

Mothers' Jobs after Childbirth and the Impact on Earnings

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Abstract

This paper studies whether and how job mobility after childbirth affects mothers' careers and reduces the “motherhood penalty.” Using administrative data, we show high job mobility among mothers post-childbirth. Employing a partial identification approach, we find that mothers who change jobs earn more both immediately at re-employment and up to 15 years later, narrowing the earnings gap with their partners. These benefits are mostly concentrated among higher-earning mothers. Increased childcare support from partners and moves to faster-growing firms drive these positive impacts, even if this requires longer commutes. However, high mobility costs limit more mothers from reaching better job opportunities.

JEL Codes: C21, J13, J31, J62

Key words: motherhood penalty, return-to-work, job mobility, earnings, earnings gaps

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1 Introduction

Women still earn substantially less than men in most countries (e.g. Goldin, 2014; Blau and Kahn, 2017; Olivetti and Petrongolo, 2016). The persistent gender inequality in earnings has been linked to the unequal impact of parenthood and the associated “motherhood penalty”, a large and persistent decline in mothers’ earnings after childbirth compared to both fathers and even women without children.¹ Motivated by the literature on job-to-job transitions, which generally finds in general that job mobility has a positive effect on workers’ wage growth, we investigate whether and how changing employers after childbirth can support mothers’ advancing their careers, improving their wages, and ultimately reduce the motherhood penalty.

While job-to-job transitions are generally considered an integral part of workers’ wage growth (Rogerson et al., 2005; Wright et al., 2021), their impact on mothers’ labor market careers is not clear. For example, mothers might transition to flexible but lower paying jobs to balance work and family responsibilities. They may also face higher costs of searching for and moving to better employment, for example, due to inadequate childcare support or limited information about job opportunities. However, anecdotal evidence also suggests that for some mothers, the birth of a child can be a catalyst for refocusing their ambitions and careers, with many aiming to become role models for their children.² Despite its significance, there is limited understanding of how changing employers after childbirth impacts mothers’ career trajectories.³ Understanding the factors through which childbirth affects mothers’ earnings is important for a better understanding of gender inequalities in the labor market and central to the design of effective policies.

Using administrative data for Austria, we first document that mothers exhibit high job mobility after childbirth.⁴ Motherhood increases the likelihood of changing employers within two years after childbirth by almost 8 percentage points compared to observationally similar non-mothers. Our estimates remain virtually unchanged when controlling for a wide range of individual, employment, and firm specific background characteristics to capture possible differences in moving intentions. We provide evidence that if mothers change jobs, they are more inclined to do so within two years after birth, during the job protected maternity leave period, rather than when the child is older. This pattern suggests that changing jobs is likely more effective after childbirth than later. Changing employers right after childbirth likely has

¹The motherhood penalty has been documented for various countries and contexts, for example, Fernández-Kranz et al. (2013), Angelov et al. (2016), Lundborg et al. (2017), Bütikofer et al. (2018), Kuziemko et al. (2018), Kleven, Landais and Sogaard (2019), Kleven, Landais, Posch, Steinhauer and Zweimüller (2019), and Healy and Heissel (2024).

²See, for example, the statements of mothers on how having children can lead to career reconsiderations and an increase in ambitions here <https://www.nytimes.com/interactive/2020/05/05/parenting/how-motherhood-changed-us.html>.

³A few works have looked at general gender differences in job search (Kunze and Troske, 2012; Cortes et al., 2020; Flinn et al., 2020; Le Barbanchon et al., 2021).

⁴When discussing mechanisms underlying our results in Section 7, we show that mothers have initially higher job mobility after childbirth, but also that their partners are more likely to change employer with a small time lag.

important consequences for mothers’ career trajectories and wages. However, identification of these effects is challenging.

We estimate the impact of changing jobs after childbirth on mother’s earnings employing a partial identification approach based on intuitive assumptions made in many search models with endogenous search effort (Christensen et al., 2005; Wright et al., 2021; Faberman et al., 2022) for identification. Specifically, we assume that marginal returns to job search are decreasing in both mother’s pre-birth earnings and her *potential* re-employment earnings at her pre-birth employer, *conditional* on her background characteristics and characteristics of the pre-birth firm. Intuitively, mothers with higher earnings and earnings potential are already in highly productive firm-worker relationships. Therefore, while mothers may have many outside options, the opportunities that offer significantly higher pay are fewer, and thus they have a lower likelihood of finding better paying matches elsewhere. Taking into account that searching for new employment is costly, specifically after giving birth, this implies that these mothers have a lower likelihood of leaving their pre-birth employer after childbirth. It is worth emphasizing, that these assumptions do *not* impose any restrictions on what type of mothers gain from job mobility.

We show that these assumptions on mothers’ search behavior allow us to derive upper and lower bounds on the impact of job mobility on earnings, building on the ideas in d’Haultfoeuille (2010). To account for possible differences in search behavior and preferences, we also include a wide range of mother and firm characteristics, such as their age, education, as well as firm size and the share of female employees, in our estimation. We do so to capture situations, for example, where higher educated mothers move to lower paying jobs as they underestimate the costs of having children (Kuziemko et al., 2018) or prefer family friendly firms (Hotz et al., 2018).

Besides our two monotonicity assumptions, we do not impose any other restrictions on mothers’ abilities, preferences or require any other structure on the underlying selection mechanism to identify bounds on the causal effect. Our monotonicity assumptions do *not* restrict who can gain from job changes. Our bounding approach also allows for situations where firms make job offers based on mothers’ (unobserved) productivity or higher-earning mothers use potential outside offers to renegotiate with their existing employers (Cahuc et al., 2006), as long as the pre-birth firm is more likely to bargain with and matches potential outsider offers of mothers with higher pre-birth earnings or earnings potential. Mothers with higher productivity tend to have higher pre-birth earnings and potential re-employment earnings, making it more likely that they return to their pre-birth employer. Therefore, our monotonicity assumptions are likely satisfied in our setting.

We provide empirical support for our two monotonicity assumptions. First, we show that even when controlling for a wide-range of mothers’ pre-birth employment and other background characteristics, higher pre-birth earnings are significantly and positively associated with the likelihood of mothers’ returning to their pre-birth employer. Second, using estimates from a

selection model we show that higher future earnings potential at the pre-birth employer is also strongly associated with returning to the former employer after childbirth.

Our estimates of job mobility on mother’s re-employment earnings reveal strong heterogeneous effects, depending on her position in the earnings distribution. We find that mothers at the upper part of the earnings distribution *benefit* from leaving the pre-birth employer at the time of the return-to-work decision. For example, job mobility increases the likelihood of earning at least 60 euro/day by around 1 points respectively, which we translate into a wage increase of roughly 4 to 7 percent. Under our monotonicity assumptions, the gains we estimate reflect the causal impact of mothers’ job mobility on earnings and are not explained by unobserved factors, such as productivity or motivation. The earnings gains from job mobility also allows these mothers to narrow the earnings gap with their partners compared to mothers who return to their pre-birth employer.⁵ In contrast, our bounds are relatively wide and cover zero for mothers at the lower and middle part of the earnings distribution.

The initial decision to leave the pre-birth employer has persistent effects on mothers’ labor market success. Using average earnings between 11 to 15 years after the return-to-work decision, we find that a job transition after childbirth increases long-term earnings by around 10 percent. Overall, our results imply that job mobility can help to put mothers on a different career trajectory with the possibility to reduce the motherhood penalty.

We examine the robustness of our results in various ways. For example, our bounding approach relies on the assumption that (potential) earnings are the main driving force for mothers’ job mobility decisions. While this is the case in many job-search models and a large share of individuals searching on-the-job state dissatisfaction with pay and benefits as the main reasons (Faberman et al., 2022), mothers may prioritize non-pecuniary amenities over earnings when making decisions, and these components are possibly negatively correlated. To further address these concerns, we also consider alternative monotonicity assumptions based on pre-birth job tenure. Mothers with longer pre-birth tenure likely have an established relationship with the employer and a greater valuation for the provided job characteristics (Gronberg and Reed, 1994). Consequently, mothers with longer tenure at the current employer are also more likely to return after childbirth.⁶ Estimating our bounds under these alternative monotonicity assumptions yields results consistent with our original specification.

To obtain further insights into what drives our effects, we investigate the role of employers and factors affecting job search costs and mobility. We find that employers play an important role in shaping mothers’ future labor market success; see also Hotz et al. (2018) as well as Abowd et al. (2018) and Song et al. (2019) for a general analysis of the role of firms for labor market outcomes. Mothers with larger earnings increases from changing jobs after childbirth move to faster growing firms, both in terms of overall employment and the number of female employees.

⁵While job mobility reduces the pay gap within the household for higher earning mothers, we still find that they earn less than their partners after the job transition.

⁶In our work, we can neither investigate which specific job characteristics are valued by the mother nor can we directly estimate compensating wage differentials. We use job tenure as a proxy for the total bundle of job characteristics valued by the mother.

Faster growing firms tend to be more successful in the future and also offer higher life-time wages (Kaas and Kircher, 2015). Mothers with larger earnings increases also move to firms with smaller gender wage gaps among newly hired workers. Our results imply that mothers move to firms offering offering better career opportunities to their new female employees.⁷ The combination of moving to more successful firms offering better career opportunities ultimately leads to the positive earnings effects we find in our analysis.

We find that mothers benefiting from job mobility increase their commuting time to work and are geographically more mobile. The results provide indirect evidence that mothers with larger earnings increases from changing employers search in wider geographic areas to find better employment possibilities. They also imply that these mothers tend to value an increase in earnings relatively more than a reduction in commuting time and therefore exhibit preferences more similar to men; see also Le Barbanchon et al. (2021). In light of the results in Cortes et al. (2020) that higher paying jobs also offer more amenities, one could also interpret our results that a combination of monetary and non-monetary benefits allows these mothers to accept larger commuting costs. In contrast, mothers who do not gain from job mobility tend to reduce their commuting time, although these effects are imprecisely estimated.

Taken together, our results suggest that mothers face important differences in search and moving costs and moving play an important role in explaining our results. For example, having no access to flexible childcare may make it impossible for mothers to look for mothers from looking for better employment opportunities which also require longer commutes. We investigate such an explanation further, and look at the importance of formal and informal childcare.

Our results do not suggest that local provision of nurseries play a role in explaining the differences in labor market success between mothers who move employers and those who do not. The estimates are close to zero, and we can rule out meaningful effects. In that sense, we complement Kleven et al. (2024) who do not find that childcare expansion policies had any sizable effects on gender convergence.

We do find evidence, however, that informal help with childcare, specifically by the husband, is an important factor. Using information about childcare arrangement in the Austrian Microcensus and comparing mothers in our sample to their “synthetic selves” in the census (see Kuziemko et al., 2018, for a similar approach), we find that mothers gaining the most from job mobility after childbirth also receive significantly more support with childcare from their husbands. Interestingly, our results reveal that husbands of mothers with higher gains from changing employers also exhibit higher job mobility after childbirth themselves. We do not find any evidence that husbands adjust their labor market outcomes on other margins, such as a reduction in employment or transition to less demanding jobs.⁸ Changing employer and

⁷Complementing our results here, Healy and Heissel (2024) find that delay in career advancements is an important determinant of the motherhood penalty, using data on U.S. Marines.

⁸We do not observe hours worked in our data and therefore cannot investigate this possible margin of adjustment.

needing to adjust to a new work environment may make these husbands more receptive for the difficulties of balancing childcare and working life.

Our results complement [Goldin \(2014\)](#) and highlight the important role of husbands' support in achieving gender convergence. Changes in the routine of partners' working lives may help to overcome these costs. Interpreted through the marriage and labor market model of [Calvo et al. \(2024\)](#), where couples with more equal productivity in household tasks are more likely to match and also have more equal labor market outcomes, our results also imply an important role for assortative matching in explaining the motherhood penalty. Consistent with this explanation, we find that for mothers at the upper part of the earnings distribution the household earnings gap narrows due to job mobility.

Lastly, we provide indirect evidence that information about job opportunities may play a role in explaining why we do not find any earnings effects of job mobility for mothers at the lower part of the earnings distribution; see also [Cortes et al. \(2020\)](#) and [Frimmel et al. \(2022\)](#) for related discussions. We show that mothers at the lower part of the earnings distribution tend to have weaker labor market networks than those at the upper part. Having a strong co-worker network is likely an important source for information about job opportunities. Co-workers also provide prospective employers with information they otherwise would not have ([Dustmann et al., 2016](#)). On the one side, our results imply that having access to accurate information about labor market prospects likely matters for the future career trajectory of high-earning mothers. On the other side, they also suggest that co-worker networks may not be as important for obtaining information regarding good job opportunities at lower earnings levels.

In addition, in the appendix, we show that the documented job mobility patterns and the impacts on earnings are unique to mothers. We do not find similar mobility patterns for non-mothers. In general, our results indicate that non-mothers who change employers tend to move to lower paying jobs. These earnings reductions are caused by transitions to firms offering fewer career opportunities to newly hired female employees compared to men; the opposite to what we find for mothers.⁹ We provide suggestive evidence that the mobility to such types of employers is, at least partially, motivated by the intention to have (more) children in the future. In contrast, we find that job mobility decreases the likelihood of having at least one more child for mothers. These results are in line with [Adda et al. \(2017\)](#) and [Hotz et al. \(2018\)](#) who show that there is substantial sorting of women into firms and jobs depending on their future fertility.

Taken together, our results show, on the one side, that changes in the labor market have the potential of reducing gender inequality; see also the discussion in [Goldin \(2014\)](#). Given the rather pessimistic findings so far on the motherhood penalty and the limited impact of family leave policies in supporting gender convergence ([Kleven, Landaïs and Sogaard, 2019](#); [Tô, 2018](#); [Thomas, 2019](#); [Kleven et al., 2024](#)), we see our results as encouraging. Our work provides

⁹In our data we only observe location information for mothers applying for childcare benefits. Therefore, we cannot investigate the commuting channel in the sample of non-mothers.

support that the goal of gender equality is achievable, although there still needs to be a lot of work done. Providing information about labor market opportunities and supporting job search may be one way forward to reduce gender gaps, at least within the household and for higher earning mothers.

On the other side, woman, and mothers in particular, still face many obstacles in the labor market and changes may only occur slowly. Husbands play a key role, for example by taking over care responsibilities, to overcome these obstacles; see also, for example, the discussions in [Bertrand \(2011\)](#) and [Kleven et al. \(2024\)](#).

With our work we make several contributions to different strands in the literature. First, we contribute to the literature on gender inequality in the labor market ([Olivetti and Petrongolo, 2016, 2017](#)) and in particular to the growing literature on parenthood and its unequal impact on men and women ([F ernandez-Kranz et al., 2013](#); [Angelov et al., 2016](#); [Lundborg et al., 2017](#); [B utikofer et al., 2018](#); [Kleven, Landais and Sogaard, 2019](#); [Healy and Heissel, 2024](#)). We document that mothers exhibit high job mobility after childbirth with important implications for their future careers. To the best of our knowledge, such a job search and mobility channel has been given limited attention in the existing literature.

We also contribute to the literature on the (unintended) consequences of maternity leave policies on mothers' post-birth labor market outcomes ([Lalive et al., 2014](#); [T o, 2018](#); [Thomas, 2019](#)).¹⁰ In our work, we consider the short- and long-term earnings impact of job-to-job transitions after childbirth, an outcome which can be closely linked to job search during maternity leave.

Lastly, our work speaks to the recent literature on the causes of rising inequality in the labor market caused by firms, mobility and matching ([Abowd et al., 2018](#); [Song et al., 2019](#); [Calvo et al., 2024](#)) and specifically mothers' sorting into jobs and firms ([Felfe, 2012](#); [Adda et al., 2017](#); [Hotz et al., 2018](#)).¹¹ We show that sorting into firms matters both pre- and post-birth, with many mothers changing employers to combine family responsibilities with a labor market career.

Our paper proceeds by first describing the institutional setting and the data. In [Section 3](#) we document that mothers after childbirth have a high job-to-job transition rate compared to observational similar non-mothers. We describe our bounding approach in [Section 4](#). Our main estimates, the effect of job mobility after childbirth on both short- and long-term earnings are presented in [Sections 5 and 6](#). In [Section 7](#), we explore the role of firms and search costs in explaining our results. [Section 8](#) concludes.

¹⁰Other papers evaluating the changes in maternity leave policies on mothers' post-birth labor market outcomes include, for example, [Berger and Waldfogel \(2004\)](#), [Baker and Milligan \(2008\)](#), and [Sch onberg and Ludsteck \(2014\)](#). These works find in general impacts on the short-term labor supply of mothers, but no or only small effects on their long-run labor market outcomes.

¹¹Related, there is also the literature on general sorting into low- and high paying jobs by gender (e.g. [Loprest, 1992](#); [Del Bono and Vuri, 2011](#); [Card et al., 2016](#); [Barth et al., 2021](#); [Sorkin, 2017](#)).

2 Institutional Setting and Data

2.1 Institutional Setting

We briefly describe the institutional setting in place in Austria between 1990 and 1995, the time period of our sample. It should be noted that the two most important components of family leave policies in our work, maternity protection and job-protected maternity leave, have remained largely unchanged over the past years and are still in place today. We also note that in Austria, the child penalty is relatively high in comparison with other countries (Kleven, Landais, Posch, Steinhauer and Zweimüller, 2019) and the take-up of parental leave is low (Kleven et al., 2024).

Maternity Protection: The duration of maternity protection is 16 weeks in general. It starts 8 weeks before the estimated birth date and lasts until 8 weeks after the birth of the child. Under certain circumstances, such as a premature birth, multiple births or cesarean-section birth, maternity protection is extended to at least 20 weeks. Mothers are not allowed to work during maternity protection by law. Over the duration of the protection period, mothers receive government transfers replacing 100 percent of the net pre-birth labor earnings. The replacement is calculated as the average labor earnings over the last 3 months prior to the start of maternity protection.

Maternity leave: After the end of maternity protection, mothers have the right to take maternity leave. The maximum duration of job protected maternity leave is 24 months. During this time, mothers enjoy extended job protection. Extended job protection means that mothers have the right to return to their pre-birth employer in the same position as prior to leave taking. If this is not possible, an employer has to offer a similar position in line with the specification set out in the existing employment contract. Mothers are also protected from dismissal for six weeks after returning from maternity leave. After these six weeks, the regular notice period and dismissal rules apply.¹²

Unlike employers, mothers can terminate the work relationship with her pre-birth employer at any time during the maternity leave, as long as they comply with the appropriate notice period.¹³ At the same time, they also keep the option of returning to their pre-birth employer after the end of maternity leave. This allows mothers to engage in job search during their leave period.

It should be emphasized that job protected maternity leave is not unique to Austria but is offered in many countries. For example, in the U.S., women employed in firms with 50 or more employees are in general entitled to 12 weeks of unpaid job protected maternity leave

¹²The exact notice period depends on tenure within the firm. In general, the notice period is at least 6 weeks and employees can only be dismissed by the end of each quarter.

¹³The exact period for notifying the employer is often set by collective bargaining agreements and is normally one month.

under the Family and Medical Leave Act.¹⁴ Women in the UK can take a minimum of 52 weeks of job-protected leave, with a possible extension if the employer participates in a special maternity scheme. In Germany mothers are eligible for up to 3 years of job protected leave after the birth of a child.

Benefit Payments: During the time period between July 1990 and the end of 1995 we consider in our analysis, mothers received government transfers during the entire maternity leave.¹⁵ The duration of job protected leave and the time over which government transfers are paid are therefore equal in our setting. The benefit amount did not depend on mothers' household income and amounted to roughly 30 to 40 percent of female net median earnings (Lalive et al., 2014). Benefit payments were conditional on the mother staying at home, however. If she returned to work before the leave period was exhausted, benefit payments were terminated.

To qualify for benefit payments, mothers had to fulfill certain work requirements. For a first birth, they had to be employed for at least 52 weeks within the two years prior to giving birth. For the second- and higher order births or if the mother was younger than 25 years at the time of birth, the work requirement was reduced to 25 weeks.¹⁶

2.2 Data and Sample

Our analysis is based on the Austrian Social Security Data Base (ASSD), a high-quality administrative data set to verify pension claims which is structured as a matched employer-employee data set. It covers all private sector employees and provides detailed information about daily labor market states. As time spent on child bearing and rearing is an important determinant for the calculation of old-age security benefits, the ASSD also contains high quality information on the number of births and the duration of maternity leave taken by mother with previous social security contributions. Zweimüller et al. (2009) provide an extensive description of the ASSD.

We observe all mothers with a child born between July 1990 and the end of 1995, and previous employment subject to social security contributions in the data. For all mothers in our sample, we obtain the duration of the maternity protection and maternity leave, the tenure prior to entering maternity protection at the pre-birth employer, and mothers' daily earnings. We also obtain information on daily earnings in the first job after re-entering the labor market and information on the employing firm. In addition, to investigate the long-term impact of job

¹⁴In some states, the job protected leave is even longer, conditional on certain requirements. For example, the District of Columbia offers up to 16 workweeks of medical leave and 16 weeks of family leave during a 24 months period (see Gault et al., 2014, for an overview).

¹⁵The current legislation allows parents to choose from a set of benefit duration, ranging from 12 (higher monthly benefit payments) to 36 months (smaller monthly benefit payments). Regardless of the chosen duration, job protected leave is fixed to 24 months after childbirth.

¹⁶Parents also had the possibility to share the second year of maternity leave during our observation period. It was also possible to transform the maternity leave into part-time leave by reducing working hours by 50% and receiving only 50% of the benefits. There was no substantial take-up of either maternity leave by fathers or part-time leave, however (Lalive et al., 2014).

search we collect information on daily earnings up to 15 years after the initial return-to-work decision.

In our analysis, we concentrate on a sample of mothers who are attached to the labor market. Therefore, we disregard all mothers who had less than one year of tenure in their last firm prior to childbirth. This tenure requirement is slightly stronger than the eligibility criteria for job-protected maternity leave discussed in the previous section and also slightly stronger than the restrictions applied in [Lalive et al. \(2014\)](#). While our results are not sensitive to the imposed tenure requirements, concentrating on a sample of established workers allows us to fully trace out the potential effects of job mobility after childbirth.

Around 65 percent of all mothers who take up employment after childbirth return to work within the maternity leave period of two years. Some mothers take substantially longer, however. For example, some return to the labor market once the child attends primary school around age six or even later. Firms may perceive the extended leave taking as a signal of lower attachment to work ([Tô, 2018](#)). These mothers also arguably do not engage in job search but their return decision and job selectivity is likely driven by the age of the child and other considerations. To avoid that our results are affected by this group, we exclude all mothers who did not return to the labor market by the end of the job protected maternity leave period.¹⁷

In Appendix A, we provide further evidence for the importance of the job protected maternity leave period for mothers' return-to-work decisions. As shown in Figure A.1, the vast majority of mothers return to work within 24 months after birth, and most of them do so at the end of the job protected maternity leave period. If mothers change jobs, they do so more likely within the job protected maternity leave period. This pattern suggests that changing jobs is likely more effective after childbirth than later when the child is older.

Table 1 summarizes our estimation sample. Overall, our sample consists of around 59,000 women with at least one child. All earnings in the table and in our analysis are expressed in 1990 euro. Before entering maternity protection, mothers earn on average 25 euros per day which is lower than the average female daily earnings of 36 euros during the period under consideration.¹⁸ The large majority of mothers in our sample are employed in white collar jobs prior to childbirth and have, on average, almost four years of tenure in the pre-birth firm.

[Table 1]

We also provide summary statistics separately for mothers who decided to leave their pre-birth employer (leavers, $L = 1$) and those who returned (stayers, $L = 0$) after childbirth. As one can see, mothers who left the pre-birth employer tend to be younger and had lower

¹⁷On the one side, longer time out of work may lead to a stronger depreciation of human capital and can therefore lower re-employment wages (e.g. [Albrecht et al., 1999](#)). On the other side, women returning faster to the labor market after childbirth might be negatively ([Ejrnaes and Kunze, 2013](#)) or positively ([Tô, 2018](#)) selected. In Appendix F, we present results when allowing for a longer return period. The estimates are qualitatively similar to those presented here.

¹⁸Expressed in current terms, these mean daily earnings correspond to 45 euro and 65 euro respectively.

earnings in the pre-birth firm compared to stayers. Leavers also have lower tenure than stayers. With respect to firm characteristics, leavers were more likely employed in significantly smaller firms and also faced higher pay inequality within the firm prior to giving birth.

Overall, the summary statistics presented in Table 1 suggest substantial differences in observable characteristics between stayers and leavers. These stark differences are likely affected by unobserved heterogeneity, for example, in preferences for family friendly firms and amenities (e.g. Felfe, 2012; Hotz et al., 2018), in career concerns (e.g. Bertrand et al., 2010), or in the intensity of job search (e.g. Faberman and Kudlyak, 2019), which motivates us to use a partial identification approach to estimate the impact on job mobility, discussed in Section 4.

3 Motherhood and Job Mobility

Motherhood has likely significant impacts on mothers' career consideration. Having a child can be considered as an important life circumstance. It may serve as an information shock about own labor market expectations and ambitions. That motherhood leads to substantial changes in life and to career reconsiderations is also often discussed in the popular press. For example, anecdotal evidence suggests that for some mothers, the birth of a child can be a catalyst for refocusing their careers, with many aiming to become role models for their children. But raising children can be demanding, and caregiving responsibilities may significantly impact one's career trajectory.¹⁹

In the previous section, we provided evidence that if mothers change jobs, they tend to do so during the job protected maternity leave period. This suggests that searching and changing jobs is more common during the maternity leave period rather than when the child is older. In this section, we show that recent mothers also tend to have significantly higher job mobility after childbirth than comparable non-mothers.

To investigate the importance of job mobility after childbirth for mothers in comparison to non-mothers, we first construct a control group of non-mothers with similar age as mothers observed in our sample. From this group, we select, for each quarter, in which we observe a birth (reference quarter), all women who were employed at that time, but who did not give birth in a window of 4 years around the reference quarter.²⁰

Then, for all non-mothers we obtain the tenure in the current firm, the earnings up to the reference quarter, as well as the labor market outcomes up to two years after the reference quarter. These two years correspond to the duration of the maternity leave of mothers; see Section 2. Applying similar criteria as when defining our baseline sample of mothers, we

¹⁹See, for example, statements of recent mothers here: <https://www.nytimes.com/interactive/2020/05/05/parenting/how-motherhood-changed-us.html>. In Appendix F, we show that our results are stronger for mothers with higher-order births, and therefore a higher likelihood of completed desired fertility. This group may have stronger incentives to refocus their careers.

²⁰This implies that our control group also includes women who already have had children or will do so in the future, as long as the birth date of the child is at least 4 years away from the reference quarter. Our control groups also includes women who potentially never have any children. For simplicity we refer to all these women as non-mothers.

disregard all non-mothers with tenure of one year or less measured up to the reference quarter. We also exclude all non-mothers who were not employed at least one day in the two years following the reference quarter.

Using this final sample of non-mothers, we then create an indicator if the individual had a job-to-job transition within two years after the assigned reference quarter. An individual experienced a job-to-job transitions if she moved to a new employer after the reference quarter and the transition took place within the same quarter as the end of her previous employment spell.

We estimate simple differences in means comparing the job-to-job transition rates of mothers with those of non-mothers. To account for possible differences in moving intentions, we also estimate logit regressions where we account for a wide range of personal and labor market characteristics such as tenure in the previous job, earnings in the previous job, education, and age. These variables capture possible differences in the propensity to move employer caused, for example, by career and earnings considerations or differences in firm-specific human capital. The average marginal effects derived from our regression are reported in Table 2. Notice that we do not interpret our estimates here as causal but rather important suggestive evidence.

[Table 2]

The results presented in the table show the importance of motherhood for job mobility. Our estimates are large and highly significant. Mothers have a more than 7 percentage points higher likelihood of moving to a new employer within two years after giving birth in comparison to non-mothers.²¹ Compared to the mean job mobility of non-mothers of around 7%, our estimates imply that mothers have a twice as high job mobility propensity. Including our control variables leaves our results virtually unchanged.

To show that our results do not depend solely on career concerns and information shocks of becoming a mother, we present estimation results separately by education groups. Educational attainment is likely a good, while imperfect, measure to proxy possible career concerns (see also [Del Bono et al., 2012](#)). At the same time, motherhood tend to be a larger shocks to the labor market beliefs for higher educated women ([Kuziemko et al., 2018](#)).

We observe a similar pattern of job mobility for our different education groups as we do in our baseline sample. Highly educated mothers have a more than 5 percentage points higher likelihood to move to a new employer compared to non-mothers. For lower educated mothers, we even find stronger effects of motherhood on the transition probabilities. All our estimates are not only substantial in magnitude but also highly significant. Overall, our results show that mothers have significantly higher job mobility after childbirth than comparable non-mothers.

In terms of our other variables, we see that in general individuals with higher tenure and higher wages are less likely to leave their employer. The estimated average marginal effects for

²¹In line with our argument that career changes are more frequent during job-protected maternity leave, [Gottlieb et al. \(2022\)](#) finds—using data from Canada—that mothers eligible for extended leave are more likely to start a business.

these variables are also quite large. For example, a one euro increase in daily earnings decreases the leave probability by 0.14 percentage points. The effects of wages on the propensity to leave the employer are similar across our education groups.

4 Empirical Bounds Approach

In this section, we introduce our empirical bounding approach. We first discuss the monotonicity assumptions necessary for identification and provide empirical evidence that these hold in our setting. Then, we derive the bounds on the earnings impact of job-to-job transitions.

4.1 Monotonicity Assumptions

Our bounding approach is based intuitive assumptions on how mothers select into job mobility. Specifically, we assume marginal decreasing returns to job search in mother’s pre-birth earnings and their re-employment earnings potential at their pre-birth employer. Such assumptions are inherent in many theoretical job-search models (Christensen et al., 2005; Wright et al., 2021) and supported by empirical evidence (Faberman et al., 2022). Mothers with higher earnings and earnings potential are already in highly productive matches with their current employer. Consequently, although they likely have more outside options, the chances of finding a suitable one that offers higher pay are lower. Considering that job search requires effort and is costly, this implies that these mothers are less likely to switch employer after childbirth. As we will discuss further below, the implied monotonicity assumptions give rise to intuitive bounds on the effects of job mobility on earnings.²² We describe our bounding approach and discuss the required monotonicity assumptions in detail further below.

Denote by L the indicator whether a mother changed jobs after childbirth, with $L = 1$ if she leaves her pre-birth employer (leaver) and $L = 0$ if the mother returns to her pre-birth employer (stayer). Likewise, denote by $Y(1)$ the potential earnings a mother would receive if she left her pre-birth employer and by $Y(0)$ the potential earning if the mother returned to her pre-birth employer (see, for example, Imbens and Wooldridge, 2009, for the potential outcome notation). We define the distributional effects of job mobility on mothers’ earnings in the following way

$$\Delta^D(y) = P(Y(1) > y | L = 1) - P(Y(0) > y | L = 1). \quad (1)$$

For a given y , the estimate $\Delta^D(y)$ from Equation (1) reflects the effect of job mobility after childbirth on the probability of obtaining re-employment earnings of greater than y for

²²One might be concerned that mothers put more weight on non-monetary job amenities, such as flexibility, than on earnings when deciding to change employer. While the results in Cortes et al. (2020) suggest a positive correlation between provided non-monetary job amenities and earnings, in Section 5 we show that our results are robust to an alternative set of monotonicity assumptions, addressing these concerns.

mothers who decided to leave their employer. This effect can therefore be interpreted as how job mobility after childbirth affects mothers' post-birth earnings potentials.

Notice that $P(Y(1) > y | L = 1)$ in Equation (1) can be directly identified from the observed data. To bound the counterfactual outcome $P(Y(0) > y | L = 1)$, we link mother's observed job-to-job transition to two intuitive monotonicity assumptions on mothers' job mobility propensity, using the idea of d'Haultfoeuille (2010).

Monotonicity in Pre-birth Earnings

Denote by Z mother's pre-birth earnings prior to entering maternity protection and by X a vector of mother's background characteristics which may affect her job transition decision, such as education, age, and pre-birth firm characteristics. Remember that $Y(0)$ are *potential* earnings offered by the pre-birth employer after the return-to-work decision.

Our first monotonicity assumption requires that the likelihood of leaving the pre-birth employer is decreasing in mother's pre-birth earnings Z , for given potential earnings $Y(0)$ and characteristics X . More formally, it can be expressed as

Assumption M1.

$$P(L = 0 | Y(0), Z = z, X = x) \text{ is increasing in } z \text{ almost surely, for all } x. \quad (\text{M1})$$

Changing employers requires effort and is likely costly. Therefore, the expected earnings gain from moving to a new employer is smaller for higher values of Z (see also, for example, the model of Christensen et al., 2005). Facing smaller marginal benefits from changing employers, mothers' with higher values of Z are therefore less likely to search for a new job and more likely to return to their pre-birth employer. In support of Assumption M1, Faberman et al. (2022) find a strong decrease in the job search intensity in own wages, such as time spent searching for a job and the numbers of applications sent.

Validity of Assumption M1

Assumption M1 would be violated if workers with higher pre-birth earnings are more likely to receive more acceptable job offers than those with lower pre-birth earnings, *conditional* on facing the same potential earnings $Y(0)$ at the pre-birth employer. This would be the case, for example, if workers with higher pre-birth earnings but the same prospects upon return to the pre-birth employer received better information about possible outside offers, leading to higher mobility. Schmidpeter (2023) finds that, in general, workers receiving information about new job opportunities adjust their expectations about wage growth at the current employer upward, but the new information does not lead to an increase in expected job mobility, supporting Assumption M1.

To further address this concern, we also control for a wide range of characteristics which possibly capture the transmission of the information about outside options and effectiveness of search. For example, we include the size of the pre-birth employer and the share of female co-

workers in our analysis. Having more co-workers and specifically female co-workers are likely a good source for information about job opportunities. We also include age as well as the educational attainment of the mother. These factors have been shown to be important determinants for the effectiveness of job search (Faberman et al., 2022). Assumption M1 then requires that within each age-education-firm size group our conditional monotonicity assumption holds.

There is also the possibility that mothers use information about new job opportunities to renegotiate with their current employer, as, for example, in Caldwell and Harmon (2019). In general, such renegotiation behavior is in line with our bounding approach, as long as the pre-birth firm is more likely to negotiate with and match potential outside offers of mothers further up the earnings distribution.

Assumption M1 would also be violated if, for example, mothers with higher pre-birth earnings are negatively surprised by the “costs” of motherhood and therefore value family friendly but lower paying careers more after childbirth than those with lower values of Z . For example, Kuziemko et al. (2018) show that higher educated mothers likely underestimate the impact of motherhood on their future labor market career. To account for such possibilities, we include a wide range of mothers’ background characteristics in our estimation, such as age and education.

Monotonicity in Potential Re-Employment Earnings

To obtain our bounds, we also need to assume that mother’s likelihood of leaving the pre-birth employer is decreasing in *potential* earnings offered after childbirth by the pre-birth employer $Y(0)$, conditional on pre-birth earnings Z and mother’s background characteristics. Our second monotonicity assumption can formally be expressed as

Assumption M2.

$$P(L = 0|Y(0) = y, Z, X = x) \text{ is increasing in } y \text{ almost surely, for all } x. \quad (\text{M2})$$

Assumption M2 implies that mothers with higher $Y(0)$ at their pre-birth employer will gain less from searching more intensively for a new job compared to mothers with lower $Y(0)$ and possible more productive matches elsewhere. Given that searching is costly and facing smaller earnings gains, mothers further up the earnings distribution will therefore less likely leave their pre-birth employer; see also the discussion and models in Wright et al. (2021).²³ Notice, that Assumption M2 does not rule out that we observe mothers with higher $Y(0)$ to move to higher paying jobs at a different firm.

Validity of Assumption M2

Assumption M2 would be violated if mothers with higher $Y(0)$ valued non-monetary amenities, such as work flexibility, offered by other firms more than the earnings potential at their pre-

²³In the model considered in Wright et al. (2021) where higher paying jobs attract more applicants and search is costly, an individual even stops searching once she receives a sufficiently high wage at her current firm.

birth firm. While non-monetary amenities play an important role in the labor supply decisions of mothers in general (e.g. Felfe, 2012), there is no evidence that valuation of non-monetary amenities depends on the earnings potential. For example, the results in Taber and Vejlín (2020) suggest that women with higher education and therefore likely higher potential earnings value non-monetary job amenities equally as women with lower education and therefore likely lower potential earnings. There is also evidence that higher paying firms also offer more amenities. For example, Cortes et al. (2020) show that there is a positive within-gender correlation between actual earnings and the number of non-wage amenities. Notice that Assumption M2 in general does not rule out that mothers are willing to trade off pay for non-monetary work amenities. We only require that the willingness to pay for non-monetary amenities does not increase in mothers' potential earnings, conditional on individual and firm background characteristics.

The possibility of renegotiation may be another threat to Assumption M2. For example, for mothers with higher earnings potential it may be a better and less costly strategy to renegotiating the terms of employment with the pre-birth employer instead of moving to a new job (see, for example, Cahuc et al., 2006). However, mothers with higher $Y(0)$, and thus likely in more productive matches, are likely more costly to replace for the employer, implying higher bargaining power.²⁴ Given these higher replacement costs, the pre-birth employer may therefore be more willing to offer better conditions. Assumption M2 does not exclude this type of renegotiation, as long as the pre-birth employer is more likely to bargain with and match potential outsider offers of mothers with higher $Y(0)$.

To further capture possible specific negotiation behaviors, we also control for important determinants, such as firm size and education in our analysis. Larger firms may be more productive and therefore also more inclined to negotiate with their workers. Likewise, higher educated mothers have more likely more specialized skills and are therefore harder to replace, giving firms a higher incentive to renegotiated.²⁵

Further Discussion on the Monotonicity Assumptions

So far, we have discussed our assumptions from the worker's perspective. It is also possible that firms introduces potential selection on unobserved characteristics in our setting. For example, employers may make job offers selectively to more career-oriented and highly productive mothers. Assumptions M1 and M2 do not impose restrictions on individual productivity, preferences, job search effort, or return decisions. All these components can be correlated with the potential outcomes and pre-birth earnings. Therefore, selective job offers (and acceptances) based on mothers' unobserved characteristics, such as productivity, are not ruled out by our bounding approach.²⁶ However, under our monotonicity assumptions, the pre-birth firm always needs to have a higher willingness to keep mothers with higher pre-birth earnings (Assumption M1)

²⁴For example, Ginja et al. (2023) show that the costs of family leave programs for firms depends on the availability of substitutes.

²⁵Caldwell and Harmon (2019) find that renegotiation is more common among higher skilled workers, who likely have higher $Y(0)$.

²⁶While we can derive bounds on the returns to job mobility allowing for correlation between unobserved characteristics and (potential) outcomes, the size of the bounds likely increases with the strength of the correlations.

and earnings potential (Assumption M2). Notice that in our specific setting, mothers always can choose to return to their pre-birth employers and receive their pre-birth earnings Z ; see Section 2.

Under our two monotonicity assumption, (potential) earnings are the main driving force of the job mobility decision. While this is the case in many job-search models and a large share of individuals searching on-the-job state dissatisfaction with pay and benefits as the main reasons (Faberman et al., 2022), mothers may put more weight on other, non-monetary job characteristics which we do not directly observe in our data. To account for such possibilities, we also consider, as robustness, alternative monotonicity assumptions based on job tenure at the pre-birth employer. From the mother’s perspective, longer pre-birth tenure likely indicates a greater valuation of the total bundle of job characteristics, including non-monetary amenities (Gronberg and Reed, 1994). From the firm’s perspective, longer tenure also suggests a more established relationship with the mother and likely less uncertainty about her future productivity and career orientation. Consequently, mothers with longer tenure at the current employer are also more likely to return after childbirth.²⁷

It is worth noting that our monotonicity assumptions are on the selection into job mobility and not on the outcomes. They are therefore different and arguably weaker than the assumptions usually imposed in the empirical literature using bounds; see Manski (2003) and Ho and Rosen (2017) for an overview over different bounding approaches. For example, the commonly used monotone treatment response (MTR) assumption requires that leaving the pre-birth employer has either a monotone positive or monotone negative effect on re-employment earnings (Manski, 1997). Similar requirements are imposed by the monotone instrument variable (MIV) assumption which necessitates to have access to a variable having a monotone impact on earnings (Manski and Pepper, 2000). Likewise, the monotone treatment selection (MTS) assumption restricts the direction of the selection bias due to endogenous job-to-job transition on earnings (Manski and Pepper, 2000).

As we do not have any prior on how leaving the pre-birth employer can affect future earnings and the direction of the selection bias, neither of these restrictions are likely appropriate in our setting. In contrast, by using our two monotonicity assumptions we only require that the probability of returning to the pre-birth employer is increasing in Z and potential future earnings $Y(0)$, without restricting the impact on the outcome or imposing any other structure on the selection mechanism. It is worth emphasizing, that our assumptions do *not* impose any restrictions on what type of mothers gain or lose from job mobility. For example, our assumptions do *not* rule out that gains from job mobility are higher (or lower) for mothers at the upper part of the distribution.

²⁷Hotz et al. (2018) document a high pre-birth job mobility of mothers moving into family-friendly firms for Sweden. Our original monotonicity assumptions do not rule out such behavior, as long as earnings are the main driving force behind post-birth job mobility. Nevertheless, one might be concerned that some mothers make these pre-birth moves in light of alternative, non-monetary factors affecting post-birth labor market outcomes. In this sense, our alternative monotonicity assumptions also provide a robustness check to such situations.

Besides the two monotonicity assumptions, we also need a strong correlation between Z and $\mathbb{1}(Y(0) > y)$ in the subgroup of stayers. Loosely speaking, one can think of this requirement as a type of relevance condition, similar to the relevance condition in linear instrumental variable models. We provide empirical evidence that all our assumptions are satisfied in the next section.

4.2 Empirical Support for Monotonicity Assumptions

We provide empirical support for our three identification assumptions discussed in the previous section. First, under Assumption M1 the likelihood of returning to the pre-birth employer has to be increasing in Z . To provide empirical evidence for the monotone relationship between Z and the return probability, we run a logistic regression of the leave indicator on pre-birth earnings. We also include a quadratic in earnings to capture any possible non-linearities, $\tilde{Z} = \{Z, Z^2\}$. The predicted probabilities of returning to the pre-birth employer as a function of pre-birth earnings, $\hat{P}(L = 0|\tilde{Z})$, are shown in Panel a of Figure 1.²⁸

[Figure 1]

Second, Assumption M2 requires that the probability of returning to the pre-birth employer is positively related to potential earnings $Y(0)$. We provide evidence for this assumption graphically by plotting the (unconditional) estimates of the selection probability $\hat{P}(Y)$ obtained from the moment condition (2), discussed in the next section, against the observed re-employment earnings for stayers, i.e. mothers with $L = 0$. The results are shown in Panel b of Figure 1. It is apparent from the figure that there is a strong and positive relationship between potential earnings and mothers' decisions to return to their pre-birth employer, which supports our second monotonicity assumption.

Third, there has to be a strong and positive correlation between potential post-birth earnings $\mathbb{1}(Y(0) > y)$ and pre-birth earnings Z . We provide indirect evidence for this relation by estimating a local linear regression of $Y(0)$ on Z among mothers who returned to their pre-birth employer. Panel c in Figure 1 provides the results from this regression, together with 95 percent confidence intervals. As one can see, there is a clear positive and strong relationship between Z and Y .

4.3 Bounding the Earnings Effect of Job-to-Job Transitions

Under Assumptions M1 and M2 we can obtain the following upper and lower bound on our counterfactual outcome $P(Y(0) > y|L = 1, X = x)$ (see also d'Haultfoeuille, 2010):

$$P(Y(0) > y|L = 1, X = x) \leq E[P(Y > y|L = 0, Z, X = x)|L = 1, X = x] \quad (\text{UB})$$

²⁸The estimated coefficients on Z and Z^2 are 0.0061 (s.e. 0.0027) and 0.0002 (s.e. 0.0001) respectively. The results are not sensitive to the functional form here. For example, including Z linearly in the model gives an estimated coefficient of 0.016 (s.e. 0.001).

$$\frac{\pi_x}{1 - \pi_x} E \left[\frac{1 - P_x(Y)}{P_x(Y)} \mathbb{1}(Y > y) | L = 0, X = x \right] \leq P(Y(0) > y | L = 1, X = x) \quad (\text{LB})$$

where $\pi_x = P(L = 0 | X = x)$. The term $P_x(Y)$ is the solution to the following conditional moment condition

$$E \left[\frac{1 - L}{P_x(Y)} - 1 | Z, X = x \right] = 0. \quad (2)$$

$P_x(Y)$ can be thought of as the probability of returning to the pre-birth employer.²⁹ A detailed derivation of the bounds is presented in Appendix B.

Intuitively, to obtain the upper bound (UB) on our counterfactual outcome based on Assumption M2, we match mothers who leave their pre-birth employer to stayers with the same pre-birth earnings Z , conditional on having the same background characteristics. Since mothers with higher (potential) earnings at their pre-birth employer are more likely to return, it must be the case that there is no other employer offering better career opportunities and therefore a higher probability for the mother of receiving higher earnings (Assumption M2). Therefore, any mother with similar pre-birth earnings (and characteristics) but who decided to leave the pre-birth employer faces at most the same expected career prospects as stayers at her old firm. Thus, we can use the observed re-employment earnings of stayers as an upper bound on our counterfactual outcome.³⁰ It turns out that in our empirical analysis, discussed in the next section, these upper bounds are most informative.

The lower bound (LB) under Assumption M1 is based on a selection correction approach, where we weight the observed re-employment earnings of stayers with the estimated odds of returning to the pre-birth employer. When estimating the odds, we assume that mothers only base their decision whether to return to their pre-birth employer on the potentially offered re-employment earnings, given observable background and firm characteristics.³¹ This gives rise to a (misspecified) instrumental variable approach where we estimate Equation (2) using pre-birth earnings as instrument for re-employment earnings *conditional* on our outcome Y ; see d’Haultfoeuille (2010) and Laffers and Schmidpeter (2021). Loosely speaking, as we ignore the strong dependence between pre- and post-birth earnings, and the positive effect on the return probability (Assumption M1), our misspecified selection correction approach underestimates the true selection into job mobility and the potential re-employment earnings at the pre-birth

²⁹Strictly speaking, the interpretation that $P_x(Y)$ is the return probability is only correct under the independence assumption $L \perp\!\!\!\perp Z | (Y, X)$, which is stronger than the monotonicity assumptions we impose, see d’Haultfoeuille (2010).

³⁰One could make this argument more formally. Under Assumption M2 and using Bayes’ formula we have that $P(Y(0) \geq y | L = 1, Z = z, X = x) \leq P(Y(0) \geq y | L = 0, Z = z, X = x)$. To obtain the bound, this inequality needs to be integrated over Z conditional on L and X . Therefore, earnings potential of leavers at the pre-birth employer is bounded from above by the re-employment earnings of stayers.

³¹Weighting by the estimated selection probability bears similarity to the non-parametric selection correction approach of Das et al. (2003) using propensity score weights. The exclusion restriction here is, however, different. In our setting, selection is mainly driven by the earnings potential $Y(0)$. If pre-birth earnings were independent of job mobility conditional on re-employment earnings, then we could point identify the earnings effects of job mobility, as in d’Haultfoeuille (2010).

employer for movers. This suggests that we can use these estimates as lower bound on our counterfactual outcome.

Using (UB) and (LB), we can bound the conditional returns to job mobility:

$$\begin{aligned}
LB_x(y) &\equiv P(Y|L = 1, X = x) - E[P(Y > y|L = 0, Z, X = x)|L = 1, X = x] \\
&\leq \Delta_x^D(y) \leq \\
UB_x(y) &\equiv P(Y > y|L = 1, X = x) - \frac{\pi_x}{1 - \pi_x} E\left[\frac{1 - P_x(Y)}{P_x(Y)} \mathbb{1}(Y > y)|L = 0, X = x\right]
\end{aligned} \tag{3}$$

Given that $LB_x(y)$ and $UB_x(y)$ are sharp bounds on $\Delta_x^D(y)$ (d'Haultfoeuille, 2010), we have that $LB(y)$ and $UB(y)$ defined as

$$\begin{aligned}
LB(y) &\equiv \int_x LB_x(y) dF_{X|L=1}(x), \\
UB(y) &\equiv \int_x UB_x(y) dF_{X|L=1}(x),
\end{aligned} \tag{4}$$

are also sharp bounds on $\Delta^D(y)$, where $F_{X|L=1}$ denotes the conditional distribution of X given $L = 1$. Therefore, by integrating the lower and upper bound over the distribution of X given $L = 1$ we obtain bounds on our effect of interest $\Delta^D(y)$. We discuss how we estimate these bounds from the data in Appendix C.

5 Job Mobility after Childbirth and Earnings

5.1 Impact on Earnings after Return-to-Work Decision

Figure 2 presents the estimates of the effect of job mobility on mothers' earnings potential $\Delta^D(y)$ at the time of the return-to-work decision. In all specifications, we include education, age-at-birth, firm size and share of females in the pre-birth job to capture possible differences in moving intentions. The left-hand side graph in the figure depicts both the estimated upper and lower bounds. The graph on the right-hand side of the figure zooms into the lower bounds.

Our lower bounds are informative, in the sense that there are points in the support of mothers' re-employment earnings where $P(Y(1) > y)$ is larger than the upper bound on $P(Y(0) > y)$. In that case, job mobility has positive effects on mothers' re-employment earnings, with a magnitude at least as high as indicated by the lower bounds. In the figures, the shaded regions are 95 percent confidence intervals. Notice that in some cases the confidence intervals are very narrow and are hard to distinguish from the bounds in the graph.

[Figure 2]

Two interesting features emerge from the figure. First, earnings effects of job-to-job transitions are very heterogeneous along the earnings distribution. At most of the lower and middle parts of the earnings distribution, we do not find evidence that changing employers increases mothers' re-employment earnings. Our estimated bounds are very wide and cover zero.

In contrast, we find that mothers with potential earnings above 60 euro per day, which corresponds roughly to the upper quintile of the observed earnings distribution, uniformly benefit from moving to a new job after childbirth. While our bounds rule out very large effects for this group, our lower bound remains strictly positive, implying positive impact of job changes on earnings. These higher-earning mothers may be more sensitive to career opportunities. Our results show that these mothers transit to jobs with higher earnings potential after childbirth. Under our monotonicity assumptions, the estimates bound the causal effect of job mobility on earnings. The positive effects we estimate therefore do not arise from differences in productivity, motivation, and other unobserved preferences.

Second, the increase in earnings potential from moving to a new job can be considerable for mothers at the upper part of the distribution. For example, our lower bounds imply that job mobility after childbirth increases the likelihood of earning 60 euro or more by at least 1 percentage points and the likelihood of earning at least 80 euro by half a percentage point.

Using the estimated bounds on the distribution functions, we can translate these effects into an approximated expected increase in earnings associated with moving to a new employer instead of returning to the pre-birth firm. To calculate the expected earnings increase from job mobility for leavers, we first calculate truncated means of the form $E[Y|Y > \bar{y}] = \frac{\sum_{Y>\bar{y}} Y P(Y=y)}{P(Y>\bar{y})}$. We use the observed empirical cdfs of leavers to obtain their actual changes in earnings after moving employers. To obtain the counterfactual truncated mean, capturing potential change in earnings if the mother had returned to the pre-birth employer, we use the lower bound on $P(Y(0) > y|L = 1)$ defined in inequality (LB), and integrate over the distribution of X . Then, we calculate the relative earnings effects of job mobility after childbirth as the ratio of two truncated means.

Applying this approach, we find, for example, that for those mothers who earn at least 60 euro, moving to a new employer increases expected earnings by around 4 percent in the new job. Job mobility increases earnings of mothers who earn at least 80 euro by around 7 percent compared to the situation had they returned to their pre-birth employer. These increases are sizable when compared to mothers' average re-employment earnings of 32 euros per day.³² As we discuss further in Section 7, these earnings gains from job mobility also allows mothers to narrow the pay gap with their partner.

³²Remember that we report all earnings in 1990 levels.

5.2 Earnings Effects Based on Alternative Monotonicity Assumptions

The monotonicity assumptions used in our bounding approach in the previous section are based on earnings as the main driving force behind job mobility. One might be concerned that this does not fully capture mothers' job changing decisions, however. For example, mothers may put substantially more weight on non-monetary job amenities, such as work flexibility, than earnings when deciding whether to move to a new employer.³³ To further address this concern, we consider alternative monotonicity assumptions based on pre-birth job tenure.

Following [Gronberg and Reed \(1994\)](#), mothers with longer pre-birth tenure likely have a more established relationship with the employer and also a higher valuation of the offered characteristics in the current job. For firms, there might also be less uncertainty about mother's future productivity and career-orientation. This implies that observed job tenure is a good proxy for job quality and unobserved amenities offered by the pre-birth employer. Therefore, mothers with longer pre-birth tenure are more likely to return to their pre-birth employer. Note that in our analysis, we use job tenure as a proxy for the total bundle of job amenities valued by the mother. We do not investigate which amenities are particularly important to mothers or estimate compensating wage differentials. As before, using our bounding approach, we can allow pre-birth tenure to be correlated with other unobservable characteristics, such as mother's productivity.

The estimated bounds under the alternative monotonicity assumptions are shown in [Figure 3](#) which follows the same pattern as before: the left-hand side graph shows both upper and lower bounds while the graph on the right-hand side zooms into the informative lower bound.

Basing our monotonicity assumptions on job tenure does not alter our conclusions made in the previous section. The estimated bounds suggest a very similar picture as before, both in terms of effect sizes and who gains from changing employers. We find clear positive effects for mothers at the upper part of the earnings distribution. The consistent findings we obtain, whether we base our monotonicity assumption on tenure or earnings, give us confidence that we capture the impact of job changes on mothers' future labor market careers.

[[Figure 3](#)]

6 Impact on Long-Term Earnings

While we find positive effects of job mobility on mothers' re-employment earnings for those at the upper part of the distribution, our estimates may not fully reflect the life-time earnings impacts. For example, it is possible that firms offer returning mothers initially flexible but lower paid work after childbirth, with the potential to increase earnings, and climb the career ladder

³³The results in [Cortes et al. \(2020\)](#) suggest that in general the number of non-monetary amenities are positively correlated with offered wages. This would imply that our earnings measure also captures the role of non-monetary amenities in mothers' decision making.

later on. This may be particularly relevant for mothers with higher productivity, who may be more difficult to replace. If this was the case, our estimates in the previous section would overstate the impact of changing employers on mothers' future earnings potential. It is also possible that mothers who leave their pre-birth employer and move to higher-paying jobs may be increasingly insulated from potential disruptions in the future (as, for example, in [Jarosch, 2023](#)). This would lead to a persistent increase in earnings, and our initial estimates would understate the impact of changing employers after childbirth on mothers' life-cycle earnings. We therefore also consider the impact of initial job mobility after childbirth on long-term earnings.

We calculate long-term earnings as mother's average earnings between 11 and 15 years after the return-to-work decisions. We take the averages to avoid that a single year affects our long-term estimates.³⁴ We do not require the mother to stay with the same employer as at the time-to-work decision but allow them to move employers later on. Therefore, our long-run estimates capture the importance of changing jobs earlier after childbirth compared to later (or not at all). The estimated bounds on the long-term effects of changing employers are shown in [Figure 4](#).

[[Figure 4](#)]

As one can see from the figure, an initial job-to-job transition increases earnings for mothers at the upper part of the earnings distribution even up to 15 years after re-entering the labor market. Our estimated increase in long-term earnings is also sizable. For example, our lower bounds, shown in the right-hand side graph in the figure, show that leaving the pre-birth employer increase in the likelihood of earning 60 euro or more by at least half a percentage points and earning at least 70 Euro by at least 1 percentage point. These effects translate into an approximated increase in expected long-term earnings by around 10 percent. Our bounding approach does not allow us to directly isolate the reasons why initial job mobility leads to a long-term increase in earnings. We investigate possible underlying mechanisms, such as the role of firms and partners in [Section 7](#).

Overall, our findings suggest an important role for job search during maternity leave and resulting job mobility in explaining earnings gaps among mothers and women in general, with implications for the persistent gender pay gaps. On the one side, job search during maternity leave and a resulting job-to-job transitions can lead to divergence in mothers' labor market careers. On the other side, earning gains from leaving the pre-birth employer after childbirth may set mother on a higher career trajectory and has the potential to narrow the sizable gender pay gaps.

³⁴The results are similar when taking averages over a shorter time horizon.

7 Understanding the Earnings Impacts of Job Mobility

7.1 Exploring Underlying Mechanisms

Our findings presented in the previous section raise two important questions. First, why do only mothers at the upper part of the distribution gain from moving to a new employer after childbirth? And second, if changing jobs is beneficial for some mothers, why is there not more mobility after childbirth?

We concentrate on the role of firms and job characteristics as important labor market determinants to answer the first question. Firms play an important role in explaining workers' labor market outcomes (e.g. Card et al., 2012; Kaas and Kircher, 2015). However, for mothers good employment possibilities also may not be available in close proximity and require longer commutes.

To answer the second question, we look at the importance of search and mobility costs related to childcare and husband's support (e.g. Kleven et al., 2024). For example, mothers who receive little or no support with childcare may lack the opportunity to transition to a new job. In contrast, having a supportive partner who assists with childcare may enable some mother to pursue such jobs. Therefore, we will also pay close attention to whether the earnings gains we estimated in the previous section, along with potential support from partners in caregiving, can lead to a narrowing of the (household) pay gap.

To better understand the underlying mechanisms, we first group our sample into five different sub-samples g , depending on the mother's position in the earnings distribution. Mothers earning less than 20 euro per day are assigned to the first group, mothers earning at least 20 euro but less than 40 euro are assigned to the second group and so on. This grouping is motivated by our main results from Section 5, which indicate that mothers further up the earnings distribution gain from job mobility.

For each of these five groups we estimate then a linear regression separately for leavers ($L = 1$) and stayers ($L = 0$)

$$M_i = X_i' \beta^{g,L} + \epsilon_i \quad (5)$$

where M_i is the underlying channel of interest, for example firms' employment growth, faced by a stayer (leaver) mother i belonging to group g . The vector X_i contains information about mother's background characteristics such as age at birth and education as well as information about her pre-birth employer; see also Table 1.

To investigate whether underlying mechanisms differ between stayers and leavers, we then use our model estimates $\hat{\beta}^{g,L}$ to obtain predicted differences in each group g : $\hat{E}[\widehat{M}_i | G = g, L = 1] - \hat{E}[\widehat{M}_i | G = g, L = 0]$.³⁵ This estimate reflects the possible underlying channel through

³⁵This approach is fully flexible and is more robust than using simple linear regressions including a mobility dummy, as it accounts fully for any potential differences in the distribution of the observed covariates between

which the job mobility effect operates. It should be emphasized that we do not interpret the results as ultimate causal, but suggestive although interesting evidence.

7.2 The Role of Firm and Job Characteristics

We first investigate whether leavers move to more successful firms after childbirth, approximated by firms' growth rates. Faster growing firms may offer higher wages to fill open positions faster and may also offer higher life-time earnings (Davis et al., 2013; Kaas and Kircher, 2015). Moving to such firms can therefore be an important source of earnings growth for mothers. We measure firm growth as the differences in the log of the total number of employees and the number of female employees respectively between the time of the return to work decision and the start of the maternity leave. The results are reported in Columns (1) and (2) in Table 3.

[Table 3]

Leavers tend to move to faster-growing firms. Mothers who leave their pre-birth employer also move to firms with stronger hiring of female employees. These differences become more pronounced at the upper part of the earnings distribution. At the top of the earnings distribution, leavers move to firms which increase total employment by almost 50% over the considered period and hire 35% more women compared to firms of stayers.

We also investigate whether mothers who change jobs move to firms which do not only grow faster but also offer better career opportunities to women. To proxy such career opportunities we use both the gender pay gap among incumbent workers and the gender gap among new hires. Firms with smaller gender pay gaps may offer more equal opportunities to men and women, for example, in terms of promotions and earnings growth. The results are shown in Column (3) and (4) in Table 3.

Leavers at the bottom of the earnings distribution move in general to firms which have higher gender pay gaps among both incumbent and newly hired workers than firms of stayers. In contrast, leavers at the upper part of the earnings distribution move to firms where the existing gender pay gap is smaller compared to the gap at their pre-birth employer. These differences become particular pronounced when looking at the difference in the gender pay gap among newly hired workers. Mothers who leave their pre-birth employer move to firms in which the pay gap shrinks by 20 percentage points more among newly hired workers compared to stayers.

Taken together, these findings highlight the importance of firms in explaining mothers' labor market success after childbirth, mirroring the general findings in the literature (e.g. Card et al., 2016; Song et al., 2019). Mothers who increase their earnings potential by changing jobs tend to move to faster growing firms. They also move to firms which have more equal gender

leavers and stayers within our groups. At the same time, it is also more demanding with respect to sample size and may therefore be less efficient. In most of our analysis, we choose robustness over efficiency concerns.

pay structures, at least for newly hired workers. In that sense, our results complement the findings in [Hotz et al. \(2018\)](#) who show that (potential) mothers tend to move to more family friendly firms. Our result suggest that some mothers move to firms offering better chances for promotions and stronger earnings growth potential to females employees after childbirth. The transition to more successful firms then contributes to the positive effect of job mobility on earnings.

Given the importance of firms in explaining mothers' labor market success, we investigate whether leavers are more likely to search in a geographically wider areas for such job opportunities or if they match with local firms. Searching in different local labor markets for employment gives mothers a higher chance of matching with more productive and better paying firms ([Blanchard and Katz, 1992](#); [Bound and Holzer, 2000](#)). Difference in the commuting preferences may therefore be one reason for the unequal impact on earnings we find in our analysis (e.g. [Le Barbanchon et al., 2021](#)). The results for differences in geographical mobility between stayers and leavers are shown in Columns (5) and (6) in Table 3.

In Column (5) of the table, we show the estimated differences in geographical mobility between leavers and stayers, using an indicator whether the mothers has moved postal codes between the birth of the child and the return-to-work decision as an outcome.³⁶ Our results indicate that leavers tend to be geographically more mobile in general. The estimated pattern is getting stronger the further up a mother is in the earnings distribution. At the top of the distribution, leavers have a 6 percentage points higher probability of having moved postal code at the time of the return-to-work decision than stayers. This finding suggests that increases job mobility is at least partially associated with higher geographical mobility. By being able to move local areas, some mothers may be able to find better matches after childbirth.

We also find evidence that leavers at the top of the earnings distribution take up new employment in geographically wider areas. Leavers increase significantly the time spent commuting to work after childbirth; see the results in Column (6). Our estimates indicate that mothers at the very top of the distribution increase commuting time by around 25% after the return-to-work decision, corresponding to an increase in the average commuting time by roughly 5 minutes. Our results provide strong evidence that mobility and therefore the likelihood of finding better firm-worker matches is an important driver for our estimated earnings gains from job-to-job transitions. In light of the results in [Cortes et al. \(2020\)](#) that higher paying jobs also offer more amenities, one could also interpret these results that a combination of monetary and non-monetary benefits allows mothers to accept larger commuting costs. The impact on local mobility and commuting time we find also raises the question about the role of search and mobility costs in precluding mothers to move to new employers.

In Appendix D we show that the mobility patterns documented here are unique to mothers. Using our sample of non-mothers, we find that they do not tend to move to faster growing

³⁶Location information is only available on the postal code level and for mothers applying for childcare benefits. Therefore, we cannot account for changes within the same postal code. Therefore, our estimates likely understates the correlation between job-to-job transitions and local mobility as well as commuting patterns.

firms, and especially not to firms expanding female employment. Non-mothers at the middle and upper part of the earnings distribution also move to firms offering *fewer* opportunities to newly hired women, as measured by the gender pay gap. As a consequence, job mobility likely has a negative impact on earnings for these women. Overall, the mobility effects are opposite to what we find for mothers.³⁷

While it seems to be surprising at first that non-mothers move to lower paying jobs at firms with fewer opportunities for women, we provide evidence that the motivation for their job mobility is the intention of having children in the future, as in [Adda et al. \(2017\)](#) and [Hotz et al. \(2018\)](#); see Appendix D. These future fertility effects are especially pronounced for those non-mothers for whom we also find the strongest (negative) sorting into new firms. We find the opposite effects for our sample of mothers, where heightened job mobility is in general associated with a decrease in future fertility.

7.3 The Role of Search and Mobility Costs

In light of our findings in the previous section, we evaluate search and mobility costs associated with formal childcare provision and husband’s support next.³⁸ First, we examine whether husbands of mothers who change jobs after childbirth have different post-birth labor market outcomes compared to husbands of mothers who stay with their pre-birth employers.³⁹ In many countries, policies which encourage father to take some time off the labor market after childbirth to achieve gender equality have been introduced over the past years, but take-up can be low (e.g. [Lalive et al., 2014](#)). The adjustment of fathers’ own labor market careers could facilitate the labor market re-entry of mothers and their search for better job opportunities, however. The estimated differences in husbands’ labor market outcomes between leavers and stayers are reported in Table 4.

[Table 4]

Columns (1) to (3) in the table show the impact of leaving the pre-birth employer on the changes in husbands’ short-term labor market outcomes, measured between the mother’s time of the return-to-work decision and the year prior to childbirth. We do not find evidence that husbands of leavers are more likely to adjust their labor market attachment; see Column (1). These results therefore do not point toward a shift in the care burden from the mother toward the father.

A complete withdrawal from the labor force may be too strong of a decision. Husbands may reduce working hours or move to more flexible but lower paying jobs to support mothers

³⁷We only have location information for mothers who apply for childcare benefits. Therefore, we cannot investigate any changes in the commuting pattern for non-mothers.

³⁸There may also be other, non-exclusive factors, such as preferences and expectations about job search which determine the moving decision. Our data does not allow us to directly investigate such explanations.

³⁹In our data we only observe the partner mentioned during the application for childcare benefits, but not the exact relationship between the partner and the mother. For simplicity, we refer to these partners here as “husbands” noting that the person is not necessarily married to the mother.

job transitions. Any such move should be reflected in the husband’s earnings growth.⁴⁰ The differences in the earnings growth rate between husbands of leavers and husbands of stayers are reported in Column (2) of Table 4. Our results do not support the explanation that husbands trade their own career for the career of mothers. All our estimates are close to zero and not statistically significant at any conventional level.

However, we do find evidence that childbirth also leads husbands to reconsider their job at the current employer. Husbands of leavers are more likely to change employers after childbirth, too; see the results reported in Column (3) of Table 4. This “joint mobility” effect is becoming stronger the further up a mother is in the earnings distribution. At the very top, husbands of leavers have an almost 20 percentage point higher probability of moving employer compared to husbands of stayers. Moving jobs and the associated necessity to adjust to a new working environment may make those husbands more responsive to the childcare burden of women, leading to more support with daily routines in the household. We discuss such a behavioral adjustment response further below.

One possible explanation for the small effects on short-term labor market outcomes is, that husbands are reluctant to adjust their own labor market career during maternity leave and the job starting phase of the mother. Once mothers are again established in the labor market, husbands may be more inclined to take on some additional (childcare) responsibilities and adjust their work accordingly. In Columns (4) to (6) we explore this hypothesis further, using the same set of outcomes as before, but now we measure the differences between the age of 5 of the child and the year prior to childbirth. As it was the case with our short-term effects, we do not find that husbands adjust their labor market outcome in the long-run. Interestingly, we also do not find evidence that husbands of stayers catch up in terms of employer mobility, implying a persistent difference in the joint mobility effect.

Lastly, we explore whether mothers’ job mobility ultimately has an effect on the pay gap in the household. The change in the pay gap is defined as the difference between the earnings of mothers and father pre-birth and the pay gap within the household at the time of the return-to-work decision. This measure allows us to gauge whether job mobility leads to a faster convergence between men and women.

The estimates of the impact of job mobility on changes in the household pay gap are shown in Column (7) of Table 4. With exception of mothers with the lowest earnings, our results show that job mobility leads to a convergence in the household pay gap. The effects are almost monotonically increasing in a mother’s position in the earnings distribution. At the top of the earnings distribution, we find that job mobility narrows the household pay gap by

⁴⁰We do not observe working hours in our data and therefore cannot directly measure any adjustments on this margin.

around 28 percentage points.⁴¹ The effects here mirror our previous findings on job mobility and employer characteristics.

In light of these results, it is interesting to further explore what enables some mothers to transition to a new employer. We first consider the provision of childcare or the lack thereof as an important underlying mechanism. Little or no childcare available may constrain mothers in their decision to move jobs.⁴² We consider formal childcare using the numbers of nurseries available in the county of residence at the time of the return-to-work decision first. Second, as counties with a higher birthrate may also provide more formal care, we also look at the number of nursery places available per child between the age of 0 and 3. The results for difference in formal childcare provision between leavers and stayer is shown in Columns (1) and (2) in Table 5.

[Table 5]

We do not find evidence that leavers have better access to formal childcare. Our estimated differences are rather small when considering the total number of nurseries available in the county of residence; see Column (1). That differences in access to formal childcare are unlikely to explain our results becomes even clearer once we consider the number of nursery places per child available, see Column (2). Again, our estimates are small and not statistically significant at any conventional level. Our results here complement those of Kleven et al. (2024) who show that childcare policies have had little effects on gender convergence in Austria.

Second, we also look at informal childcare agreements. It is interesting to see whether husbands of leavers tend to help more with childcare than husbands of stayers, given that they are also more likely to change employer and therefore may be more responsive to the burden of childcare. We also consider help from relatives, such as grandparents, as an additional source of informal care. As we do not observe directly these outcomes in our data, we use information from mothers’ “synthetic selves” in the Austrian Microcensus. Specifically, we use information on mothers’ pre-birth labor market characteristics to find comparable mothers in the Austrian Microcensus. Once such a mother is found, we assign the information about childcare agreements to the relevant mother(s) in our data. Comparing mothers in our sample to mothers with the same characteristics in other data sources is motivated by a similar approach used in Kuziemko et al. (2018). We provide a detailed explanation in Appendix E how we construct synthetic selves in our data. The estimated differences in informal childcare arrangements be-

⁴¹These effects are driven by a substantial reduction in the pre-birth/post-birth pay gaps between movers and stayers. For example, at the upper part of the distribution movers face a 20 to 25 percentage points higher within household pay gap prior to giving birth compared to stayers. After the return-to-work decision, the within household pay gap for movers is around 6 percentage point *lower* compared to stayers.

⁴²Another explanations may be that mothers choose lower paying but more flexible jobs to be able to substitute relatively expensive formal childcare with informal one. Compare to the U.S. or UK, childcare is relatively cheap in Austria. In addition, subsidies for low-income families are available. Therefore, choosing informal childcare over formal care solely due to monetary reasons and adjust employment accordingly is unlikely the main explanation for our results.

tween leavers and stayers using our synthetic sample, are reported in Columns (3) to (5) in Table 5.

We find that mothers who leave their pre-birth employer and have higher earnings tend to receive more help from their husbands and also, to a lesser extent, from other relatives. The differences in informal care arrangements between leavers and stayers is particularly strong at the very top of the distribution. These findings corroborate our theory that the joint decision to leave the pre-birth employers may make husbands more responsive to childcare needs and therefore take on a higher share of the burden.

While we find strong evidence that high search and mobility costs are important obstacles for mothers, it is still not entirely clear why movers at the lower part of the distribution do not benefit from job mobility. A possible explanation may be that mothers at the lower part of the earnings distribution do not have access to all relevant information about job opportunities, specifically when taking some time out of the labor market.⁴³

We proxy access to labor market information by the strength and quality of mothers' pre-birth co-workers network in the new firm. (Former) Co-workers are an important information source for job opportunities. They also provide prospective employers with information about the applicant they otherwise would not have (Dustmann et al., 2016). Table 6 presents the results.

[Table 6]

Three strong patterns emerge from the results in the table. First, leavers at the upper part of the earnings distribution have a larger network of former co-workers in their current firm. At the top, mothers previously worked with around 20% of her current co-workers together, compared to around 9% at the bottom. There is no clear pattern when looking at the network size of female co-workers, however; see Column (2).

Second, the further up a mother is in the earnings distribution the stronger is her network, both overall and when considering female co-workers only. Mothers at the top of the earnings distribution worked on average more than 2 years previously with a co-worker in the network. This is almost one year longer compared to mothers at the lower part of the earnings distribution.

Third, the quality of the network also seems to matter for job mobility associated with earnings increases. Past and current average daily earnings of co-workers in the network of mothers at the upper part of the distribution are with 66 euro and 75 euro more than 60% higher than average daily earnings of co-workers in the network of mothers at the lower part

⁴³Alternatively, mothers at the lower part of the earnings distribution may face more restrictive access to formal childcare. Using opening hours as one such measure and exploring such a hypothesis further using mothers with pre-school children in the Austrian Microcensus, we do not find evidence for it. In general, we find that most mothers in the survey are satisfied with care facility opening hours but that satisfaction is slightly decreasing in mother's own earnings. This suggests that restrictive hours are more important for mothers at the upper part of the earnings distribution.

of the distribution. Interestingly, average current earnings of co-workers in the network are roughly comparable with the re-employment earnings of mothers at the upper parts of the distribution. This points toward information sharing of co-workers about similar jobs.

8 Conclusion

Improving gender equality has become one of the top priorities in many countries. Despite major improvement of women’s labor market outcomes in many dimensions, they still earn substantially less than men. Recently, this persistent gender gap has been linked to the unequal impact of parenthood on men and women. Discouragingly, there is evidence that family policies introduced to improve gender convergence have had only limited impacts. Therefore, the question what determines labor market success of mothers and how to improve it still remains open

In our work, we have a closer look at the labor market putcomes after childbirth. We show that mothers have substantially higher job mobility after childbirth than comparable non-mothers. This job mobility has important implications for earnings. To the best of our knowledge, the job search and mobility channel after childbirth has received limited attention in the exiting literature.

Employing a bounding approach relying on intuitive monotonicity assumptions inherent in many theoretical job search models, we find that job mobility after childbirth can increase mothers’ re-employment earnings significantly, but only for mothers at the upper part of the earnings distribution. For those mothers, the earnings impact of job mobility after childbirth is also very persistent. We find positive effects of initial job mobility on earnings even up to 15 years after the initial return-to-work decision.

Exploring the mechanisms underlying our results, we find that earnings gains are driven by mothers moving to more successful firms in a wider geographic area. While job mobility can improve mothers’ future labor market success, mothers face high costs after childbirth. High costs hinder many mothers to move to better employment opportunities. Although our results do not reveal any significant impact of the provision of formal childcare, we find that informal help in the household by the husband is important. We also provide indirect evidence that information provided by co-worker networks matter.

The documented mobility patterns are unique to mothers. Using a sample of non-mothers, we show that they not only have lower job mobility but also that they move to firms offering fewer opportunities to women. Job mobility also has a negative impact on non-mothers’ future earnings, the opposite to what we find for mothers. We provide evidence that, at least partially, such moves are driven by the future fertility.

On the one side, we see our results as encouraging, specifically in relation to the rather pessimistic findings in the literature on the motherhood penalty. Overall, our results imply that gender convergence is an achievable goal. Changes in the labor market can lead to a re-

duction in gender inequality, at least for higher-earnings mothers. Providing information about labor market opportunities and supporting mothers to find good re-employment opportunities through job mobility may be one way of reducing the motherhood penalty.

On the other side, our results also highlight the importance of search and mobility costs, specifically for mothers at the lower part of the earnings distribution. Husbands play a crucial part in promoting gender equality. These results suggest that assortative matching—not just by education or income but also by household roles—can be an important factor contributing to gender inequality. Understanding this can help in creating better policies to support mothers in the workforce.

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Tables

Table 1: Sample Overview

	Overall Sample	Leavers $L = 1$	Stayers $L = 0$	Raw Difference
<i>Personal Characteristics</i>				
Age at Birth (Years)	27.80	26.65	28.01	-1.37†
No. of Children	1.80	1.77	1.81	-0.04†
Non-Austrian (Shares)	0.05	0.05	0.05	-0.00
University Degree (Shares)	0.10	0.07	0.10	-0.03†
<i>Pre-Birth Labor Market Outcomes</i>				
Daily Earnings (Euros)	24.77	22.27	25.24	-2.96†
Tenure (Days)	1,238.40	1,116.34	1,261.16	-144.82†
White Collar (Share)	0.72	0.69	0.73	-0.04†
<i>Pre-Birth Employer</i>				
Firm Size (Median)	79.50	39.75	92.50	-52.75†
Share Females (Median)	0.64	0.68	0.63	0.05†
Log Pay Gap (Median)	-0.31	-0.34	-0.31	-0.03†
No. of Mothers	59,229	9,307	49,922	

The sample consists of all mothers who gave birth between July 1990 and December 1995, who returned to the labor market within the maternity leave period of 24 months after giving birth, and who had at least one year of tenure in the pre-birth firm. Leavers (Stayers) are all mothers who leave (return to) the pre-birth employer after returning to work.

† indicates a significance difference between leavers and stayers at least at 5%.

Table 2: Average Marginal Effects of Motherhood on Job-to-Job Transition Propensity

	(1)	(2)	(3)	(4)	(5)
	Overall		By Education		
			University	Matura	Apprenticeship & Others
Mother	7.41	7.41	5.16	7.03	7.71
	(0.16)	(0.17)	(0.56)	(0.50)	(0.20)
Tenure (Years)		−0.59	−1.44	−1.02	−0.53
		(0.03)	(0.17)	(0.12)	(0.04)
Earnings (Euro)		−0.14	−0.08	−0.10	−0.15
		(0.00)	(0.01)	(0.01)	(0.00)
Age (years)		−0.50	−0.31	−0.52	−0.50
		(0.00)	(0.05)	(0.04)	(0.00)

This table provides summary of average marginal effects of motherhood on job mobility. The estimates are based on logistic regressions of a binary indicator whether the individual had a job-to-job transition within two years after the assigned reference date on a motherhood indicator and other control variables; see Section 3. All marginal effects were multiplied by 100. Mothers are all individuals in our baseline sample, which consists of all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within the parental leave period of 24 months after giving birth; 59,220 observations in total (see Section 2). The control sample consists of a random sample of women with similar characteristics as mothers, but who did not give birth within a 4-year window around the assigned reference date; 1,041,569 observations in total. Robust standard errors are reported in parentheses.

Table 3: The Role of Employers and Jobs

	(1)	(2)	(3)	(4)	(5)	(6)
	The Role of Employer			The Role of Mobility		
	$\Delta \text{ Log Employees}$ Overall x 100	$\Delta \text{ Log Employees}$ Females x 100	$\Delta \text{ Log Pay Gap}$ among Incumbent x 100	$\Delta \text{ Log Pay Gap}$ among New Hires x 100	Moved Postal Code x 100	$\Delta \text{ Log Commuting}$ Time x 100
$Y < 20$	22.62 (10.37)	19.13 (8.14)	-8.37 (4.96)	-13.94 (12.32)	3.78 (2.98)	-6.37 (14.82)
$20 \leq Y < 40$	34.42 (11.26)	29.22 (8.55)	-1.18 (4.59)	-2.53 (12.33)	3.29 (2.98)	-5.94 (13.99)
$40 \leq Y < 60$	39.45 (10.57)	32.69 (8.85)	0.53 (4.65)	-2.37 (13.15)	6.03 (2.85)	-2.58 (15.06)
$60 \leq Y < 80$	22.98 (10.79)	18.97 (8.34)	0.33 (4.77)	7.06 (12.79)	4.72 (2.89)	-3.51 (14.96)
$80 \leq Y$	45.29 (10.75)	34.54 (8.54)	-1.98 (4.60)	20.51 (12.64)	5.60 (2.81)	25.34 (14.23)

This table provides summary of the estimates of leaving the pre-birth employer on differences in employer characteristics and geographic mobility for different income groups; see also Section 7. The baseline sample consists of all mothers who had at least one year of tenure in their pre-birth firm and who returned to the labor market within the parental leave period of 24 months after giving birth; 59,229 observations in total. The location sample requires in addition valid residence information at childbirth and when returning to the labor market; 27,916 observations in total. $\Delta \text{ Log Employees}$ measures the change in the log number of employees in the firm between the start of maternity leave and the return-to-work decision. $\Delta \text{ Log Pay Gap}$ measures the change in the log pay gap within the firm between women and men over the same time period. *Moved* is a binary indicator whether the mother moved ZIP codes between birth and the return-to-work decision. $\Delta \text{ Log Commuting Time}$ measures the difference in the log commuting time between the travel time to the employer after the return to work decision and the travel time to the pre-birth employer. Bootstrapped standard errors using 999 replications are reported in parentheses.

Table 4: The Role of Husbands' Labor Market Adjustments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	At End of Maternity Leave			At Age 5 of Child			Household Pay Gap
	Δ LF Participation x 100	Δ Log Earnings x 100	Δ Employer x 100	Δ LF Participation x 100	Δ Log Earnings x 100	Δ Employer x 100	Δ Log Pay Gap x 100
$Y < 20$	-2.17 (5.01)	1.02 (1.74)	4.05 (6.40)	-4.05 (6.40)	0.99 (3.30)	3.22 (5.38)	-3.32 (14.32)
$20 \leq Y < 40$	-1.45 (5.00)	0.87 (1.83)	3.97 (6.53)	-2.69 (3.66)	1.05 (3.18)	4.88 (5.18)	6.47 (14.16)
$40 \leq Y < 60$	0.30 (4.91)	0.19 (1.73)	5.52 (6.31)	-0.26 (3.32)	-0.91 (3.20)	7.39 (5.45)	13.71 (14.24)
$60 \leq Y < 80$	-0.77 (5.02)	-0.64 (1.80)	5.96 (6.24)	-2.72 (3.60)	-2.69 (3.25)	10.91 (5.84)	30.90 (14.14)
$80 \leq Y$	10.43 (5.04)	-0.29 (1.86)	18.82 (6.76)	4.00 (3.41)	-1.84 (3.30)	14.72 (5.28)	28.29 (14.62)

This table summarizes estimates of the effect of leaving the pre-birth employer on husbands' labor market outcomes for different maternal income groups; see also Section 7. The sample consists of all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within the parental leave period of 24 months after giving birth, and information about the husband is available; 43,598 observations in total. All variables are the difference in the respective outcome measured at 2 years (*End of Maternity Leave*) or 5 years (*Age 5 of Child*) after the birth of the child and the year prior to the birth. Δ *LF Participation* refers to changes in the labor force participation status of the husband. Δ *Earnings* is the change in log daily earnings. Δ *Employer* measures whether the husband moved to a new employer. Δ Log Pay Gap is the change in the within household log pay gap. Bootstrapped standard errors using 999 replications are reported in parentheses.

Table 5: The Role of Formal and Informal Childcare Provision

	(1)	(2)	(3)	(4)	(5)
	Provision of Formal Care		Informal Care Arrangements		
	No. of Nurseries Available	No. of Places Available	Any Daily Help x100	Daily Help from Husband x100	Daily Help from Relatives x100
$Y < 20$	-4.00 (2.89)	-0.04 (0.03)	1.90 (2.25)	1.62 (2.24)	-4.02 (1.20)
$20 \leq Y < 40$	-1.74 (2.87)	-0.02 (0.03)	2.49 (1.85)	2.18 (1.85)	-1.02 (1.08)
$40 \leq Y < 60$	-0.23 (2.88)	-0.00 (0.03)	4.96 (2.98)	5.03 (2.99)	-3.36 (1.45)
$60 \leq Y < 80$	3.46 (2.89)	0.02 (0.03)	-1.85 (6.85)	-6.32 (6.86)	3.25 (4.22)
$80 \leq Y$	1.44 (2.85)	0.03 (0.03)	21.31 (11.98)	22.86 (11.99)	6.78 (7.52)

This table provides summary of the estimates of leaving the pre-birth employer on formal and informal childcare arrangements for different income groups; see also Section 7. The Formal Care sample consists of all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within the parental leave period of 24 months after giving birth, and with valid residence information at childbirth and when returning to the labor market; 27,916 observations in total. The Informal childcare sample consists of all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within the parental leave period of 24 months after giving birth, with a partner and who had a synthetic self in the Austrian Microcensus; 12,610 observations in total (see Appendix E). *No. Nurseries Available* is the total number of nurseries available in the county of residence at the time of the return-to-work decision. Similarly, *Place Available* is the approximate number of places available per child age 0-3 in the county of residence. *Receiving Any Daily Help* is a binary indicator taking a value of one if the mother received daily help from either the husband or relatives (or both). Likewise, *Receiving Daily Help from Husband* is a binary indicator if the husband helps almost daily with childcare. *Receiving Daily Help from Relatives* is a binary indicator if grandparents or other relative help almost daily with childcare. Standard errors In Columns (1) and (2) were obtained via the bootstrap with 999 replications. Due to a significant smaller sample size the estimates in Column (3) to (5) are obtained from a simple linear regression and robust standard errors are reported .

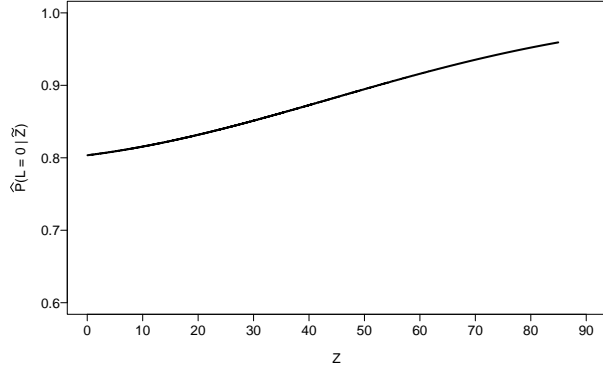
Table 6: The Role of Co-Worker Networks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Network Co-Workers in Current Firm (in %)		Days Worked Together Previously		Daily Earnings with Past Employers		Daily Earnings with Current Employer	
	Overall	Females	Overall	Females	Overall	Females	Overall	Females
$Y < 20$	9.11 (4.40)	4.99 (1.56)	570.61 (111.14)	575.23 (84.76)	33.73 (9.38)	29.80 (8.11)	45.00 (11.19)	39.27 (10.12)
$20 \leq Y < 40$	13.39 (4.44)	6.34 (1.49)	655.80 (106.18)	659.05 (86.05)	38.77 (9.34)	34.14 (7.99)	50.75 (11.12)	44.98 (10.15)
$40 \leq Y < 60$	19.30 (4.45)	8.64 (1.50)	740.09 (110.52)	730.20 (82.94)	46.20 (9.44)	41.39 (8.10)	62.37 (11.12)	56.20 (10.06)
$60 \leq Y < 80$	19.53 (4.44)	8.12 (1.51)	688.64 (107.79)	695.26 (84.75)	50.73 (9.36)	45.70 (7.98)	68.25 (11.05)	61.21 (10.11)
$80 \leq Y$	19.48 (4.47)	5.89 (1.52)	875.38 (107.97)	790.08 (85.78)	60.38 (9.27)	52.00 (8.03)	75.13 (11.10)	66.26 (10.10)

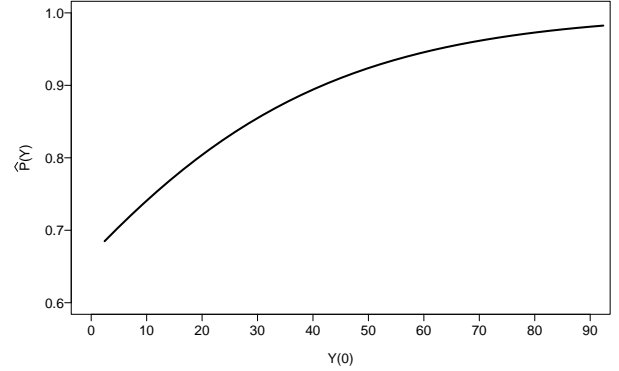
This table provides summary of the network of co-workers in the current firm for leavers and different income groups; see also Section 7. The sample consists of all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within the parental leave period of 24 months after giving birth, and left the pre-birth firm; 9,307 observations in total. The co-worker network consists of all current co-workers with whom the mother also worked in the past at a employer different from the current one. *Days Worked Together* are the average days worked together with the co-workers at a previous employer. *Past Daily Earnings* are the average earnings of co-workers measured during the last year of employment of the mother at the past employer. *Current Daily Earnings* are measured during the first year of employment of the mother in the current firm. Bootstrapped standard errors using 999 replications are reported in parentheses.

Figures

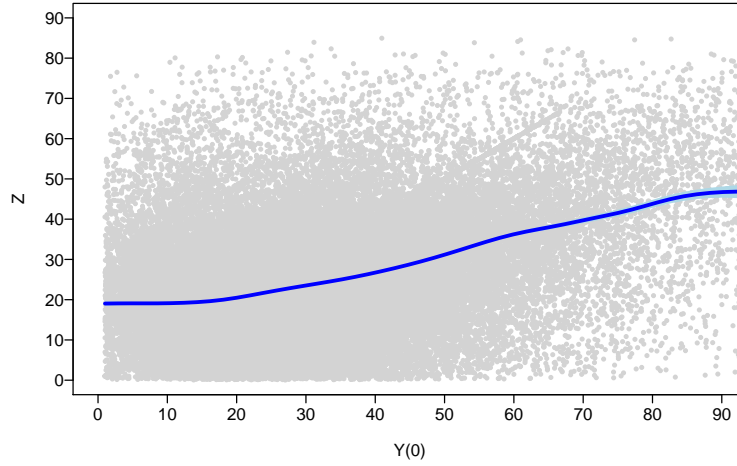
Figure 1: Empirical Support for the Monotonicity Assumptions



a. Predicted Return Probability $\hat{P}(L=0|\tilde{Z})$



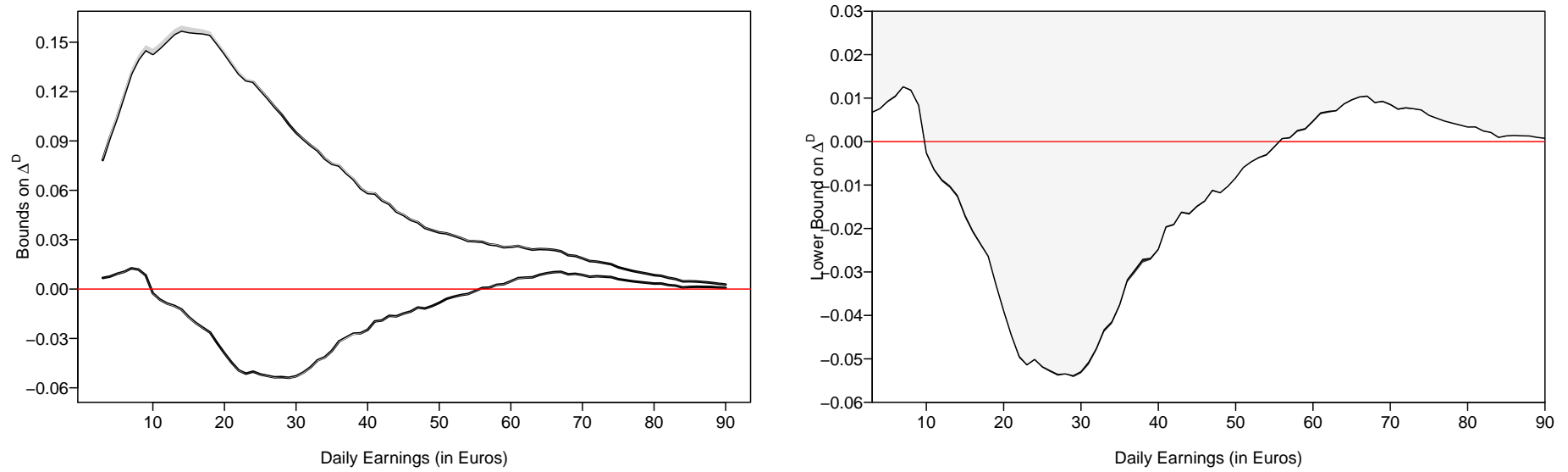
b. Predicted Return Probability $\hat{P}(Y)$



c. Relation between Z and $Y(0)$

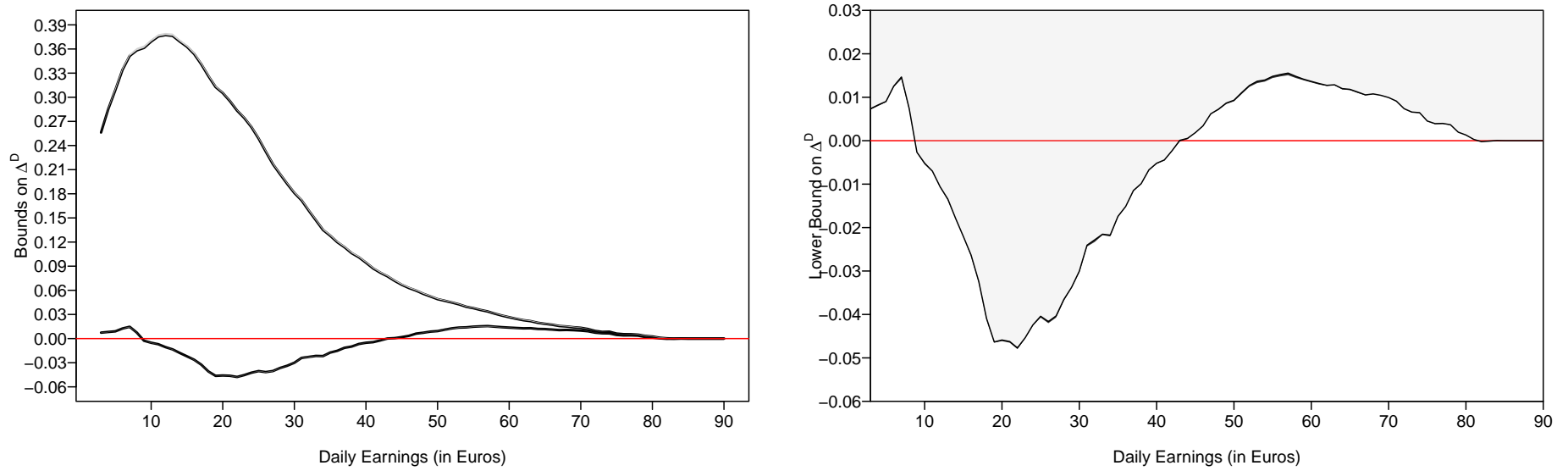
Panel a provides support for Assumption M1 and shows the predicted return probability for different values of pre-birth earnings. Coefficients underlying the predictions were obtained from a logistic regression of the return dummy on a quadratic in pre-birth earnings. Panel b provides support for Assumption M2 and shows the predicted return probabilities $\hat{P}(Y)$ for stayers. The probabilities were estimated using Equation (2) and the logistic function to parameterize the probabilities; see Section 4. Panel c shows estimates from a local linear regression of Z on $Y(0)$ for the sub-population of stayers ($L = 0$), trimming the bottom and top 1 percent of the earnings distribution. A Gaussian kernel was used and the bandwidth was obtained via leave-one-out cross-validation. Dots represent the actual observed data values. The shaded area corresponds to the 95 percent confidence intervals.

Figure 2: Job Mobility and Re-employment Earnings



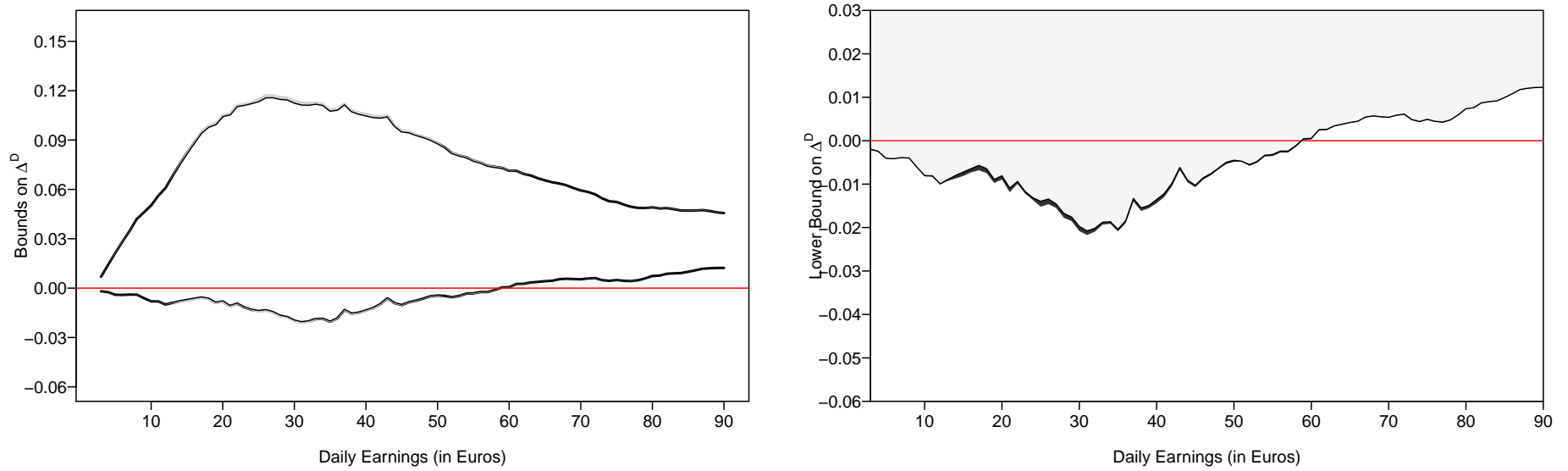
The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D . The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. In some cases the confidence intervals are small and therefore hard to distinguish in the figure. Bounds and confidence intervals were obtained using the method outlined in Section 4. The effects were estimated using employment earnings at the time of re-entering the labor market after childbirth. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, and who returned to the labor market within the maternal leave period of 24 months; in total 59,229 observations.

Figure 3: Earnings Effects of Job Mobility using Monotonicity in Tenure



The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D under alternative monotonicity assumptions based on pre-birth job tenure. The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. Notice that in some cases the confidence intervals are small and therefore hard to distinguish in the figure. Bounds and confidence intervals were obtained using the method outlined in Section 4. The effects were estimated using employment earnings at the time of re-entering the labor market after childbirth. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, and who returned to the labor market within the maternal leave period of 24 months; in total 59,229 observations.

Figure 4: Job Mobility and Long-Term Earnings



The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D for average long-term earnings between 11 to 15 years after the initial return-to-work decision. The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. In some cases the confidence intervals are small and therefore hard to distinguish in the figure. Bounds and confidence intervals were obtained using the method outlined in Section 4. The effects were estimated using average maternal earnings between 11 to 15 years after the initial return-to-work decision. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, returned to the labor market within the maternal leave period of 24 months, and who had at least once positive earnings during the aforementioned time period; in total 54,196 observations.

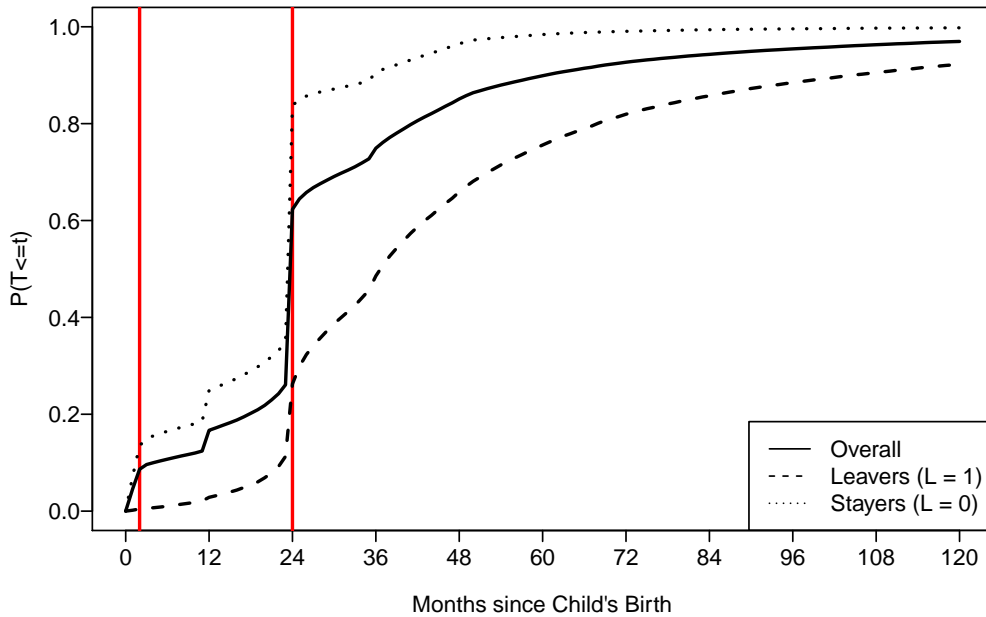
Online Appendix for “Mothers’ Jobs after Childbirth and the Impact on Earnings”

This Web Appendix provides additional details and results not discussed in the manuscript.

A Return-to-Work Patterns

In this section, we provide details about the return-to-work patterns of mothers after giving birth. In Figure A.1, we present estimates of the probability that a mother returns to work at or before time t , $P(T \leq t)$. In the figure, the solid line represents the overall return rate. The dotted line shows the share of mothers returning to their pre-birth employer, while the dashed line depicts the share of those switching employers post-childbirth. The first vertical line at 2 months represents the end of the maternity protection and the second vertical line at 24 months the end of the maternity leave.

Figure A.1: Mothers’ Return-to-Work Patterns



The figure shows the share of mothers returning to work before or at time t after childbirth. The sample comprises all mothers who gave birth between July 1990 and December 1995 and had at least one year of tenure in their pre-birth firm; in total 95,056 observations. The solid line shows the overall return-to-work rate. The dotted line depicts the return to work rate for mothers returning to their pre-birth employer, while the dashed lines depicts the return rate for mothers moving to a new employer after childbirth. The first vertical line at 2 months denotes the end of maternity protection. The second vertical line at 24 months denotes the end of job-protected maternity leave.

As it is clear from the figure, the vast majority of mothers return to work within 24 months and therefore at or before the end of job-protected maternity leave. There is also

a clear bunching in the return patten at the end of maternity leave at 24 months. The share of mothers returning to work increases from 20 percent to around 65 percent at this point, showing that the end of maternity leave constitutes indeed an important reference date for mothers. The bunching in the return patten at the end of maternity leave at 24 months also likely rules out that employer “top-up” government provisions during leave taking to encourage the mother to return earlier to work and to the pre-birth employer as an explanation for our findings.

We find a more pronounces picture when splitting our sample by leavers ($L = 1$) and stayers ($L = 0$). For both group, there still is clear bunching in the return-to-work pattern at 24 months. However, mothers who leave their pre-birth employer tend to exclusively do so by the end of the maternity leave period. In contrast, after the end of the job-protected maternity leave 2 years after birth, the share of mothers leaving the pre-birth employer increases almost linearly over time, mirroring the pattern of stayers. This finding also suggest that if mothers change jobs, they are more inclined to do so within the job protected maternity leave period rather than when the child is older.

B Derivation of the Bounds

In this section, we briefly discuss how the discussion in [d’Haultfoeuille \(2010\)](#) can be adjusted to obtain bounds on the treatment effect on the treated, and specifically $P(Y(0) > y|L = 1)$. To do so, we assume that all assumptions made in Section 4 are satisfied. Following their notation, we define $h_y(Y(0)) \equiv \mathbb{1}(Y(0) > y)$ and hence $P(Y(0) > y|L = 1) = E[h_y(Y(0))|L = 1]$.

[d’Haultfoeuille \(2010\)](#) shows that the quantity $E[h_y(Y(0))]$ can be bounded from below and above by (see their Theorem 2.5):

$$E\left[\frac{1-L}{P(Y)}h_y(Y)|L=0\right] \leq E[h_y(Y(0))] \quad (\text{H-LB})$$

$$E[h_y(Y(0))] \leq E[E[h_y(Y)|L=1, Z]] \quad (\text{H-UB})$$

To derive the upper bound [UB](#) in Section 4, notice that since both $h_y(Y(0))$ and $P(L=0|Y(0)=y, Z)$ are increasing in $Y(0)$, we have that

$$E[h_y(Y(0))|Z] \leq E[h_y(Y(0))|Z, L=0]$$

Re-writing $E[h_y(Y(0))|Z]$ as

$$E[h_y(Y(0))|Z, L=0]P(L=0|Z) + E[h_y(Y(0))|Z, L=1]P(L=1|Z)$$

and combining this with the previous equation yields

$$E[h_y(Y(0))|Z, L = 1]P(L = 1|Z) \leq E[h_y(Y(0))|Z, L = 0](1 - P(L = 0|Z))$$

This expression can be simplified to

$$E[h_y(Y(0))|Z, L = 1] \leq E[h_y(Y(0))|Z, L = 0]$$

Taking $E[\cdot|L = 1]$ over both sides gives the upper bound [UB](#).

To derive the lower bound [LB](#), notice that by addition and subtraction we have $E[h_y(Y(0))] = E[h_y(Y(0))|L = 1](1 - \pi) + E[(1 - L)h_y(Y(0))]$, where $\pi = P(L = 0)$. Plugging this into [H-UB](#) gives

$$\pi E \left[\frac{1 - P(Y)}{P(Y)} h_y(Y)|L = 0 \right] \leq (1 - \pi) E[h_y(Y(0))|L = 1]$$

which implies the lower bound [LB](#) in [Section 4](#)

C Estimation of the Bounds

The bounds in [Equation \(3\)](#) in [Section 4](#) are expressed in terms of survival functions. Expressing bounds in terms of cumulative distribution functions (cdf) is more convenient for estimation, however. Let us denote $\gamma_y(Y(L)) = \mathbb{1}(Y(L) \leq y)$. Rewriting the bounds gives

$$\begin{aligned} E[E[\gamma_y(Y)|L = 0, Z, X = x]|L = 1, X = x] - E[\gamma_y(Y)|L = 1, X = x] \\ \leq \Delta_x^D(y) \leq \\ \frac{\pi_x}{1 - \pi_x} E \left[\frac{1 - P_x(Y)}{P_x(Y)} \gamma_y(Y)|L = 0, X = x \right] - E[\gamma_y(Y)|L = 1, X = x] \end{aligned} \tag{C.1}$$

where $P_x(Y)$ is the solution to the following moment condition

$$E \left[\frac{1 - L}{P_x(Y)} - 1|Z, X = x \right] = 0. \tag{C.2}$$

The expression for our bounds in [\(C.1\)](#) suggests then that we can estimate each part of the upper and lower bound from the data via weighted cdfs. Notice that $E[\gamma_y(Y)|L = 1, X = x]$ can be directly estimated from the data using the empirical cdf and the group of leavers with $X = x$. We denote these estimates by $\hat{F}_{1|X=x}^{LL}(y)$.

We make use of distribution regression (Foresi and Peracchi, 1995) to obtain the counterfactual estimates of $E[E[\gamma_y(Y)|L=0, Z, X=x]|L=1, X=x]$, which we denote by $F_{1|X=x}^{LS}(y)$. Specifically, over a fine grid of values for y , we estimate a series of regressions

$$\widehat{F}_{1|X=x}^{LS}(y) = \frac{1}{N_{1,x}} \sum_{i:L_i=1, X_i=x} \widehat{F}_{Y|Z, L=0, X=x}(y|Z_i),$$

where $N_{1,x}$ is the number of mothers leaving the pre-birth employer with characteristics $X = x$. We parameterize $F_{Y|Z, L=0, X=x}(y|Z_i) = \Lambda(\beta_0^x(y) + \beta_1^x(y)Z_i)$, where $\Lambda(\cdot)$ is the logistic function and we made the dependence of parameters $(\beta_0(y), \beta_1(y))$ on x explicit. Hence, $\widehat{F}_{Y|Z, L=0, X=x}(y|Z_i)$ is estimated by a logistic regression in the subpopulation of stayers with $X = x$. In practice, and to avoid having our results depend on the chosen grid of thresholds y , we estimate the distribution regression for every observed outcome value.

We follow a two-step approach to estimate

$$F_{0|X=x}^{SS}(y) = \frac{\pi_x}{1 - \pi_x} E \left[\frac{1 - P_x(Y)}{P_x(Y)} \gamma_y(Y) | L = 0, X = x \right]$$

In a first step, we estimate the selection probability via GMM using the moment condition defined in Equation (C.2) and parameterizing $P_x(Y_i) = \Lambda(\Psi_0^x + \Psi_1^x Y_i)$, where, as before, $\Lambda(\cdot)$ is the logistic function.¹ In a second step, we use the predicted selection probabilities $\widehat{P}_{x,i} \equiv \Lambda(\widehat{\Psi}_0^x + \widehat{\Psi}_1^x Y_i)$ and estimate a weighted empirical cdf to obtain $\widehat{F}_{0|X=x}^{SS}(y)$.

The above estimates can then be combined into conditional lower and upper bounds on $\Delta_x^D(y)$:

$$\begin{aligned} \widehat{LB}_x(y) &\equiv \widehat{F}_{1|X=x}^{LS}(y) - \widehat{F}_{1|X=x}^{LL}(y), \\ \widehat{UB}_x(y) &\equiv \widehat{F}_{0|X=x}^{SS}(y) - \widehat{F}_{1|X=x}^{LL}(y). \end{aligned}$$

Using the estimated sample proportion of mothers with $X = x$ among the population of leavers, denoted by $\widehat{P}(X = x|L = 1)$, we can obtain the unconditional bounds on our effect of interest $\Delta^D(y)$:

$$\begin{aligned} \widehat{LB}(y) &\equiv \sum_x \widehat{LB}_x(y) \widehat{P}(X = x|L = 1), \\ \widehat{UB}(y) &\equiv \sum_x \widehat{UB}_x(y) \widehat{P}(X = x|L = 1). \end{aligned}$$

For estimation, we transform our vector of background characteristics X , so that it has a discrete support. This allows for sufficient flexibility in our estimation. We include three educational groups and four age-at-birth groups into our estimation. Mother's age

¹As the selection function specified in Equation (D.1) is highly non-linear and convergence can be difficult, we follow Laffers and Schmidpeter (2021) and normalize both Y and Z to lie in the unit interval

and education are likely important determinants for her search behavior and effort to find new employment (Faberman et al., 2022). We also include two groups for firm size and two groups for the share of female co-workers at the pre-birth firm.² The size of the pre-birth employer and share of female co-workers are also likely important factors considered by the mother when making her return decision. For example, larger firms may be able to offer better working conditions or more non-monetary benefits.³ Likewise, mothers working in firms with a lower share of female co-workers and therefore potentially in a less female-friendly environment may be more inclined to change firms (e.g. Hotz et al., 2018).

Inference is based on the nonparametric bootstrap using 500 replications. To obtain 95 percent confidence intervals we apply the method of Imbens and Manski (2004). They suggest to adjust the critical values when calculating confidence intervals in partially identified models, where the degree of the adjustment also depends on the width of the bounds.⁴

D Job Mobility, Earnings, and Firm Characteristics of Non-Mothers

In Section 3 in the main part of the paper we have shown that non-mothers have in general a lower job-to-job transition propensity than mothers after childbirth. In this appendix, we evaluate the impact of job mobility on non-mothers' future earnings and employment.

D.1 Sample of Non-Mothers

We provide summary statistics separately for non-mothers who decided to leave the employer (leavers, $L = 1$) and those who do not (stayers, $L = 0$) within two years after being included in the random sample in Table D.1; see also Section 3. Non-mothers who left their employer tend to be younger and have fewer children. They also have substantially lower earnings and fewer days of tenure than stayers. With respect to firm characteristics, leavers are more likely employed in smaller firms and also face higher pay inequality

²We take the quartiles of the observed age distribution as the relevant cut-off points for the four age groups. To determine the cut-off for the firm size and share of female co-workers we use the median. In Appendix F, we show that our results and conclusions are robust to not incorporating any pre-birth characteristics into our estimation.

³Larger firms may also have more market power in hiring, at least locally. This may affect the outside option of mothers; see Manning (2021) for a recent review on monopsony power and labor markets.

⁴The idea behind the approach of Imbens and Manski (2004) is that the width of the confidence set will not shrink to zero, even in the limit. Thus in the limit one only needs to be concerned with calculating one sided-errors.

within the firm. These observed patterns are very similar to what we find for mothers, discussed in Section 2.

Table D.1: Sample Overview - Non-Mothers

	Overall Sample	Leavers $L = 1$	Stayers $L = 0$	Raw Difference
<i>Personal Characteristics</i>				
Age (Years)	27.27	24.66	27.47	-2.81†
No. of Children	0.54	0.33	0.56	-0.23†
Non-Austrian (Share)	0.04	0.03	0.04	0.01
<i>Pre-Birth Labor Market Outcomes</i>				
Daily Earnings (Euros)	29.82	27.48	30.00	-2.52†
Tenure (Days)	1,036.85	941.54	1,044.11	-102.57†
White Collar (Share)	0.57	0.53	0.57	-0.04†
University Degree (Share)	0.02	0.02	0.02	0.00
<i>Pre-Birth Employer</i>				
Firm Size (Median)	27.75	16.50	29.00	-12.50†
Share Females (Median)	0.70	0.75	0.70	0.06†
Log Pay Gap (Median)	-0.33	-0.34	-0.33	-0.01†
No. of Mothers	1,041,569	73,731	967,838	

The sample consists of a random sample of women with similar characteristics as mothers, but who did not give birth within a 4-year window around the assigned reference date and had valid firm information; 1,041,569 observations in total. Leavers are all non-mothers who had a job-to-job transition within two years after the assigned reference quarter (see Section 3).

† indicates a significance difference between leavers and stayers at least at 5%.

D.2 Job Mobility and Earnings

We estimate the impact of job-to-job transitions on non-mothers' future earnings using our bounding approach and described in Section 4. First, we provide empirical evidence that our monotonicity assumptions also likely hold in the sample of non-mothers. Then, we discuss the impact of job mobility on earnings.

Support for Monotonicity Assumptions in the Non-Mothers Sample

Remember from our discussion in Section 4 that our bounding approach requires that the individual's job mobility propensity is decreasing in both M1) one's own past earnings given current earnings potential $Y(0)$ and M2) the current earnings potential $Y(0)$ given past earnings (and other covariates). These monotonicity assumptions are motivated by job search models with endogenous search effort (Christensen et al., 2005; Faberman et al., 2022; Wright et al., 2021) and extensively discussed in Section 4.

To provide support for Assumption M1, we estimate a logistic regression, where we regress the probabilities of staying with the employer on past earnings and individual background characteristics. The predicted probability of returning to the pre-birth employer as a function of pre-birth earnings, $\hat{P}(L = 0|Z)$, are shown in Panel a of Figure D.1. As one can see, there is a strong and positive relationship between past earnings and the probability of staying with the current employer. We interpret the results as support for our first monotonicity assumption in our sample of non-mothers.

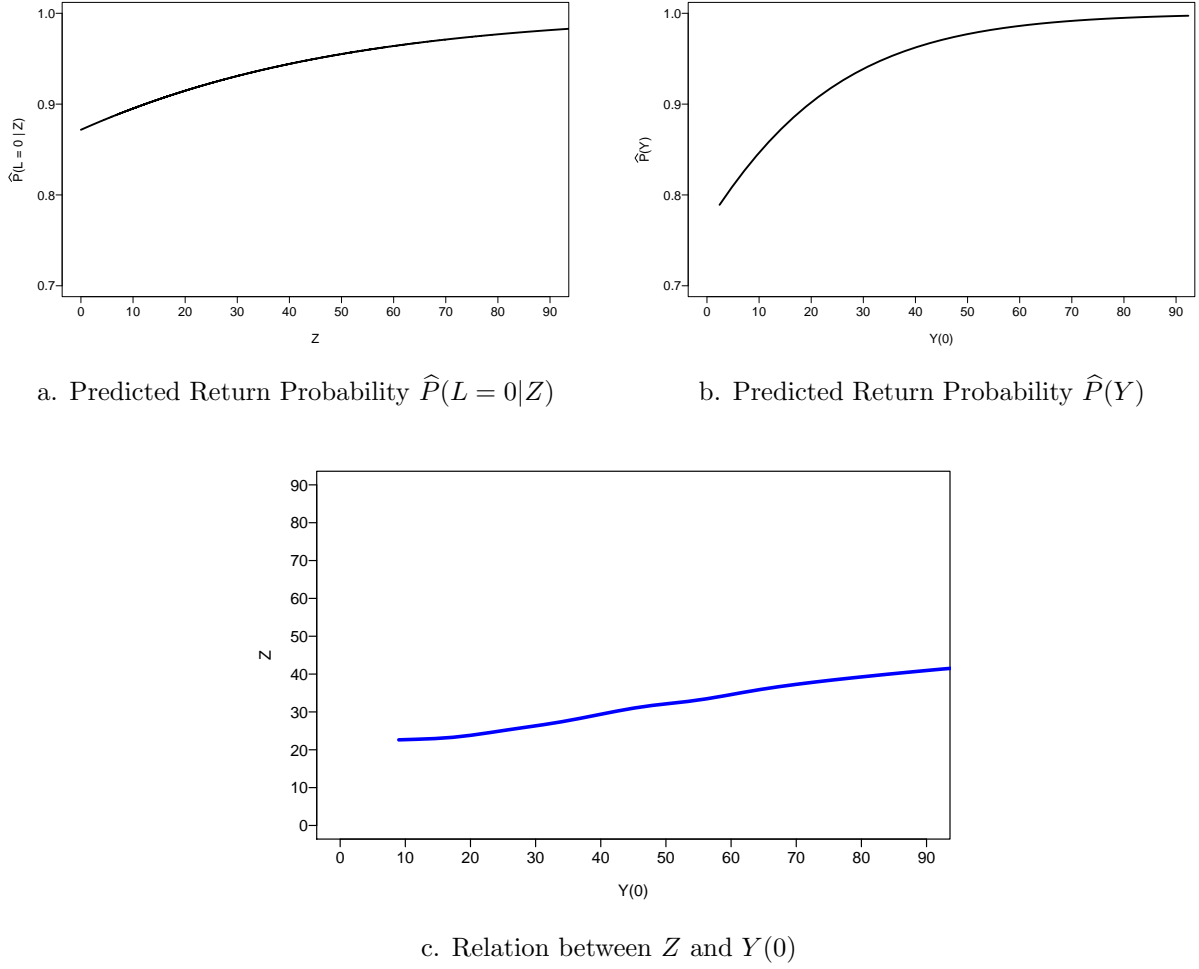
We provide evidence for Assumption M2 graphically by plotting the (unconditional) estimates of the selection probability $\hat{P}(Y)$ obtained from the moment condition

$$E \left[\frac{1 - L}{P(Y)} - 1 | Z \right] = 0. \quad (\text{D.1})$$

(see also Section 4) against the observed re-employment earnings for non-mothers who stayed with their employer in Panel b of the figure. As one can see, there is again a strong and increasing relationship between $Y(0)$ and the probability of staying with the current employer $\hat{P}(Y)$. We therefore conclude that also Assumption M2 very likely holds in the sample of non-mothers.

Lastly, in Panel c we show that in our sample of non-mothers there is a strong and increasing relationship between Z and $Y(0)$. The depicted estimates were obtained via a local linear regression of $Y(0)$ on Z among non-mothers who did not leave the employer. Note that the confidence intervals are hard to distinguish in the figure.

Figure D.1: Empirical Support for the Monotonicity Assumptions – Non-Mother Sample



Panel a provides support for Assumption M1 and shows the predicted probability for different values of pre-reference data earnings. Coefficients underlying the predictions were obtained by logistic regressions. Panel b provides support for Assumption M2 and shows the predicted return probabilities $\hat{P}(Y)$ for stayers. The probabilities were estimated using Equation (D.1) and the logistic function to parameterize the probabilities; see Section 4. Panel c shows estimates from a local linear regression of Z on $Y(0)$ for the sub-population of stayers ($L = 0$), trimming the bottom and top 1 percent of the earnings distribution. A Gaussian kernel was used and the bandwidth was obtained via leave-one-out cross-validation. The shaded area corresponds to the 95 percent confidence intervals.

Job Mobility and Earnings

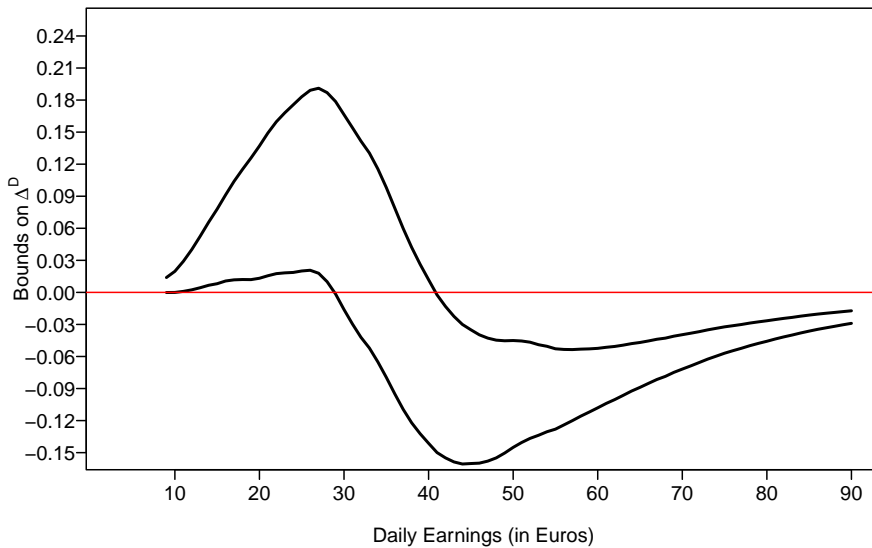
We estimate the bounds on the impact of job mobility on earnings for non-mothers similarly as for mothers and as described in Section 4. The estimated bounds are shown in Figure D.2.

Comparing the results for non-mothers to those of mothers presented in Figure 2 in the main part of the paper, two striking differences become apparent. First, our estimated bounds show that job mobility is associated with a negative impact on earnings for non-mothers at middle and upper part of the distribution. The negative effects are particularly

pronounced in the middle and then slightly decreasing the further up an individual is in the earnings distribution. In contrast, we find positive effects of job mobility on earnings for non-mothers at the lower part. These findings stand in stark contrast to what we find for mothers. Mothers at the upper part of the distribution uniformly gain from leaving their pre-birth employer.

Second, the estimated bounds for our non-mothers are also slightly larger in magnitude. For example, job mobility decreases the probability of earning more than 60 euro per day by between 3 and 9 percentage points. These effects roughly translates into a earnings reduction of 10%. In comparison, we find that leaving the pre-birth employer increases the likelihood of earning more than 60 euro by between 1 to 3 percent or around 4% for mothers. Overall, our results presented here are a strong indicator that non-mothers' job mobility decisions lead in general to negative and therefore different earnings effects than what we find for mothers. We explore possible mechanisms next.⁵

Figure D.2: Earnings Effects of Job-to-Job Transitions for Non-Mothers



The figure shows the upper and lower bound on the returns to job mobility Δ^D . The shaded area corresponds to the 95 percent confidence intervals. Notice that in some cases the confidence intervals are small and therefore hard to distinguish in the figure. Bounds and confidence intervals were obtained using the method outlined in Section 4. The sample consists of a random sample of women with similar characteristics as mothers, but who did not give birth within a 4-year window around the assigned reference date and had valid firm information; 1,041,569 observations in total (see Section 3 for a detailed description).

⁵One might be concerned that the mobility and negative earnings effects of non-mothers are caused by involuntary transitions or low job prospects. Using lay-offs in the firm as a proxy for involuntary transition and job prospects, we do not find that firms of leavers are more likely to have lay-offs over the next two years than firms of stayers.

D.3 Job Mobility and Firm Characteristics

In light of the negative impact of job mobility on earnings for non-mothers and the strong contrast to our results for mothers it is interesting to see whether non-mothers also exhibit different job mobility patterns. Following our strategy from Section 7, we explore the role of firm characteristics as an underlying mechanism explaining our results.

We concentrate on the same set of firm outcomes as in the main part of the paper. Specifically, we use firms' growth rates and gender pay gaps among incumbent and newly hired workers as outcomes. Faster growing firms tend to offer higher wages and tend to be more successful in the future (Davis et al., 2013; Kaas and Kircher, 2015). We use the within-firm gender pay gaps as a proxy for women's career opportunities in a firm.⁶

To explore these underlying mechanisms, we group our sample into five different sub-samples g , depending on the non-mother's position in the earnings distribution, as before. We choose exactly the same categories as for our mothers: non-mothers earning less than 20 euro per day are assigned to the first group, those earning at least 20 euro but less than 40 euro are assigned to the second group and so on. Then, for each of these groups and separately for movers and stayers we estimate the following model

$$M_i^{nm} = X_i^{nm'} \Gamma^{g,L} + \epsilon_i^{nm} \quad (\text{D.2})$$

where M_i^{nm} is the underlying mechanisms of interest for stayer/leaver non-mother i . The vector $X_i^{nm'}$ contains information about mother's background characteristics such as age at birth and education as well as information about her pre-birth employer. Then, we use our model estimates $\hat{\Gamma}^{g,L}$ to obtain predicted differences between leavers and stayers in each group g : $E[\hat{M}_i^{nm}|G = g, L = 1] - E[\hat{M}_i^{nm}|G = g, L = 0]$ for our non-mothers. The estimation results are shown in Table D.2.

Comparing the results in the table to those for mothers in Table 3 in the main part of the paper, one can observe strong differences. Non-mothers transit in general to different types of employers than mothers at the time of the return-to-work decision. Non-mothers tend to move to slower growing firms compared to mothers, specifically those at the upper part of the earnings distribution; see Column (1). For example, non-mothers earning at least 80 euro transit to firms growing roughly 8% faster compared to firms of stayers. In contrast, mothers move to firms growing almost 50% faster.

There is also no evidence that non-mothers move to firms with a stronger expansion in the female employment share; see Column (2). The estimates are small and mostly insignificant. In comparison, mothers tend to move to faster growing firms, not only in terms of overall employment but also when considering the share of women in the

⁶Remember that we only observe the partner and residence information for individuals applying for childcare benefits, i.e. for mothers, in our data. Therefore, we cannot investigate all the channels consider in Section 7, such as changes in commuting pattern, for non-mothers.

workplace. The differences in the mobility patterns between mothers and non-mothers are particularly strong for women at the upper part of the earnings distribution.

Similar as before, we do not find that non-mothers move to a firm offering different opportunities to their incumbent workers. The estimates for the gender pay gap among incumbent workers between the firms of stayers and leavers are mostly small and not statistically significant, see Column (3). The only exceptions are non-mothers at the bottom of the earnings distribution who move to firms with a smaller existing gender pay gap.

Looking at the difference in the gender pay gap among newly hired workers in Column (4), our results indicate again a quite different mobility pattern for non-mothers compared to mothers. We do find positive although imprecise differences in opportunities provided by the new employer compared to the old one for non-mothers at the lower parts of the distribution. In contrast, our results for non-mothers at the upper part of the distribution show that they move to firms with a higher gender pay gap among newly hired workers and therefore likely to firms offering fewer opportunities to women.

Overall, the patterns presented here are consistent with the negative impact of job mobility on future earnings we find for non-mothers at the middle and upper part of the distribution. These non-mothers move to slower growing firms offering fewer opportunities than their old employer. These results are almost symmetric but opposite the effects of job mobility on future earnings and firm sorting we find for mothers.

D.4 Job Mobility and Future Fertility

Our results for non-mothers so far indicate that they move to lower quality jobs and firms. One explanation for these findings is that (some) non-mothers intend to have children in the future. The future fertility intentions lead these women to move to less demanding and lower paying jobs prior to childbirth, similar as in [Adda et al. \(2017\)](#) and [Hotz et al. \(2018\)](#). This motivation for job mobility would explain both the negative earnings effects and negative sorting effect in terms of employment opportunities we find.

To gauge any possible relationship between job mobility and future fertility, we estimate a similar model as in Equation (D.2), using now a binary indicator whether the woman has at least one child in the following ten years as outcome.⁷ Notice that this is not a complete analysis as provided in [Adda et al. \(2017\)](#) and [Hotz et al. \(2018\)](#). We see it rather as suggestive and supportive evidence on employment dynamics of women and how they try to combine children with a work career. The results are shown in Table D.3.

As one can see from the estimates in Column (1) in the table, we find indeed evidence that job mobility is associated with future fertility for non-mothers at the middle and

⁷Our results are virtually identical when using a binary indicator whether the woman has any child in the future instead.

upper part of the earnings distribution. Remember that these are the women losing the most from job mobility. They are also those most likely moving to less demanding and lower paying jobs. These results are in line with previous findings of [Adda et al. \(2017\)](#) and [Hotz et al. \(2018\)](#) who show that potential mothers sort themselves into certain firms.

As comparison, we also analyze whether future fertility motivates the moving decisions for women in our mother sample. The results are shown in Column (2) in the table. We find the opposite effect. Mothers who move employer and who gain from job mobility have a lower likelihood of having more children in the future. These effects are stronger the further up a mother is in the earnings distribution.

Table D.2: Job Mobility and Firm Characteristics of Non-Mothers

	(1)	(2)	(3)	(4)
	$\Delta \text{ Log Employees}$ Overall x 100	$\Delta \text{ Log Employees}$ Females x 100	$\Delta \text{ Log Pay Gap}$ among Incumbent x 100	$\Delta \text{ Log Pay Gap}$ among New Hires x 100
$Y < 20$	14.60 (4.82)	14.57 (4.40)	9.76 (4.28)	2.97 (8.15)
$20 \leq Y < 40$	6.79 (4.78)	7.49 (4.37)	3.05 (4.42)	1.89 (8.19)
$40 \leq Y < 60$	3.30 (4.84)	4.39 (4.42)	-0.64 (4.38)	-4.32 (8.14)
$60 \leq Y < 80$	1.34 (4.77)	2.21 (4.41)	-1.64 (4.40)	-1.77 (8.44)
$80 \leq Y$	8.27 (4.80)	5.67 (4.40)	2.13 (4.32)	-16.56 (7.80)

This table provides summary of the estimates of job mobility on differences in employer characteristics. The sample consists of a random sample of women with similar characteristics as mothers, but who did not give birth within a 4-year window around the assigned reference date and had valid firm information; 1,041,569 observations in total (see Section 3) $\Delta \text{ Log Employees}$ measures the change in the log number of employees in the firm. $\Delta \text{ Log Pay Gap}$ measures the change in the log pay gap within the firm between women and men. A positive coefficient indicates a narrowing of the gender pay gap. Bootstrapped standard errors using 999 replications are reported in parentheses.

Table D.3: Job Mobility and Future Fertility

	(1)	(2)
	Non-Mothers x 100	Mothers x 100
$Y < 20$	-11.30 (10.14)	0.70 (3.89)
$20 \leq Y < 40$	-2.44 (10.21)	-1.96 (3.93)
$40 \leq Y < 60$	4.26 (10.01)	-0.64 (4.04)
$60 \leq Y < 80$	6.68 (10.13)	-2.52 (3.79)
$80 \leq Y$	18.22 (9.97)	-8.10 (3.66)

This table provides summary of of the estimates of job mobility on having at least one more child in the next ten years. The mother sample consists of all mothers who had at least one year of tenure in their pre-birth firm and who returned to the labor market within the parental leave period of 24 months after giving birth; 59,229 observations in total. The non-mother sample consists of a random sample of women with similar characteristics as mothers, but who did not give birth within a 4-year window around the assigned reference date and had valid firm information; 1,041,569 observations in total (see Section 3). Bootstrapped standard errors using 999 replications are reported in parentheses.

E Identifying Synthetic Selves in the Austrian Microcensus

Our administrative data does not contain information about possible informal childcare arrangements during the job-transition period, for example, by the husband. To investigate if leavers receive more support with childcare, we follow a similar idea as [Kuziemko et al. \(2018\)](#), and create “synthetic” selves of mothers in our sample using information on childcare arrangements provided in the Austrian Microcensus .

The Austrian Microcensus is a quarterly representative survey conducted by the Austrian Federal Statistical Office. Each quarter approximately 22,000 randomly selected households take part in the survey. The main focus of the survey is on housing conditions and employment, but some households are asked an additional and changing set of questions relevant to explaining labor market outcomes. In the 1995 survey, information about childcare arrangements were collected.⁸

From the 1995 survey of the Microcensus, we first select all mothers who were at the time of the interview in maternity protection. For these mothers, we obtain information about informal childcare arrangements from the data. Specifically, we assign each mother an indicator whether the husband or partner helps almost daily with childcare. To cover other forms of childcare arrangements, we also create an indicator whether the mother receives almost daily help with childcare from the grandparents or other relatives.

To be able to identify the synthetic selves of mothers later in our administrative data, we use information on mothers’ age at birth, education, nationality, percentile in the earnings distribution, and industry in the pre-birth job (1-digit). In the Microcensus, mothers are only asked about their current average net monthly earnings. Since we concentrate on mothers who were in maternity protection during the interview and therefore received a 100% replacement of the previous earnings as government transfers, this measure is a good proxy of pre-birth average net monthly earnings; see also [Section 2](#) in the main part of the paper. We disregard mothers who we cannot uniquely identify by the combination of our matching variables in the Microcensus.

Using the information on mothers’ age at birth, education, nationality, percentile in the earnings distribution, and industry in the pre-birth job, we match mothers with valid information about the husband in our administrative data to their synthetic selves in the Microcensus. Notice that in our matching approach, we also implicitly assume that mothers’ positions in the earnings distribution are not affected by any other payments or tax rates. Mothers in the administrative data for whom we do not find any or not a unique synthetic self in the Microcensus are dropped from our sample.

⁸In 2002, questions about childcare arrangements were asked, too. We choose to use only the results from the 1995 survey to be in line with the time frame of our administrative sample.

F Additional Results

F.1 Results using Higher-Order Birth

In this section, we present results for mothers having higher-order births and therefore a higher likelihood of completing their desired fertility. This group may also have stronger incentives to refocus their careers after birth. Figure F.1 presents the results.

Our results show that leaving the pre-birth employer has even larger positive effects for mothers having higher-order births. While the patterns are very similar to our main results, the lower bound is considerably higher for this sample. They provide additional evidence that changing jobs after birth can be beneficial for mothers, specifically when desired fertility is reached and career considerations become again more important.

F.2 Results not including Covariates

Accounting for any pre-birth characteristics is in general not required for identification of our bounds (see d’Haultfoeulle, 2010). However, including pre-birth characteristics may help to tighten the bounds and lend more credibility to our monotonicity assumptions. In this section we show that our results are robust and all our discussion and conclusions presented in the main part of the paper remain valid when not controlling for mothers’ pre-birth characteristics. The results are summarized in Figure F.2.

From the figure it is clear that our results are very similar to those reported in the main part of the paper, even when excluding pre-birth characteristics from the estimation. One can see that moving employer after childbirth increases the earnings potential of mothers at the upper part of the distribution. While bounds are slightly wider compared to the estimates when including pre-birth characteristics, our bounds point toward large and highly significant gains from job-to-job transitions.

Overall, all our discussions and conclusions remain valid even when not including any pre-birth characteristics in the estimation. The results also lend additional support to our monotonicity assumption. Not accounting for any pre-birth characteristics delivers very similar results as those discussed in the main part of the paper. Furthermore, the results presented here not only show that our estimates are robust to the exclusion of pre-birth characteristics but also imply that results do not depend on the choice of how we incorporate pre-birth characteristics into our model.

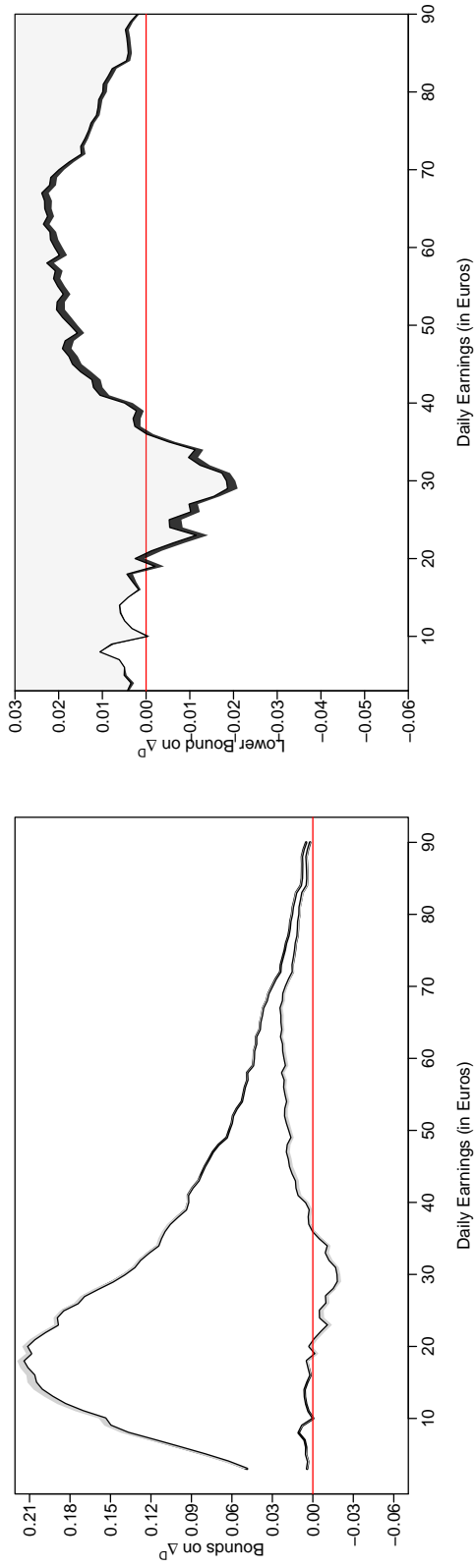
F.3 Results Extending Return-to-Work Period

Mothers are only eligible to return to the same (or a similar) position at their pre-birth employer within the maternity leave period of 24 months. In this section, we show that

our results are robust to an extension of the return period. We now consider all mothers who returned to work within 30 months after childbirth. The return period is therefore 6 months longer compared to the threshold of 24 months we use in the main part of our paper. Figure [F.3](#) shows the results.

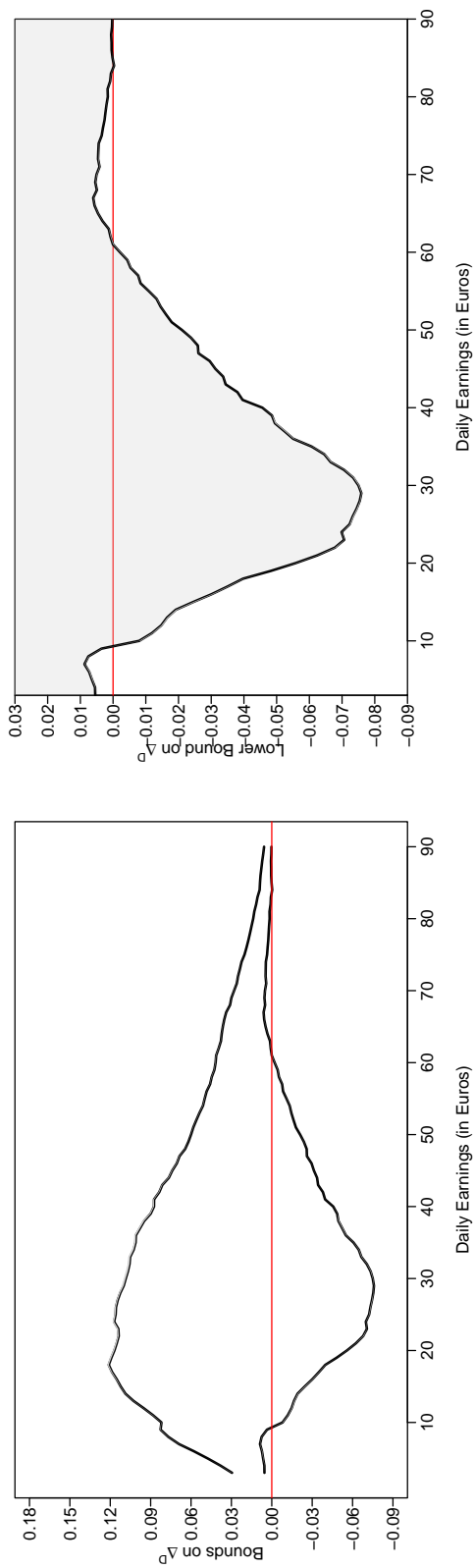
From the figure, one can see that leaving the pre-birth employer increases the earnings potential for mothers at the upper part of the distribution, even when considering an extended return period. The pattern of our estimates are also very similar to the ones reported in the main part of the paper. While lower bound is slightly decreasing when extending the return to work period, it is still positive for mothers at the upper part of the distribution, implying positive returns to job changes for this group. Overall, the results presented in this section show that our estimates are robust to an extension of the considered return-to-work period. All our conclusions in the main part of the paper remain valid.

Figure F.1: Earnings Effects of Job Mobility – Higher-Order Births



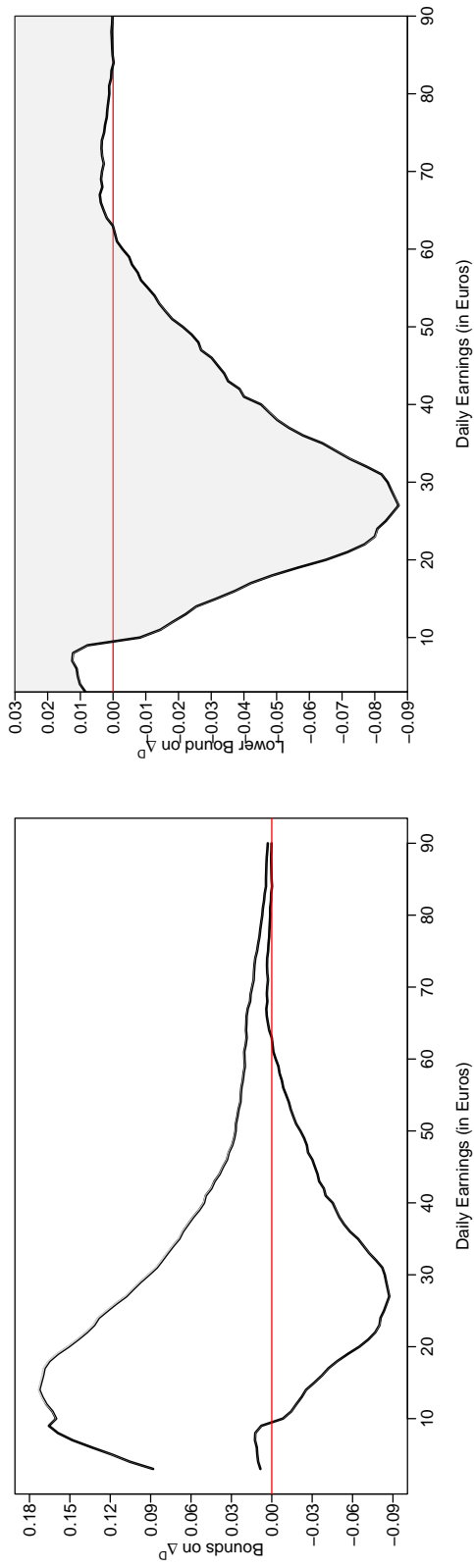
The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D . The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. In some cases the confidence intervals are small and therefore hard to distinguish in the figure. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, who returned to the labor market within 24 months after birth, and had a higher-order birth.

Figure F.2: Earnings Effects of Job Mobility – Not Including Covariates



The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D when no covariates are included in the estimation. The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. In some cases the confidence intervals are small and therefore hard to distinguish in the figure. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, and who returned to the labor market within the maternal leave period of 24 months; in total 59,229 observations.

Figure F.3: Earnings Effects of Job Mobility – Extended Return-to-Work Period



The left-hand graph shows the upper and lower bounds on the returns to job mobility Δ^D when the return-to-work period is extended to 30 months. The right-hand graph zooms into the informative lower bound. The dark shaded area corresponds to 95 percent confidence intervals. In some cases the confidence intervals are small and therefore hard to distinguish in the figure. The sample comprises all mothers who had at least one year of tenure in their pre-birth firm, and who returned to the labor market within 30 months after birth; in total 65,678 observations.

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