. "Gender differences in job search: Trading off commute against wage." *Available at SSRN 3467750*.

Lynch, Lisa M, and Sandra E Black. 1998. "Beyond the incidence of employer-provided training." *ILR Review*, 52(1): 64–81.

Mas, Alexandre, and Amanda Pallais. 2017. "Valuing Alternative Work Arrangements." *American Economic Review*, 107(12): 3722–59.

Mas, Alexandre, and Amanda Pallais. 2019. "Labor Supply and the Value of Non-work Time: Experimental Estimates from the Field." *American Economic Review: Insights*, 1(1): 111–26.

Müller, Steffen, and Renate Neubäumer. 2018. "Size of training firms–the role of firms, luck, and ability in young workers' careers." *International Journal of Manpower*.

Niederle, Muriel, and Lise Vesterlund. 2007. "Do Women Shy Away From Competition? Do Men Compete Too Much?" *The Quarterly Journal of Economics*, 122(3): 1067–1101.

Olivetti, Claudia, and Barbara Petrongolo. 2016. "The Evolution of Gender Gaps in Industrialized Countries." *Annual Review of Economics*, 8(1): 405–434.

Oreopoulos, Philip, Till Von Wachter, and Andrew Heisz. 2012. "The short-and long-term career effects of graduating in a recession." *American Economic Journal: Applied Economics*, 4(1): 1–29.

Petrongolo, Barbara, and Maddalena Ronchi. 2020. "Gender gaps and the structure of local labor markets." *Labour Economics*, 64: 101819. European Association of Labour Economists, 31st annual conference, Uppsala Sweden, 19-21 September 2019.

Ramey, Valerie. 2009. "Time Spent in Home Production in the Twentieth-Century United States: New Estimates from Old Data." *The Journal of Economic History*, 69(1): 1–47.

Riise, J., B. Willage, and A. Willen. 2020. "Can female doctors cure the gender STEMM gap? Evidence from exogenously-assigned general practitioners." *Review of Economics and Statistics*.

Stangeby, Ingunn. 1987. "Reisevaner i Norge." Samfredselsdepartementet Hovedrapport.

Statens vegvesen. 2019. "Nasjonal Reisevanundersøkelse 2018/2019." Samfredselsdepartementet Hovedrapport.

Statistics Norway. 1983. "Standard for Næringsgruppering." *https://www.ssb.no/a/histstat/sns/sns_02_1983.pdf*, Accessed: February 20, 2023.

Vågane, Liva, Inge Brechan, and Randi Hjorthol. 2011. "Den nasjonale reisevaneundersøkelsen 2009." Samfredselsdepartementet Nøkkelrapport.

Appendix

A Establishment Quality

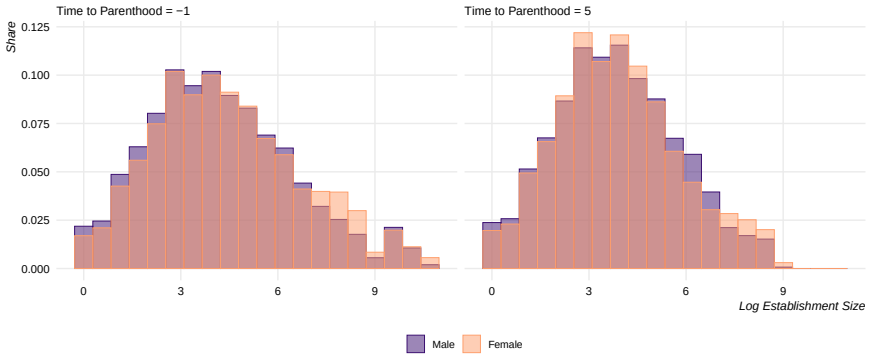
Besides changes in labor supply and skill mismatch, establishment quality is an additional pathway through which parenthood potentially alters earnings differently for men and women after they become parents for the first time. Women might choose to switch to more family-friendly establishments, but these firms impede career progression and ultimately hinders climbing the career ladder (Hotz, Johansson and Karimi, 2017). We are agnostic about the family friendliness of the workplace directly but think about a different dimension in which parenthood could impact the quality of a work establishment. Through a lower willingness to commute and an increased burden for childcare, women have a) fewer outside options and b) the options they might have are of lower quality, resulting in a disproportionate reduction of establishment quality for women after the onset of parenthood.

We will present results using three different measures of establishment quality, which have been suggested in the previous literature (see e.g. Dustmann et al. (2020)). The first measure is establishment size. Establishment size has been used extensively to measure establishment quality, in particular for individuals in the early stages of their careers. Oreopoulos, Von Wachter and Heisz (2012) show that individuals starting their careers at larger employers suffer from fewer negative labor market consequences in comparison to those that start at smaller firms. Additionally, larger firms are associated with higher wages and better training resulting in improved opportunities for career and earnings progression (Arellano-Bover, 2024). The second measure we implement is the full-time share of employees within the establishment. The last measure is the average hourly earnings of individuals at a given establishment.

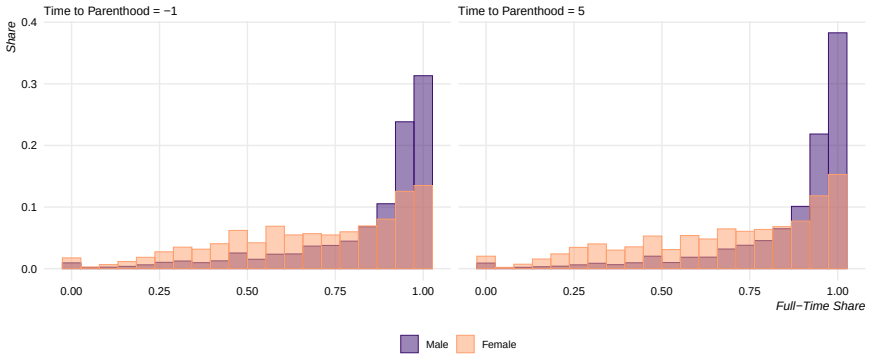
All establishment quality measures are constructed from the linked employer-employee data available between 1986 and 2010. We condition this sample on individuals with non-zero hourly earnings and who have non-missing establishment identifiers as well as reported hours worked.[22] The average hourly earnings are then constructed from annual earnings data divided by the number of weeks and hours of work. This is only an approximation of actual hourly earnings, but due to data limitations, it is the best measure of hourly earnings we can provide consistently for the sample. The full-time share is constructed as the share of individuals within an establishment that has a contractually

[22]Hours are reported only in three broad categories which we approximate with 10, 25, and 37.5 hours of work per week.

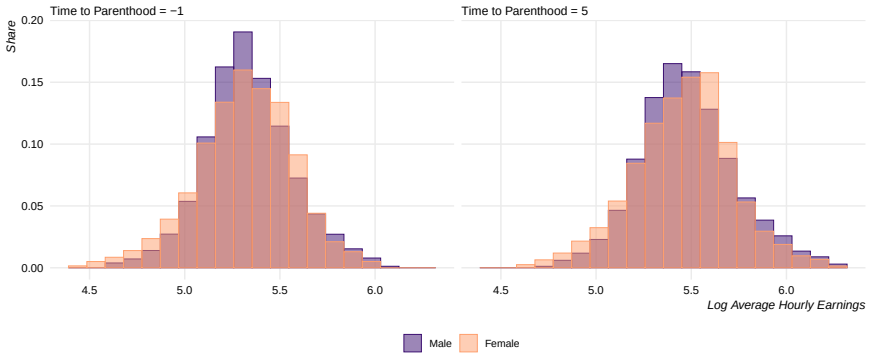
agreed work week consisting of at least 37.5 hours per week. Finally, establishment size is simply defined as the number of employees at a given establishment.



(a) Establishment Size



(b) Full-Time Share



(c) Log Average Hourly Earnings

Figure A1: Distribution of Establishment Quality Measures by Sex and Time to Parenthood

Note: The figure plots the distribution of three establishment quality measures in our main commuter sample. Each measure is plotted separately for the year $t = -1$ and $t = 5$ and by the sex of the parent. Panel a shows establishment size, panel b the full-time share, and panel c the logarithm of the average hourly wage in the company winsorized to exclude the top one and bottom percentile of the average hourly wage distribution.

To construct the establishment quality measures we follow a leave-out mean approach, which ensures that we construct average hourly earnings, full-time share, and establishment size net of the impact of the particular individual herself. This will take care of sensitivity for cases where the number of individuals within an establishment is small and allows us to abstract from changes in establishment quality due to changes in labor market characteristics of the individual whose establishment quality we want to observe. In Figure A1 we present the distributions of establishment quality measures for our main sample separately by time relative to parenthood and sex. To conveniently plot the distributions the establishment size variable and average hourly earnings within an establishment are transformed using the natural logarithm. We additionally winsorize the top and bottom percentile of the distribution for the average hourly earnings mainly for ease of visualization.[23] The main difference in the distributions is coming from differences between men and women, rather than differences due to the time relative to parenthood.

[23]The right tail of the hourly wage distribution is relatively long because we are constructing hourly earnings from annual earnings data. This income variable includes incomes from self-employment and governmental transfers. Particularly the first income source can be substantial and result in very large hourly earnings.

B Additional Figures and Tables

Table B1: Summary Statistics: Main Sample

	Mean	SD	Min	Median	Max
Panel A: Women (N = 154,091)					
Annual Earnings (1,000 NOK)	280.37	120.00	0.17	280.06	4798.23
Hourly Earnings	175.05	102.92	0.09	156.51	2454.02
Hours Worked	29.34	13.60	0.00	37.50	37.50
Employment	0.89	0.32	0.00	1.00	1.00
Public Sector Employment	0.46	0.50	0.00	0.00	1.00
Age	26.77	4.18	16	26.00	48
Years of Education	12.40	2.60	0	12.00	20
Commuting	0.31	0.46	0.00	0.00	1.00
Distance (km)	32.28	144.47	0.00	0.00	2528.85
HHI	0.16	0.15	0.00	0.11	1.00
Full Time Share	0.69	0.26	0.00	0.74	1.00
Average Earnings at Plant	211.80	72.65	0.78	205.77	8347.24
Residence Urban	0.37	0.48	0.00	0.00	1.00
Workplace Urban	0.41	0.49	0.00	0.00	1.00
Panel B: Men (N = 193,219)					
Annual Earnings (1,000 NOK)	348.28	187.01	0.15	337.78	26044.81
Hourly Earnings	194.15	120.30	0.08	178.55	13320.45
Hours Worked	30.20	14.11	0.00	37.50	37.50
Employment	0.85	0.36	0.00	1.00	1.00
Public Sector Employment	0.19	0.39	0.00	0.00	1.00
Age	28.36	4.82	16	28.00	64
Years of Education	11.89	2.78	0	12.00	20
Commuting	0.35	0.48	0.00	0.00	1.00
Distance (km)	41.32	162.62	0.00	0.00	2578.48
HHI	0.18	0.17	0.00	0.12	1.00
Full Time Share	0.85	0.21	0.00	0.94	1.00
Average Earnings at Plant	215.09	71.66	1.02	204.24	6393.20
Residence Urban	0.34	0.47	0.00	0.00	1.00
Workplace Urban	0.36	0.48	0.00	0.00	1.00

Note: The table presents summary statistics for first-time parents, women (Panel A) and men (Panel B), in the year prior to their first child. The sample includes all men and women who became first-time parents between 1990 and 2000, whom we observe four years prior to and ten years after childbirth, and who are employed at least seven out of 15 years.

Table B2: Summary Statistics: Survey

	Mean	SD	Min	Median	Max
Male	0.42	0.49	0	0.00	1
Any Child	0.58	0.49	0	1.00	1
Cohabiting	0.67	0.47	0	1.00	1
Primary School	0.03	0.16	0	0.00	1
High-School	0.18	0.38	0	0.00	1
Vocational School	0.16	0.37	0	0.00	1
Bachelor	0.29	0.46	0	0.00	1
Master	0.33	0.47	0	0.00	1
Other	0.01	0.10	0	0.00	1
Threshold	3.50	1.71	1	3.00	6
Age	38.27	7.64	25	39.00	60
Monthly Salary	32.71	14.58	3.00	30.00	150.00
Commuting Time	23.28	29.51	1.00	15.00	180.00

Note: The table presents summary statistics for the full sample of surveyed individuals ($N = 10,008$). Monthly salaries are reported in 1,000 NOK. The variables presented are a subset and only variables used in the analysis for this article.

Table B3: Child Penalty Overview

	Commuter	**Commuter** $t \leq 5$	**Always Employed**
Hours Worked	0.25	0.25	0.10
Earnings	0.24	0.22	0.22
Hourly Earnings	0.06	0.09	0.08
P(Commute)	0.33	0.31	0.09
Commuting Distance	0.68	0.62	0.28
Herfindahl-Hirschman Index	-0.20	-0.15	-0.07
P(Workplace Urban)	0.32	0.30	0.08
Number of Establishments	0.38	0.35	0.12
Establishment Size	0.15	0.02	0.11
Average Hourly Earnings	0.02	0.01	0.01

Note: The table presents the overall child penalty for different outcome variables and sample specifications by following the procedure presented in Equation 3. The second column uses our main commuter sample, the third column also uses the commuter sample but only for relative time periods $t \leq 5$ and the last column is computed on estimates from the always employed sample.

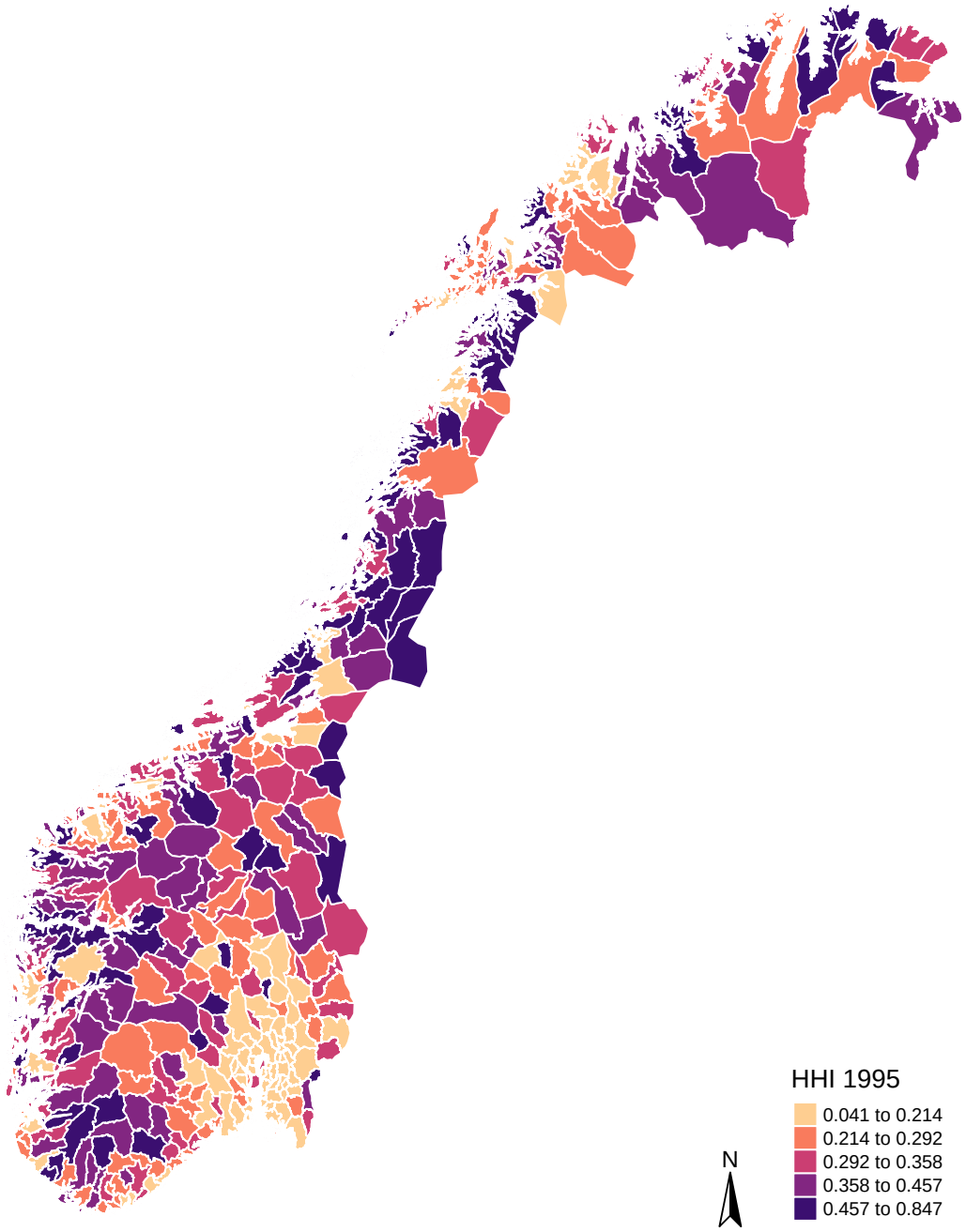


Figure B1: Herfindahl-Hirschman Index in 1995

Note: Average Herfindahl-Hirschman Index in 1995 in each municipality. The HHI is calculated based on the on the main commuter sample using the actual commuting distance of individuals to define the local labor market (see Figure 1). It includes all individuals who became first-time parents between 1990 and 2010 who were employed at least 8 out 15 years in the 15 years around childbirth.

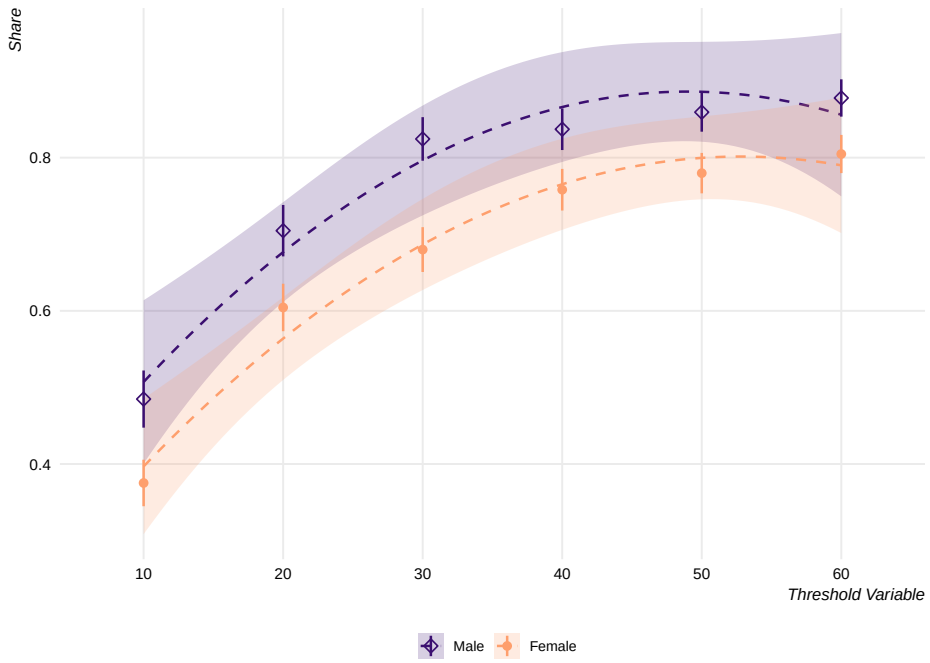


Figure B2: Survey Results: Willingness to Commute

Note: The figure separately shows the share of men (purple diamond shapes) and women (orange point shapes) choosing to select position two in a question referring to the trade off between a salary increase and doubling of the commuting distance. The shares were obtained by regressing a dummy variable equal to one if a person chooses to position two on the full set of threshold dummies $\gamma \in [10, 20, 30, 40, 50, 60]$ separately for men and women. The 95 % confidence intervals are based on robust standards. Fitted lines are regression lines of second order polynomial through the shares estimates.

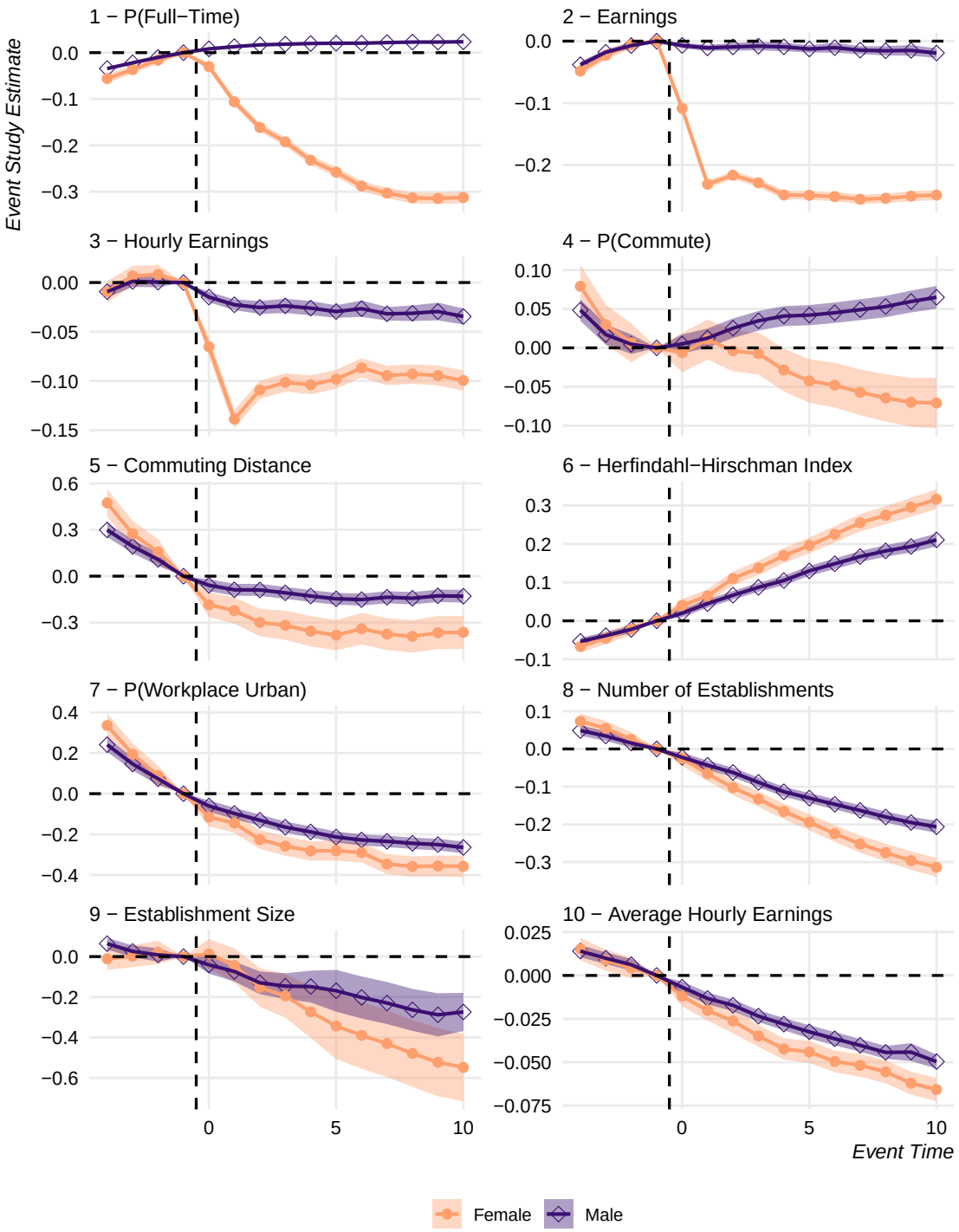


Figure B3: Always Employed Sample

Note: The figure shows the estimated coefficients from 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. The figure presents results for a sample of first-time mothers ($N = 26,109$) and first-time fathers ($N = 74,037$) who are employed throughout the 15 years surrounding childbirth. Each panel presents results for a different outcome separately for men and women.

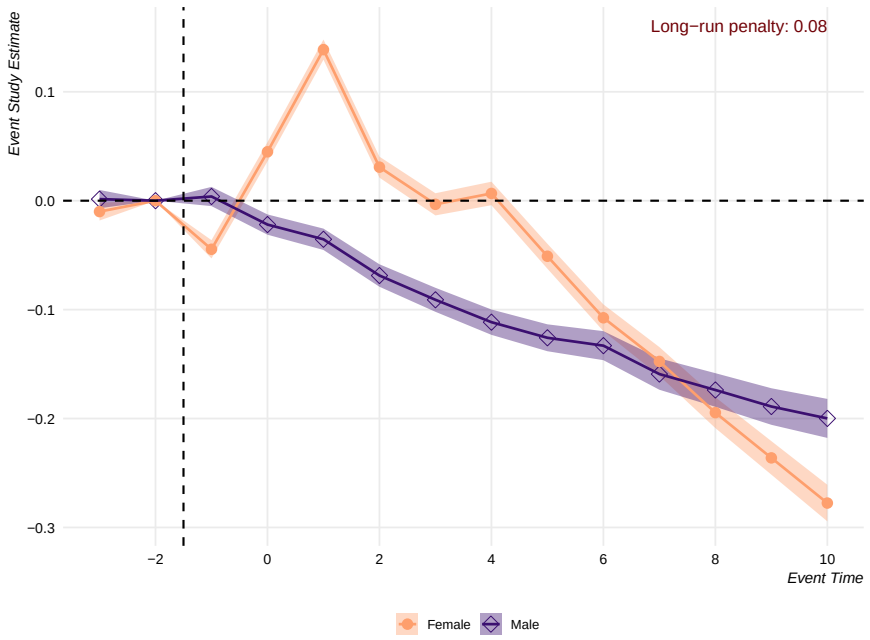


Figure B4: $\mathbb{P}$(Labor Market Mobility)

Note: The figure shows the estimated coefficients of the event time dummies, obtained from Equation 2 with $t = -2$ as the omitted category, 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 and the regressions include industry fixed effects. The shaded areas indicates the 95% confidence band using robust standard errors. The samples include men and women who became first-time parents between 1990 and 2010, whom we observe three years prior to childbirth and 10 years after, who are employed for at least 8 out of 15 years around childbirth. Long-run penalties represent the difference between the male and female estimate at $t = 10$ and are indicated in the top-right corner of each panel.

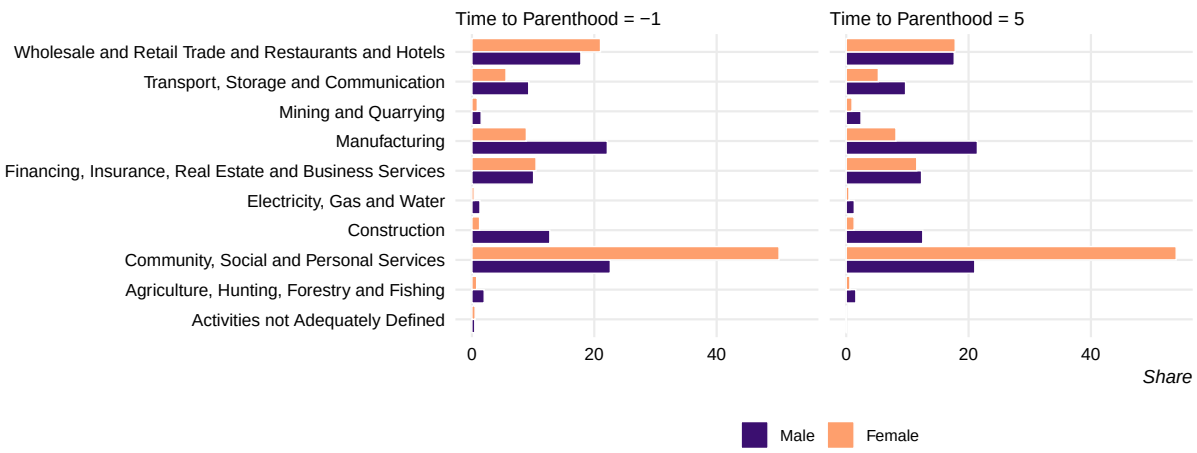


Figure B5: Industry Affiliations by Sex and Time Relative to Parenthood

Note: The figure shows the share of men and women working in different industries defined as one-digit codes following the Norwegian adoption of ISIC codes (Statistics Norway, 1983). The left panel shows the industry shares for individuals in our main commuter sample for the year prior to childbirth ($t = -1$), while the right panel shows the same for the time period five years post childbirth ($t = 5$).

Issued in the series Discussion Papers 2022

2022

01/22 January, **Astrid Kunze**. "Parental leave and maternal employment"

02/22 February, Øystein Foros, Hans Jarle Kind and Frank Stähler. "Endogenous multihoming and network effects: Playstation, Xbox, or both?"

03/22 March, **Catalina Franco**, David J. Harding, Shawn D. Bushway and Jeffrey Morenoff. "Failing to Follow the Rules: Can Imprisonment Lead to More Imprisonment Without More Actual Crime?"

04/22 March, Anselm Hager and **Justin Valasek**. "The Impact of Exposure to Refugees on Prosocial Behavior"

05/22 March, Anselm Hager and **Justin Valasek**. "The Impact of Forced Migration on In-Group and Out-Group Social Capital"

06/22 March, **Kurt R. Brekke**, Dag Morten Dalen and Odd Rune Straume. "Competing with precision: incentives for developing predictive biomarker tests"

07/22 May, **Alexander W. Cappelen**, Thomas de Haan and **Bertil Tungodden**. "Fairness and limited information: Are people Bayesian meritocrats?"

08/22 June, Rita Ginja, Julie Riise, Barton Willage and **Alexander Willén**. "Does Your Doctor Matter? Doctor Quality and Patient Outcomes"

09/22 June, **Richard Friberg**, **Emil M. Strøm Halseth**, **Frode Steen** and **Simen A. Ulsaker.** "The effect of cross-border shopping on commodity tax revenue: Results from a natural experiment"

10/22 July, **Alexander W. Cappelen**, **Ranveig Falch**, **Zhongjing Huang** and **Bertil Tungodden**. "Acceptance of inequality between children: Large-Scale Experimental Evidence from China and Norway"

11/22 August, **Øivind A. Nilsen** and Arvid Raknerud. "Dynamics of First-Time Patenting Firms"

12/22 September, Pedro Carneiro, **Kjell G. Salvanes**, Barton Willage, and **Alexander Willén**. "The Timing of Parental Job Displacement, Child Development and Family Adjustment"

13/22 October, Gozde Corekcioglu, Marco Francesconi and **Astrid Kunze**. "Expansions in Paid Parental Leave and Mothers' Economic Progress"

14/22 October, Ryan McWay, **Pallavi Prabhakar** and Ayo Ellis. "The Impact of Early Childhood Development Interventions on Children's Health in Developing Countries: A Systematic Review and Meta-analysis"

15/22 October, Lars Ivar Oppedal Berge, **Kjetil Bjorvatn**, Fortunata Makene, Linda Helgesson Sekei, **Vincent Somville** and **Bertil Tungodden**. "On the Doorstep of Adulthood: Empowering Economic and Fertility Choices of Young Women"

16/22 October, **Astrid Kunze** and Katrin Scharfenkamp. "Gender diversity, labour in the boardroom and gender quotas"

17/22 November, **Samuel Dodini**, **Katrine Løken**, and **Alexander Willén**. "The Effect of Labor Market Competition on Firms, Workers, and Communities"

18/22 November, **Yuzuru Kumon** and Kazuho Sakai. "Women's Wages and Empowerment: Pre-industrial Japan, 1600-1890"

19/22 December, **Alexander Willén**, Barton Willage, and Julie Riise. "Employment Protection and Child Development"

20/22 December, **Samuel D. Hirshman** and **Alexander Willén**. "Does Increasing Risk Widen Gender Gaps?"

21/22 December, Manudeep Bhuller, Gordon B. Dahl, **Katrine V. Løken** and Magne Mogstad. "Domestic Violence and the Mental Health and Well-being of Victims and Their Children"

2023

01/23 January, Felix Chopra, **Ingar Haaland** and Christopher Roth. "The Demand for News: Accuracy Concerns versus Belief Confirmation Motives"

02/23 March, **Ola Honningdal Grytten** and Viktoriia Koilo. "Offshore Industries as Growth Sector: The Norwegian Case"

03/23 March, **Ingvild Almås**, **Alexander W. Cappelen**, **Erik Ø. Sørensen** and **Bertil Tungodden**. "Fairness Across the World"

04/23 March, **Kurt R. Brekke**, Dag Morten Dalen and Odd Rune Straume. "The price of cost-effectiveness thresholds"

05/23 March, Leonardo Bursztyn, **Alexander W. Cappelen**, **Bertil Tungodden**, Alessandra Voena and David Yanagizawa-Drott. "How Are Gender Norms Perceived?"

06/23 April, **Alexander W. Cappelen**, Stefan Meissner and **Bertil Tungodden**. "Cancel the deal? An experimental study on the exploitation of irrational consumers"

07/23 May, **Sara Abrahamsson**, **Aline Bütikofer** and Krzysztof Karbownik. "Swallow this: Childhood and Adolescent Exposure to Fast Food Restaurants, BMI, and Cognitive Ability"

08/23 May, Malin Arve and **Justin Valasek**. "Underrepresentation, Quotas and Quality: A dynamic argument for reform"

09/23 May, **Björn Bartling**, **Alexander W. Cappelen**, Henning Hermes, Marit Skivenes and **Bertil Tungodden**. "Free to Fail? Paternalistic Preferences in the United States"

10/23 May, Chiara Canta, **Øivind A. Nilsen** and **Simen A. Ulsaker**. "Competition and risk taking in local bank markets: evidence from the business loans segment"

11/23 May, **Aline Bütikofer**, **René Karadakic** and **Alexander Willén**. "Parenthood and the Gender Gap in Commuting"

NORGES HANDELSHØYSKOLE
Norwegian School of Economics

Helleveien 30
NO-5045 Bergen
Norway

T +47 55 95 90 00
E nhh.postmottak@nhh.no
W www.nhh.no