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Arnaud Philippe
University of Bristol

Daphné Skandalis
University of Copenhagen and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Motherhood and the Cost of Job Search*

Why do women experience a persistent drop in labor earnings upon becoming mothers, i.e. a "child penalty"? We study a new mechanism: search frictions. We analyze data on job applications sent on a popular online platform linked with administrative data for 350,000 involuntarily unemployed workers in France. First, we highlight differences in job search behavior between mothers and similar women with no children. Mothers send 12.2% fewer job applications and are more selective regarding wage and non-wage amenities. Consistently, they have a lower job finding rate. Second, we analyze the exact time when applications are sent and highlight differences in the timing of job search. We find that mothers' rate of applications decreases by 20.3% in the hours and days when there is no school. We also show that mothers responded to a reform that introduced school on Wednesday by smoothing their search across weekdays and narrowing their search timing gap with other women. In a simple search model, we show that our results imply that mothers both face lower incentives and higher costs to search. We conclude that search frictions disproportionately prevent mothers from improving their labor market situation and contribute to the child penalty.

JEL Classification: J16, J22, J64
Keywords: job search, gender inequality, time allocation, child penalty

Corresponding author:
Daphné Skandalis
University of Copenhagen
Nørregade 10
1172 København
Denmark
E-mail: dskandalis@gmail.com

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"Eileen is job searching, but she fits this around her domestic activities, which usually center on her two children, a daughter and a fourteen-year-old son. Eileen's job search is fragmented. Even though she spends a considerable amount of time on her search, especially before any interviews, the hours she spends tend to be patched together. Eileen's case, in which her job search is secondary to other, mostly household tasks, is typical for the majority of women in my sample."

Crunch Time: How Married Couples Confront Unemployment, by Aliya Hamid Rao

1 Introduction

Motherhood is associated with a decrease in the labor market earnings of women: Mothers are more likely to be jobless, and they tend to work for fewer hours and receive lower hourly wages when they have a job. Understanding the causes of this child penalty is key, as it accounts for 80% of total gender differences in earnings in recent years (Kleven et al., 2019). A popular explanation is that mothers want to provide less market work because their home production is considered more valuable (e.g., due to social norms). This explanation abstracts from job search frictions, which can prevent people from working as often as they want or in the exact job they want in practice. Yet, these frictions might disproportionately affect mothers: Not only might any search cost deter mothers from searching more than other workers, but mothers might also face higher search costs. Search frictions might thereby contribute to the child penalty.

To shed light on this new mechanism, we study how having children affects the job search behavior of workers who lost their jobs involuntarily. We use uniquely rich information on the job application behavior of French unemployed workers stemming from the Public Employment Service (PES) online search platform (Marinescu and Skandalis, 2021). We provide the first analysis of high-frequency variation in search activities, utilizing information on *the exact time when applications are sent*. We match this data with administrative datasets containing rich information on workers' labor market and demographic status at the time of job loss. In particular, we observe whether people have children below age 18 when they become unemployed, which allows us to study the role of parenthood.[1] We also measure how selective workers are in their job search regarding various job amenities (e.g., the reservation wage, the maximum commute distance) using a mandatory administrative survey (Le Barbanchon et al., 2021). Finally, we track their dates of re-employment. The linked dataset covers about 350,000 unemployed workers who involuntarily lost their jobs in France in 2013-2016.

Why might unemployed mothers take longer to find a job than non-mothers, even when

[1]Note that we focus on persistent differences rather than on those that might exist just in the immediate aftermath of childbirth. In particular, workers on maternity or parental leave are not included in our analysis since they are not regular unemployed workers (e.g., they don't have any search requirements).

they were working in the same type of job before their involuntary job loss? To fix ideas, we formalize how motherhood might affect unemployed women in a simple search model. We assume unemployed workers choose their search intensity and their reservation job amenities. Unlike other women, mothers can do valuable home production by performing childcare. We distinguish two time periods—the school-time and the time when children are home—and assume childcare can only be performed when children are home. Motherhood hence increases the value of both having time available for childcare and being able to allocate it in the specific period when children are home. The model implies that motherhood increases the opportunity cost of market work, as commonly assumed. This lowers unemployed mothers' *incentives to search*: They should search less, be more selective, and ultimately go back to work slower than non-mothers. Besides, motherhood might also increase the *cost of search*. This would be the case in our model if job search cannot be fully performed while doing childcare and if there are "reallocation costs", i.e. costs associated with departing from the typical time allocation of job search across periods, for instance in the form of a loss in productivity.[2] The model predicts that if mothers also face higher search costs, they should decrease their search intensity relative to non-mothers even more, decrease their selectivity relatively less, and ultimately go back to work even slower. Our empirical analysis will first allow us to test these predictions on the effect of motherhood on search behavior and job finding. Second, it will allow us to shed light on the underlying mechanisms and test whether mothers indeed face higher search costs.

In the first part of our empirical analysis, we investigate whether motherhood is associated with a gap in search behavior and the job finding rate after an involuntary job loss. In practice, we measure "motherhood gaps" (resp. "fatherhood gaps") in various outcomes by estimating the differences between unemployed women (resp. men) with and without children who had similar labor market characteristics up to the point of job loss. We control for very detailed information on workers' demographic characteristics and past labor market history. Strikingly, we find that mothers send 12.2% fewer job applications than similar women with no children (we call them non-mothers henceforth).[3] We show that mothers' lower rate of applications partly reflects their higher selectivity (i.e. they find fewer vacant jobs to apply to) and partly reflects their lower search effort. We then directly estimate the motherhood gaps in search selectivity. We find that mothers are indeed more selective than similar women with no children in all the considered wage and non-wage amenities. In particular, their reservation wage is 0.6% higher, and their maximum commute distance

[2]This captures the intuition that jobseekers can be less productive if they search when there are no new relevant vacancies or when they are tired. The literature on task juggling has found that having constraints on the time organization of work can decrease productivity in various contexts (Adams-Prassl et al. (2023), Buser and Peter (2012), Coviello et al. (2014) Coviello et al. (2015)).

[3]We provide various robustness checks to address the concern that our estimates for the motherhood gaps in applications might capture gaps in the use of the PES search platform rather than gaps in overall applications. In particular, we show that our estimates for the motherhood gaps in applications are similar across all job types, even for jobs that are under-represented on the PES search platform.

is 7.8% lower. In contrast, fathers exhibit the same application rate as non-fathers and a similar level of selectivity, though their reservation wage is 0.9% higher. Ultimately, mothers have a 8.9% lower re-employment rate within one year than non-mothers, while fathers have the same re-employment rate as non-fathers. Our results are consistent with the predictions of our model with search frictions: we confirm that mothers exert less search effort, are more selective, and stay unemployed longer than women with no children who had a similar career up to the point of job loss.

In the second part of our empirical analysis, we shed light on the underlying mechanisms by analyzing the *timing* of search activities. We estimate the motherhood gaps in the counts of applications sent *in every 10-minute intervals* throughout the day. The granularity of our data allows us to reveal that mothers send their applications at very different times of the day than similar non-mothers. Using the French Time Use Survey, we show that mothers exhibit the largest drops in their applications precisely in the times when children are typically present by their side—which corresponds to times when children don't have school in France. The periods when children are present are associated with a 20.3% decrease in the rate of applications of mothers. Fathers also reallocate their search activities to accommodate the schedule of children, but about half less than mothers. Our results imply that people must take some time away from childcare to perform work-related activities, even when these activities can be done from home, like sending job applications. To the extent that mothers value childcare more than fathers, they should, therefore, have larger incentives to reallocate their search activities around the schedule of children than fathers. However, mothers' reallocation of search activities can be associated with higher search costs, if there are costs associated with departing from the typical timing of search activities—as highlighted in our model.

Is it indeed costly for mothers to adjust the timing of their search activities to the schedule of their children? To address this question, we then analyze the impact of a reform of school schedule on the time allocation of mothers' search activity. While kindergarten and primary school children (i.e. between age 3 and 11) historically had no school on Wednesday in France, school time was introduced on Wednesday mornings in 2013-14. The reform both increased overall school time and spread it more evenly across weekdays. Though it was not its primary objective, the reform was found to boost mothers' propensity to work on Wednesdays and have a full-time contract (Duchini and Effenterre, 2023). We estimate the effect of the reform on unemployed parents' job search, in a differences-in-differences model where unemployed workers with no children serve as a control group. The reform had a positive effect on the rate of job applications of mothers overall, driven by a large increase in applications on Wednesdays. It had no effect on fathers' job applications. Mothers hence used the reform to distribute their search effort more evenly across weekdays and attenuate their differences in search timing with non-mothers. These findings suggest that it is indeed costly for mothers to concentrate their search activities in the periods

when children are at school. Finally, we directly test for reallocation costs by analyzing differences in the success rate of applications sent at different times. We see that the job applications that mothers send when children are at school are less likely to lead to a hire than those sent at other times. This is consistent with the idea that mothers get a lower return on their applications because they time them to accommodate children's schedule. Altogether, our analyses of high-frequency search activities suggest that mothers do indeed experience higher search costs: they must either sacrifice valuable childcare or implement a costly reallocation of their search activities to the periods when children are not present.

Our rich administrative data allow us to explore the heterogeneity of these parenthood gaps. We show that younger women exhibit a larger motherhood gap in their total number of job applications and are more likely to adjust the timing of their search activities to children schedule. This is consistent with the finding of a larger child penalty just after the birth of the first child in the literature (e.g., Kleven et al. (2019)). But apart from these age differences, the motherhood gaps appear strikingly homogeneous. In particular, we observe large motherhood gaps in applications and large reallocations of search activities even among women who had selected into relatively demanding careers: those who were working full-time, in jobs with relatively high hourly wages, or in male-dominated environments.

Our results have important implications for the understanding of the child penalty. We find that mothers face larger search frictions than other workers, which worsens their labor market outcomes after an involuntary job loss. Although our paper focuses on search frictions during unemployment, the mechanisms we analyze are likely also at play during on-the-job search and might hence continuously penalize mothers throughout their career. In particular, mothers searching on-the-job likely have to do most of their search activities after regular work hours, i.e. in moments when children are home—which would generate very high costs. This might contribute to mothers being less well informed about the labor market and receiving fewer outside offers. This is in line with recent evidence that women have more (downward) biased beliefs about the market wage for their resume (Roussille (Forthcoming)), and that women are less likely than men to use information about job opportunities at other firms to increase their wages (Caldwell and Harmon, 2019).

We finally discuss policy implications. Our results imply that gender differences in the value for childcare create inequality in the labor market, even beyond the gender differences in preferred work arrangements previously analyzed in the literature (e.g. Goldin (2014)): They also generate gender differences in activities that are essential for workers' career progression but not directly paid work, like job search. Though it remains an open question whether/how policy interventions can substantially affect mothers' disproportionate involvement in childcare, our results point towards some policies that could help at the margin. They suggest that aligning school schedules as much as possible with work schedules is beneficial for mothers. They also suggest that mothers might face specific obstacles in getting access to childcare services when they are unemployed (e.g., financial constraints,

prioritization of employed parents). Offering cheap and flexible daycare services to unemployed mothers could hence help them go back to work faster. For instance, The French Public Employment Services recently started offering unemployed parents free temporary daycare spots when they have job search related appointments. Finally, our findings suggest that policies designed to decrease search frictions can also help reduce gender inequality in the labor market (e.g. counseling programs for jobseekers, regulations about transparency on pay, or promotion procedures in organizations).

The paper is organized as follows. We present the related literature in Section 2 and the theoretical framework in Section 3. Section 4 discusses the institutional context, data and our empirical strategy. In Section 5, we document the differences associated with motherhood in traditional job search and employment outcomes. In Section 6, we analyze differences in the high-frequency timing of search activities. In particular, we estimate the impact of the reform of school schedule on the timing of search activities. Section 7 discusses the implications of our results for the understanding of the child penalty and for the design of public policies, and Section 8 concludes.

2 Related literature

Our paper makes three main contributions to the literature. First, our paper relates to a growing literature analyzing gender differences in search behavior (Le Barbanchon et al. (2021), Cortés et al. (2023), Fluchtmann et al. (2020), Mas and Pallais (2017), Reuben et al. (2017), Wiswall and Zafar (2018)). The gender differences in search behavior that might appear upon the arrival of children are likely the most detrimental to gender equality since this is when the earnings trajectories of men and women sharply diverge (see e.g., Kleven et al. (2019)). Yet, there is very limited evidence on how job search behavior might change in relation to parenthood. We fill this gap by providing novel evidence of differences associated with parenthood in multiple aspects of search behavior (i.e., search intensity, search selectivity, timing of search). The comparison of the search behavior of men and women in prior literature has highlighted some determinants of gender inequality on the labor market: women are willing to accept lower wages than men because they value more non-wage amenities and are more risk-adverse. Our paper shows that parenthood triggers new determinants: a large gender gap in the rate of job applications opens up. We show that this comes from mothers facing lower incentives to search and higher costs of searching. In turn, this importantly slows down women's transition in the labor market—thereby contributing to the child penalty. Closely related, recent papers have highlighted gender differences in the effect of job displacement on earnings (Ivandić and Lassen (2023), Illing et al. (2023)). In particular, Illing et al. (2023) find that women experience a larger earnings loss than men who are displaced from similar firms. The authors further show that the earnings loss is particularly large for mothers and provide suggestive evidence that mothers

might search less. We confirm this pattern and shed light on the underlying mechanisms.

Second, we contribute to the empirical literature on the determinants of job search behavior, more generally. A large corpus of studies has highlighted the impact of job search incentives (e.g., moral hazard) on search behavior and unemployment duration.[4] However, there has been little attention on the role of job search costs, such as the time required to search. In survey data, unemployed workers report spending only about 30-85 minutes a day searching for jobs (e.g., Krueger and Mueller (2010b), Krueger and Mueller (2011), Krueger and Mueller (2012), Faberman et al. (2022), DellaVigna et al. (2022)).[5] This might be interpreted as evidence that time constraints cannot affect unemployed workers. In contrast, this paper highlights that while unemployed mothers might not face constraints on the volume of their job search, they might face constraints on its timing—which can also affect their unemployment duration. Our findings hence suggest that it is also important to consider search costs to understand the differences across workers in search behavior and unemployment duration.

Third, we contribute to the growing literature studying how mothers' value for time flexibility contributes to gender inequality in the labor market. In seminal articles, Goldin (2014) and Goldin and Katz (2015) have posited that the current organization of firms—which disproportionately reward working long hours and in specific hours—generates gender wage gaps given women's greater value for time flexibility. Subsequently, one strand of the literature has further explored why women's time allocation of work is associated with a lower pay. Cubas et al. (2023) emphasize that women are penalized not only because they provide fewer work hours but also because of the *timing* of their work hours, since it deters them to sort in occupations where workers must coordinate their schedules. Using high-frequency data on work schedules, several papers have documented how women's allocation of work time also contributes to decrease their wage within specific jobs which offer flexible hours e.g. gig platform work (Adams-Prassl et al. (2023), Cook et al. (2021), Bolotnyy and Emanuel (2021)).[6] In this paper, we use high-frequency data on job search which contain detailed administrative information (including parental status) and cover a large sample of workers from various sectors, skill levels, etc. It allows us to confirm the finding

[4]For instance, the literature has documented how unemployment insurance might affect the incentives to search for a job (e.g., Krueger and Mueller (2010a), Barbanchon et al. (2017), Marinescu and Skandalis (2021), DellaVigna et al. (2022)).

[5]Using Time Use Surveys, Krueger and Mueller (2010b) find that the average search time of unemployed workers during weekdays corresponds to 41 minutes in the US (and 27 minutes in France) but 171 minutes conditional on searching. In other surveys, the mean time spent searching reported by unemployed workers was 70 minutes in New Jersey (Krueger and Mueller, 2011), 77 minutes in the U.S. (Faberman et al., 2022), 85 minutes in Germany (DellaVigna et al., 2022). Note that these surveys might not capture all activities that are important for getting a job, e.g. networking or discussing job opportunities with friends and family.

[6]They find that women receive lower hourly wages in these jobs because they adjust less frequently their work schedule to temporary increases in demand or in productivity (Adams-Prassl et al. (2023), Bolotnyy and Emanuel (2021)), or because they work shorter hours and thereby improve their productivity slower (Cook et al. (2021)).

that women are less likely to adjust the timing of work-related activities to maximize their returns and instead adjust it to accommodate children's schedule. Like Adams-Prassl et al. (2023), we find that this is the case even for activities that can be done from home, which shows how gender inequality might persist in home office settings. We further show that this propensity to adjust the timing of work-related activities is similar across women from all education levels, family configurations and career types. Another strand of the literature has analyzed the impact of the supply of external childcare on mothers' allocation of work time. Duchini and Effenterre (2023) and Price and Wasserman (2023) highlight the influence of the public school schedule while Cortés and Pan (2019) highlight the influence of the availability of cheap private childcare services. Our results confirm that school schedule affect mothers' allocation of time, but for job search activities. Since we directly observe people's behavior rather than their employment status—which also depends on labor demand—we can further show that the gender differences in the response to changes in school schedule at least partly come from gender differences in *individual behavior* rather than from gender differences in labor demand.

3 Theoretical framework

Why might unemployed mothers take longer to find a job than non-mothers, even when they had a similar career before their involuntary job loss? In a simple partial equilibrium job search model, we show how search frictions can help rationalize such effects of motherhood on unemployment duration after job loss. Our model also allows us to distinguish two mechanisms: mothers might face lower incentives to search and higher costs of search. We briefly present the model here and provide more details in Appendix A.

Set-up We start from a simple job search model: we assume that there are search frictions, i.e. it takes time and effort to find a new job. In that context, unemployed workers influence their re-employment outcomes by choosing their search effort and their reservation job (i.e. we consider jointly wage and non-wage amenities). We then introduce in the model a specific environment for unemployed mothers. We assume childcare is a form of home production for mothers: mothers generate an instantaneous value from childcare $\mu > 0$. Note that the magnitude of μ summarizes various elements: how productive mothers are in rearing children, how costly it is to use an alternative childcare arrangement, how much utility they get from doing childcare or from having "high-quality" children[7] (see Cortés and Pan (2024)). Moreover, we distinguish two time periods (e.g., corresponding to different hours of the day or days of the week): the hours when children are home, T_1;

[7]These might, in turn, reflect social norms rather than intrinsic preferences, for instance, as mothers might perceive society judging them on their performance in child-rearing as noted by Cortés and Pan (2024). We come back to the interpretation of differences in the value of childcare when we interpret our empirical results.

the hours when they are in school, T_2. The key difference is that mothers can only provide childcare when children are home. This implies that motherhood increases the value of both having time available for childcare and being able to allocate it in the specific period when children are home. In this environment, the extent to which motherhood affects the cost of any activity other than childcare (e.g., market work or job search) depends on two types of assumptions we make about this activity: whether people remain available for childcare while they do this activity; whether there are costs or constraints associated with allocating this activity to school hours. Let's first consider market work.[8] In most of its current forms, work is done outside of home and with a relatively fixed schedule that goes beyond school hours. Therefore, we assume that women are unavailable for childcare activities when they are working and that work time must overlap with the time when children are home. In this setting, motherhood increases the opportunity cost of work.

Now, let's consider job search. There is much less prior evidence about the potential constraints associated with job search. Therefore, we introduce here flexible assumptions that our empirical analysis will help us test. First, we assume that mothers can *partially* search for jobs while they provide childcare. On the one hand, some job search activities (e.g., applying online for jobs) can be done from home and might hence be compatible with "passive" childcare, especially for parents of older children (Folbre et al., 2005). On the other hand, it is unrealistic that one can simultaneously do job search and childcare to their full extent. For instance, mothers searching from home might have to interrupt their activities to devote time to children (consistent with the findings of Adams-Prassl et al. (2023) for mothers working from home). We summarize the extent to which job search is incompatible with childcare with parameter $\psi \in [0, 1]$ which appears in the time constraint that people face when children are home: $h_1 + (\psi \cdot s_1) \leq 1$, where $h_1 \in [0, 1]$ denotes the fraction of T_1 that people spend on childcare, and $s_1 \in [0, 1]$ the fraction of T_1 spent searching for a job. The larger ψ, the more incompatible childcare and job search are, and the less it pays off to search in T_1.[9]

Second, we assume that there are costs associated with allocating job search activities to school hours. Since empirical evidence suggests unemployed workers spend limited time to job search[10], we consider that they can allocate all their search time to school hours but at a cost. This captures the general idea that having constraints on the timing of an activity might decrease productivity (e.g., consistent with the findings that constraints on the time organization of work decrease productivity in Buser and Peter (2012), Coviello et al. (2014) Coviello et al. (2015)). There are various plausible reasons why it might be

[8] For simplicity, we will say "work" for "market work" henceforth.

[9] Alternatively, we could have assumed that mothers are constrained to devote a certain amount of time to children when they are home. For instance, some of the alternative childcare arrangements that mothers have when they are working might not be available to them as unemployed. We come back to this in our policy discussion in Section 7.2.

[10] Krueger and Mueller (2010b), Krueger and Mueller (2011), Krueger and Mueller (2012), Faberman et al. (2022), DellaVigna et al. (2022)

true in the case of job search. After people search for a while, they might get tired and send applications of a lower quality. Alternatively, they might exhaust the pool of relevant vacancies and have to apply to vacancies that represent worse fits. Moreover, it might be difficult to re-schedule some types of job search activities, e.g. job interviews or networking events. We hence allow for search activities in periods 1 and 2 to be imperfect substitutes in our model. The job arrival rate has the following form: $\lambda(s_1, s_2) = \lambda_0 \cdot (0.5 \cdot s_1^{\gamma} + 0.5 \cdot s_2^{\gamma})^{\frac{1}{\gamma}}$, where $\gamma \leq 1$. The lower γ, the less one can substitute search activities in one period for another (and if $\gamma = 1$, search activities in periods 1 and 2 are perfect substitutes).

Overall, in our model, motherhood increases the cost of work and hence decreases the incentive to search for a job. Additionally, motherhood might also increase the cost of job search if searching for a job is at least partially incompatible with doing childcare ($\psi > 0$) and reallocating search effort to school hours is costly ($\gamma < 1$).

Model predictions We calibrate the model with realistic parameter values and solve the maximization problem of unemployed workers.[11] We derive three types of predictions that will guide the interpretation of our empirical results. First, the model predicts that *mothers should search less and be more selective.* Indeed, in all the calibrations considered, mothers have lower search effort and a higher reservation amenity than non-mothers (Panels (1)-(2) in Figure A.1). The more valuable mothers' home production is (μ), the larger those differences in search. Intuitively, when mothers' home production becomes more valuable, the opportunity cost of work rises, and the incentives to search diminish. In turn, this implies that mothers have a lower job finding rate (Panel (3)).

Second, mothers might also face higher search costs on top of lower incentives to search (i.e., when $\psi > 0$ and $\gamma < 1$): the model then predicts that *the negative effect motherhood on job search should be amplified and the positive effect on selectivity should be attenuated.* This is visible by comparing the dashed and continuous lines in Figure A.1. When mothers face higher search costs, they decrease their search effort even more (Panel (1)), but they increase their reservation amenities relatively less (Panel (2)). Intuitively, mothers cannot afford to be as selective if searching for jobs is more costly. Ultimately, their job finding rate drops even more. Overall, the search cost channel is not driving the bulk of the effect of motherhood on search and re-employment, but it affects its magnitude. Note that it is crucial to both show that childcare and job search are at least partially incompatible ($\psi > 0$) and that mothers cannot perfectly substitute search in one period for another ($\gamma < 1$) to prove that the search channel is at play. In particular, if there is perfect substitution between search in different hours, mothers will not face a higher cost of job

[11] We focus on interior solutions. In particular, we make sure that mothers are not constrained in their amount of job search by the time available during school hours, given the evidence that workers spend relatively limited time searching for a job in the literature (e.g., Krueger and Mueller (2010b), Krueger and Mueller (2011), Krueger and Mueller (2012), Faberman et al. (2022), DellaVigna et al. (2022)). We note that if mothers were hitting this constraint, this would increase their cost of job search even more.

search irrespective of the degree of incompatibility between childcare and job search.[12]

Third, if mothers face higher search costs on top of lower incentives to search (i.e. $\psi > 0$ and $\gamma < 1$), *the timing of their search activities should diverge from that of non-mothers*. Mothers should decrease their search effort more on no-school hours and less on school hours (see Figure A.2). Note that if childcare and job search are partially incompatible ($\psi > 0$) but search activities during school hours and no-school hours are perfect substitutes ($\gamma = 1$), then mothers should entirely stop searching for jobs during no-school hours and *increase* their search in school hours (Panel (5)-(6) in Figure A.6).

Empirical validation Our empirical analysis will shed light on two types of questions outlined by this theoretical framework. First, it will allow us to show that there are indeed motherhood gaps in search behavior and job finding that are consistent with the model predictions. This will confirm that the general framework of search models is relevant to understand mothers' recovery from an involuntary job loss. Second, our analysis of the timing of search will allow us to empirically assess whether the search cost channel mechanism is at play. We will do this in various ways. We will show that mothers decrease their search effort much more in no-school hours. We will also evaluate the effect of a reform introducing school on Wednesday morning—which both increased school time and spread it more evenly across weekdays. In the lenses of our model, the increase in the amount of school time can be represented by a decrease in the value of childcare, μ. This should increase mothers' search effort and decrease their selectivity (this corresponds to a shift along the x-axis in Figure A.1). Moreover, Wednesday morning becomes part of the school-period rather than the no-school period: we expect a large increase in search effort on Wednesday morning if childcare and job search are at least partially incompatible and if search activities in different weekdays are imperfect substitutes (this corresponds to a shift from the dark line to the light line in Figure A.2, Panel (2)).

4 Data and empirical strategy

4.1 Institutional context: school schedules in France

In France, children can start attending free public kindergarten at age two or three. In practice, 23% of two-year-old children and 95% of children aged three to five attend kindergarten (Goux and Maurin (2010)). Children then attend compulsory primary school from age six to age eleven and secondary school afterward (education is compulsory from age six to sixteen during the study period). French school years go from September to June and include four two-week long holidays around October, December, February, and April.

Before 2013, kindergarten and primary school children (i.e. most children between three and eleven years old) went to school for four days a week: on Monday, Tuesday, Thursday,

[12] See Figures A.3, A.4, A.5, Panels (5), (6)). We provide more details in Appendix A.

and Friday. On those days, they had six hours of teaching time (generally from 8:30am to 11:30am in the morning and from 1:30pm to 4:30pm in the afternoon) and two hours of lunch break in the middle. In 2013-2014, school schedules were reformed in order to spread teaching time more evenly across weekdays for kindergarten and primary school children. The reform added teaching time on Wednesday mornings in most schools, generally from 8:30am to 11:30am. On other weekdays, the teaching time was generally shortened by about 45 minutes and complemented by free non-compulsory extracurricular activities. For a comprehensive description of this reform, see Duchini and Effenterre (2023). Overall, the effect of the reform was twofold: first, it increased the free public childcare provision at school; second, it spread it more evenly across weekdays. About 20% of French municipalities adopted the new schedule in 2013; the rest only did so in 2014. Though this reform was motivated by pedagogical considerations, it was shown to boost mothers' propensity to work on Wednesdays and have a full-time contract (Duchini and Effenterre, 2023).

4.2 Data

Matched job applications data We match various types of administrative datasets from the French Public Employment Service (PES), Pôle Emploi. First, we exploit data on the job applications sent on the PES online search platform, following Marinescu and Skandalis (2021). The French PES administers a popular search platform. In 2013, in an effort to support recruiting, employers were offered the possibility to include a link in their job ad to a standardized application procedure. In that case, job seekers could only apply to the job by filing a detailed online form. These online applications are tracked on the information system ("Télécandidatures"), with the exact time of the applications, a vacancy identifier, a firm identifier, and an individual identifier. We match this dataset with vacancy data to have information on the characteristics of the job that are visible to the job seeker: type of contract, type of occupation, posted wage (reported in about half of the vacancies), number of hours, required education level, required skill level. We also match this dataset with firm and individual administrative registers to know which job seeker applied and whether this person was subsequently hired by the firm.

We use the data on job applications for two main purposes. First, we analyze differences associated with motherhood in the count of applications sent by each jobseeker. One concern in this exercise is that the online search platform is only one out of several possible search channels: it does not capture all the applications sent by a jobseeker. However, Marinescu and Skandalis (2021) provide various tests showing it represents a valid proxy for search effort overall. We also make sure that our specific results in this paper are not biased by potential differences in the fraction of applications done on the online search platform associated with motherhood (we discuss this further in Section 4.4). Second, we exploit a novel feature of the data: we analyze high-frequency changes in the timing of job applications. In particular, we count the applications sent during weekdays for every

10-minute interval. We use 10-minute intervals as it is the unit used to report activities in the French Time Use Survey (described below). We also count the applications sent during weekends or school holidays.

Other data Additionally, we measure job seekers' selectivity based on the information that all French job seekers report when they register as unemployed in a mandatory survey administered by the Public Employment Services, following Le Barbanchon et al. (2021). This information is collected in a dataset called "Fichier historique des demandeurs d'emploi" (FH), alongside rich individual information on jobseekers at the time of unemployment registration. We analyze four dimensions of selectivity: the reservation wage, the maximum commute distance, whether people want a part-time or a full-time job and whether people want an open-ended or a finite-duration contract.[13]

Our main employment outcome is the time to re-employment, i.e. the time between the date of registration as unemployed and the date of the first new job found. We obtain this information from the employers' mandatory declarations of new hires ("Declarations préalables à l'embauche", DPAE). Since this dataset does not contain information on wages, we also present a complementary analysis using the FH-DADS—a linked dataset of unemployment register and employment data available for 1/12th of the labor force in 2009-2012.[14]

Last, we use data from the French Time Use Survey (FTUS) from 2009-2010, which asks respondents to report all the activities they have been doing during two days—a weekday and a weekend day—in intervals of 10 minutes. We focus on the 282 respondents below age 55 who are unemployed and have children. We identify the time intervals when respondents declare being in presence of their children, and those when they declare doing childcare as their primary or secondary activity.

Study samples We study workers who became unemployed between September 2013 and September 2016. Following Le Barbanchon et al. (2021), we restrict our sample to those who became unemployed after an involuntary job loss (i.e firing from open-ended contracts or expiration of temporary fixed-term contracts) and who are eligible for unemployment insurance. Among these workers, we restrict our sample to those who sent at least one application on the platform in our main analysis (our results are robust to relaxing this sample restriction). We further restrict the sample to individuals between 20 and 55 years old, when people are most likely to have children at home. That leaves us with a sample of

[13]Respondents can provide their reservation wage as an hourly, monthly, or annual wage. We convert all answers into hourly wages. Job seekers can state their maximum commute distance in minutes or kilometers. Following Le Barbanchon et al. (2021), we convert the maximum commuting time for those who declared in minutes into kilometers, assuming that the average commuting speed is 35 km/hour.

[14]Note that this sample does not overlap with our main study dataset, which spans unemployment spells started in 2013-2016, while this alternative dataset spans unemployment spells started in 2009-2012. We construct a separate dataset from the FH-DADS data by applying the same sample restrictions (except for those related to online applications) and constructing the same variables as in our main dataset.

345,385 individuals. When we analyze the effect of the reform of school schedule, we exclude individuals who live in cities for which we could not find a public school or kindergarten that either implemented the school schedule reform in 2013 or in 2014 (i.e. about 3% of observations): we hence use a sample of 333,567 individuals in the last part of our empirical analysis. We present the characteristics of unemployed workers in our main sample in Table 1.[15] 45% of people in our sample have at least one child when they sign up as unemployed, but this fraction is higher for women (52% of women versus 36% of men). The average age of both men and women is 34 years old. Women tend to have a higher degree (37% of them have a Higher education diploma, vs 28% of men). Their prior earnings are lower than those of men, and they are more likely to work part-time.[16] Women tend to send slightly more applications than men overall (1.12 in the first three months versus 1.02), but have a lower job finding rate. 57% of women find a job within one year, versus 60% of men. As documented in Le Barbanchon et al. (2021), women and men differ in their search criteria: women report a smaller reservation wage, a shorter maximum commute distance, and they are more likely to search for a part-time job (11% of them do).

4.3 Descriptive statistics

Job vacancies We provide descriptive statistics about the job vacancies posted on the PES search platform. An important question is to what extent the platform covers the variety of jobs that people in our sample are looking for. Indeed, the platform only represents one search channel among others. To assess this, we compare the jobs that people in our sample are hired into to those they apply to on the PES search platform in Table B.2. We see that the vacancies on the online platform do indeed cover all types of contracts, firm sizes, and sectors. We notice, however, that temporary contracts are under-represented on the PES platform, while finite-duration contracts are over-represented. Small establishments (less than five employees) are slightly under-represented on the PES search platform. In terms of sectors, we note that Administrative services jobs are under-represented, but the sectoral composition is overall pretty balanced.

Job applications One novel aspect of our data on applications is the high-frequency information about their timing: we know the day, hour, and minute when the application is sent. We present descriptive statistics about the allocation of applications throughout the day in Figure B.1. We see that there is almost no search activity before 7am (we will hence focus on the applications sent between 7am and midnight when we analyze the allocation of search activities through the day). Job search peaks around 10am, decreases around lunch time, increases again in the beginning of the afternoon, and rapidly decreases after 4pm.

[15] Descriptive statistics for the subsample used for the analysis of the school reform are presented in Table B.1 They are virtually identical to those presented in Table 1.

[16] Here, part-time means any duration below the standard full-time hours in the sector

These large variations in the propensity to apply throughout the day might both reflect the organization of social life and of the labor market: some hours are typically associated with meals or leisure, some hours might be better suited for job search (e.g., because it is easier to reach employers during office hours).

4.4 Empirical strategy

The motherhood gap In a first part of our empirical analysis, we estimate parenthood gaps in search behavior, separately for men and women (in what follows, we focus on women for simplicity). The motherhood gaps capture the persistent differences associated with motherhood rather than the differences arising immediately after the birth of the first child. Indeed, motherhood is defined as having children below 18 years old. Our objective is to shed light on specific factors that affect mothers at the time when they search, rather than on those that have affected them up to the point when they search. We hence control for a wide range of observable labor market characteristics to compare mothers and non-mothers who have had similar work experience up to the point when they become unemployed. In practice, we estimate the following empirical model:

$$Y_{i,t} = \alpha_0 + \alpha Child_{i,t} + X_{i,t}\beta + \varepsilon_{i,t} \quad (1)$$

Where $Y_{i,t}$ is the outcome for an unemployment spell that began at the calendar date t for individual i. $Child_{i,t}$ is a dummy equal to one if individual i has at least one child below age 18 when becoming unemployed. $X_{i,t}$ is a vector of time-varying and fixed characteristics for individual i at time t. It includes: job seekers' age (a dummy for each age integer in years), marital status (single or married), education (a dummy for each of 5 diploma levels), labor market experience (a dummy for each of 5 experience levels), type of skills (a dummy for each of 5 skill categories), past cumulated unemployment duration, count of past unemployment spells, potential UI benefits duration (a dummy for each duration integer in months), prior wage, prior work hours (a continuous ratio of hours relative to full-time), occupation searched (a dummy for each of about 350 occupation codes, "code rome"), city of residence (a dummy for each city code). We are interested in the coefficients α, which measure the motherhood gaps.

We successively consider several outcomes. First, we consider the *count of job applications* at the start of the unemployment spell. Specifically, we take the number of applications sent during the first quarter of unemployment or up to re-employment (for job seekers leaving before the end of the first quarter).[17] This allows us to identify the differences associated with motherhood in the rate of applications sent after an involuntary job loss. We make sure that our results are not biased by potential differences between mothers

[17]We consider job applications during alternative time windows in robustness checks: first two or six months of unemployment.

and non-mothers in the fraction of search that is done on the online search platform in two ways. First, we construct a summary measure of the representativeness of the job ads posted on PES search platform based on their contract type, firm size, and sector (see Table B.2). We show that the change in the number of applications is not driven by a shift in the composition of applications towards types that are more or less represented on the PES search platform. Second, we use an alternative measure of search intensity that should be less affected by the selection on the PES search platform: we measure the speed at which job seekers apply to a newly posted vacancy, i.e. the number of days between the date when the vacancy is posted and the date when the person applies. The intuition is among jobseekers using the online platform, the more frequently someone searches, the faster she should apply to a newly posted vacancy.

Second, we consider measures of *search selectivity* reported by job seekers when they become unemployed. This includes the logged reservation wage, the logged maximum commuting distance, a dummy for whether the individual reports searching for an open-ended contract, and a dummy for whether the individual reports searching for a part-time job. This allows us to identify the differences associated with motherhood in jobseekers' selectivity regarding various job amenities at the start of their unemployment spell. One might be concerned about bias in jobseekers' reporting since these variables come from a mandatory survey. We address this concern by building alternative measures of selectivity using the characteristics of the jobs applied to.

Third, we consider various measures of *non-employment spells*. This allows us to identify the differences associated with motherhood in the hazard of finding a new job after an involuntary job loss. In our main specifications, we use a dummy for whether the individual finds a job within one year. In alternative specifications, we consider other time windows and other types of spells (time to the first long-term job, time to the first exit from the unemployment register).

Fourth, we take as an outcome *the count of job applications sent during specific time intervals*, such as specific times of the day or specific days of the year. Like before, we take the number of applications sent during the first quarter of unemployment or up to re-employment (for job seekers leaving before the end of the first quarter). We obtain various coefficients corresponding to the motherhood gaps in applications sent at different times and compare them. In this exercise, non-mothers help us capture the variations in the volume of applications coming from the typical organization of social life and of the labor market (see Figure B.1) and isolate how motherhood affects the timing of job applications.

When we take as outcomes the count of applications or re-employment dummies, we present the estimates obtained from Poisson count models (instead of the linear models presented above) which are better suited for outcome variables with a mass point at zero. Poisson regression models do not suffer from the incidental parameter problem and allow for convenient inclusion of fixed effects. In order to allow for misspecification of the Poisson

distribution, we present coefficients estimated using a quasi-maximum likelihood method (Wooldridge, 2010). We report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. All our conclusions are robust to estimating linear models using OLS instead for these outcomes.

The effect of the reform of school schedule We compare job seekers with or without children, before or after the reform. We estimate the following differences-in-differences model separately for men and women:

$$Y_{i,t} = \gamma_0 + \gamma_1 Child_{i,t} + \gamma_2 Reform_{i,t} + \gamma_3 Child_{i,t} \cdot Reform_{i,t} + X_{i,t}\beta + \eta_{i,t} \quad (2)$$

Where $Reform_{i,t}$ is a dummy equal to one if the reform was implemented in the city of individual i at the date t. All the other variables are similar to those in model (1). We are interested in the coefficient γ_3, which gives the causal effect of the change in school schedule on the considered search and re-employment outcomes, under our identifying assumptions.

The reform introducing school time on Wednesdays, and thereby both increased the overall time that children between age 3-11 can spend at school and spread it more evenly across weekdays. While both aspects of the reform can affect job search behavior, we are primarily interested in the second one since it allows us to test more novel mechanisms. In a first step, we analyze the effect of the reform on the allocation of search activities across weekdays. For that purpose, we consider various outcomes: the count of applications sent on Wednesday and the count of applications sent on other days, the count of applications sent in the morning or the rest of the day for each weekday. In a second step, we also consider the more standard outcomes described above: the count of all job applications, various dimensions of selectivity in search, and non-employment spells.

The identification relies on two assumptions. First, parents and people with no children would have had similar changes in their search behavior after September 2014 in the absence of the reform. Second, people with no children should not be affected by the reform. In particular, they should not be indirectly affected through the increased competition with non parents. It appears unlikely that there are such "spillover effects" for search behavior outcomes, but there might be on the hazard of finding a job to the extent that parents and non-parents might compete for the same jobs. In that case, our estimates for the effect of the reform on the hazard of finding a job could be upward biased.

5 The motherhood gap in search behavior

We start our empirical analysis by estimating parenthood gaps in search behavior. Our objective is to establish novel basic facts about mothers' experience of involuntary job loss and test the broad predictions of the search model presented in Section 3, before delving into the mechanisms in the next Section.

5.1 Main results on the motherhood gaps in search

We investigate in Table 2 whether parenthood is associated with differences in search behavior and re-employment, as expected from our model. We first present estimates for the gaps in job applications (for women in the upper panel and men in the lower panel). Strikingly, we find that mothers send 12.2% fewer job applications than similar women with no children (col (1)). In contrast, the rate of applications of fathers is identical to that of similar men with no children. The count of applications sent might reflect both the intensity of the search effort provided and the selectivity in search. Indeed, more selective workers might apply to fewer jobs, not because they spend less effort but because fewer job vacancies correspond to their search criteria. To investigate the relation between parenthood and search effort, we re-estimate parenthood gaps when controlling for our rich measures of workers' search selectivity. Adding these controls slightly attenuates the estimated motherhood gap in applications: we find that mothers apply 8.9% less than similar non-mothers who have similar search criteria (col (2)). This is consistent with the idea that mothers are more selective overall than non-mothers and, hence, have fewer jobs to apply to. Moreover, these results suggest that motherhood is associated with a large decrease in search effort, consistent with the predictions of our model. In contrast, fathers send the same number of applications as similar men with no children, even when controlling for search criteria.

We then directly estimate parenthood gaps in search selectivity in four dimensions. We find that mothers' reservation wage is 0.6% higher than that of non-mothers (col (3)). Their maximum commute distance is 7.8% lower (col (4)), they are 1.3 percentage points more likely to seek an open-ended contract (col (5)), and 5.1 percentage points more likely to prefer a part-time job (col (6)). Overall, mothers appear more selective than non-mothers in all the dimensions of job amenities that we can observe. This is consistent with the predictions from our calibrated search model that mothers should request a higher level of job quality—all dimensions considered. As for men, fathers also appear more selective than non-fathers in terms of wages: Their reservation wage is 0.9% higher (col (3)). But they look similar in their selectivity in terms of non-wage amenities: They have a similar maximum commute distance (col (4)), they are slightly more likely to look for an open-ended contract (by 0.8 percentage points, col (5)), and are equally likely to prefer part-time jobs (col (6)).

Our results add to prior evidence of gender differences in job search (Le Barbanchon et al. (2021), Fluchtmann et al. (2020), Mas and Pallais (2017), Reuben et al. (2017), Wiswall and Zafar (2018)). In particular, the prior literature highlights that one determinant of gender inequality in the labor market is the gender difference in the taste for wage versus non-wage amenities. Our results show that parenthood might further amplify gender differences in the demand for wage and non-wage amenities since parenthood is associated

with a smaller increase in reservation wages for women than for men and a larger increase in the demand for non-wage amenities. However, our results reveal that parenthood is associated with an even more important type of gender difference in job search: a large gender gap in the rate of job applications. Our findings suggest this gap comes from women providing less search effort and becoming more selective in *all* amenities upon parenthood. These patterns are consistent with a search model in which motherhood increases the value of home production. In labor markets with search frictions, this should lead to mothers taking longer to find a suitable job.

We finally investigate if the differences in job search we have observed translate into differences in job finding rates. In col (7) of Table 2, we see that mothers are 8.9% less likely to find a job within one year than similar women without children. The motherhood gap in job applications is hence associated with a gap in the job finding rate of similar magnitude. In contrast, fathers do not differ from other men in their re-employment rate. Overall, we find parenthood gaps in re-employment rates consistent with those in search behavior and with the predictions from our search model. These results are in line with the finding that mothers experience especially large earnings losses after being displaced in Denmark and Germany (Ivandić and Lassen (2023), Illing et al. (2023)). They suggest that the parenthood gaps in search behavior that we uncovered contribute to the gap in labor market earnings that women experience after becoming mothers, i.e. the child penalty.

5.2 Additional results and robustness checks

Additional results We examine how the parenthood gaps in search and re-employment outcomes vary across demographic groups. From the child penalty literature (e.g., Kleven et al. (2019)), we expect the motherhood gaps to be larger just after the birth of the first child. Though we do not observe the date of birth of children, we can test whether motherhood gaps vary with women's age. Figure 1 indeed confirms that the largest motherhood gaps are observed among younger mothers. In particular, the motherhood gap in job applications is around 20% among women aged 25; it gradually decreases with age and becomes insignificantly different from zero above 45 years old (Panel (1)). Similarly, the motherhood gap in reemployment rate goes up to 20% among women around age 25 and gradually converges to zero when age increases (Panel (2)). The motherhood gaps in search selectivity along non-wage amenities also peak among young women and decline with age (Panels (4), (5), (6)). Moreover, the literature on the child penalty finds that mothers are most affected by their first child, while subsequent children only have a more modest effect. In Table C.1, we estimate separately the gap in search associated with having one child, two children, or three children or more. We find that women with one child send 11.3% fewer job applications than similar non-mothers, those with two children send 12.8% fewer, and those with more children send 15.8% fewer. This analysis confirms that most of the gap in the rate of applications can already be observed with the first child.

Our rich data allow us to investigate further the heterogeneity of the motherhood gap and, in particular, to test if it depends on women's situation on the labor market before job loss (Figure C.1, C.2, C.3, C.4, C.5). We focus our discussion on the motherhood gaps in application and re-employment rates, but motherhood gaps in all outcomes are also systematically presented in Appendix. Strikingly, we find that these motherhood gaps are large even for women who were engaged in relatively intense careers, i.e. those who had a relatively high wage, a full-time schedule, and worked in male-dominated environment. We also note that these motherhood gaps are similarly large for married and single women. As for men, fatherhood gaps are homogeneous along all dimensions considered and always close to zero. Overall, this analysis highlights that *for all women*, motherhood is associated with a larger drop in applications and a longer career interruption—while fatherhood is not. This echoes findings in the literature of relatively homogeneous child penalties across women (Cortés and Pan (2024)).

We have shown that mothers have a slower recovery after an involuntary unemployment spell, which likely contributes to the child penalty. Another important question is to which extent involuntarily unemployed mothers also get re-employed at lower wages. We examine this using a distinct data source (FH-DADS) and a different sample of workers (those who became unemployed in 2009-2012) since we don't observe re-employment wages in our study sample. Consistent with the results obtained in our main sample, we estimate an 8.5% motherhood gap and a negligible fatherhood gap in the job finding rate in this alternative sample (Table C.2). Moreover, we estimate that mothers receive a 1.3% smaller re-employment wage than non-mothers when they find a job. In contrast, fathers receive a similar re-employment wage as non-fathers. This negative motherhood gap in re-employment wage might appear at odd with our finding of a positive motherhood gap in reservation wage. We note two potential explanations for it. First, the distribution of job vacancies offered on the labor market might be such that finding wages far above the reservation level is more difficult for mothers than non-mothers, given their non-wage amenities criteria. Consistent with this explanation, we find that among the women who find a job within two years, motherhood is actually associated with a *lower* reservation wage (Table C.3). This confirms that mothers who are more selective in terms of wage seem to have more difficulties finding jobs. Second, workers might experience a decrease in their reservation wage over time (e.g. due to the expiration of their unemployment benefits, loss of human capital, or stigmatization of long-term unemployed workers) consistent with the findings of Marinescu and Skandalis (2021). Although mothers have a higher reservation wage than non-mothers when they start their unemployment spell, their reservation wage might have decreased more by the time they find a job because of their longer unemployment duration. Overall, our analysis shows that not only mothers get re-employed slower than similar non-mothers, but they also get re-employed at lower wages. This helps further explain how search frictions during unemployment might contribute to the child penalty.

Robustness checks We conduct various additional analyses to consolidate our main findings. One important concern is that the motherhood gap in applications that we estimate in Table 2 might not only reflect a gap in the overall rate of job applications but also a gap in the use of the PES platform vs other search channels: Instead of applying less than non-mothers, mothers might make a smaller fraction of their applications on the PES search platform. First, we show that mothers send fewer applications than non-mothers for all types of jobs considered (Figure C.6), including those over-represented and those under-represented on the online search platform (see more details on our measures of representativeness in Section 4.3). Second, we use an alternative measure of search effort: how fast jobseekers apply to a vacancy after it is posted. The intuition is among jobseekers using the online platform, the more frequently someone searches, the faster she should apply to a newly posted vacancy. In Table C.4, we find that mothers apply to vacancies posted for more days than non-mothers (col (1) and (2)) and that they are less likely to apply on the day when the vacancy was posted (col (3) and (4)). Finally, we note that we capture all new jobs when we estimate the the motherhood gaps in job finding—not only the new jobs found through the PES platform, and that our estimates for the gaps in job finding and in job applications closely align.

Another way to probe the robustness of our results to potential measurement issues is to compare the estimates for the parenthood gaps in search selectivity that we obtain when we measure search selectivity using different data sources. Our job application data indeed offer the possibility to build similar measures of search selectivity to those from the mandatory administrative survey: For each job seeker, we consider all jobs applied to at the start of the unemployment spell and compute the average wage, the average commuting distance, the fraction of permanent contract, and the fraction of part-time jobs.[18] In Table C.5, we present side by side the parenthood gaps in search selectivity measures from survey data and from the job applications data, in the subsample of jobseekers for whom we observe both. The picture looks strikingly similar in the two data sources. Consistent with their answer to the mandatory survey, mothers are more selective than similar non-mothers in the jobs they apply to—while fathers apply to relatively similar jobs as non-fathers.

Finally, we show that our estimates for the parenthood gaps remain similar when we vary the set of control variables included (Table C.6), when we vary the measure of the application rate (Table C.7) or of the re-employment rate (Table C.8).

6 Motherhood and the *timing* of job search

In this section, we turn to the most innovative aspect of our data: we analyze high-frequency changes in search activities. We highlight that mothers importantly reallocate their search

[18]These measures hence can be interpreted as capturing the targeted job amenity rather than the reservation amenity. See Nekoei and Weber (2017) and Marinescu and Skandalis (2021) for more details.

activities to adjust to the schedule of their children, while fathers do it less. It allows us to test the mechanisms behind the motherhood gap in job search and re-employment outcomes presented in Section 3: we provide suggestive evidence that mothers not only face lower incentives to search but also higher search costs.

6.1 The motherhood gap in the *timing* of job search

We start by documenting the differences in the rate of applications between parents and non-parents at a high-frequency. Given our granular data, this allows us to pinpoint the role of children's schedule.

Graphical analysis We analyze the parenthood gaps in search timing in Figure 2 (Panel A for women and B for men). In practice, we break up the total number of applications analyzed in Table 2 into applications sent during 10-minute intervals throughout weekdays. We superimpose the proportion of unemployed parents declaring that at least one of their children was present in the room during the same 10-minute interval in the French Time Use Survey. The light gray areas indicate school time and children's typical sleeping time. The first takeaway from Figure 2 is that the mothers strongly deviate from the typical timing of search of non-mothers. There are very large differences in the rate of applications at specific times. For instance, mothers' rate of applications is 50% higher than that of non-mothers around 9:30am, while it is 40% lower than that of mothers around 5pm. Moreover, the granularity of the data allows us to detect that mothers search less than non-mothers precisely when children tend to be present, given the French school schedule (i.e. during the school lunch break and after school). Conversely, they often search more during the periods when children are at school or sleeping. Finally, Figure 2 provides striking graphical evidence that the reallocation of job search around children's schedule is much more pronounced for mothers than fathers. Indeed, while we see qualitatively similar patterns for mothers and fathers, the variations throughout the day are much more pronounced for mothers. Overall, this Figure shows that parents adjust the timing of their search activities to the typical schedule of children and highlight large gender differences.

These results confirm the hypothesis from our theoretical framework (Section 3) that taking care of children can not be done alongside full-speed job search. One could have expected that parents could provide (passive) childcare while performing other activities as long as they could be done from home, like sending online applications. Though the possibility of searching from home might help, our results show that childcare is still at least partially incompatible with job search. This is consistent with the suggestive evidence that mothers are often interrupted when they work from home by Adams-Prassl et al. (2023), and shows that gender inequality might persist in home office settings. This implies that children's schedules create constraints on the timing of mothers' search activities. Yet, one might think that this should not affect the cost of searching for a job for unemployed

mothers. Indeed, prior evidence suggests that unemployed workers do not spend very long searching for a job so they probably have enough time to perform their (unconstrained amount of) search activities in the periods when children are at school (e.g., Krueger and Mueller (2010b), Krueger and Mueller (2011), Krueger and Mueller (2012), Faberman et al. (2022), DellaVigna et al. (2022)). However, there might also be costs associated with departing from the typical timing of search activities. In that case, being constrained in the timing of search activities by children's schedule should raise the cost of job search. We will investigate whether this might be the case in section 6.2.

We provide various additional graphical analyses to strengthen our interpretation. First, we estimate parenthood gaps in applications sent every 10 minutes using OLS regressions instead of Poisson regression models (see discussion in Appendix D.1). The advantage is that the OLS estimates are not affected by large fluctuations in the baseline rate of applications among non-parents throughout the day, and it is hence easier to see how the gaps in the applications sent every 10 minutes map into the gap in the total number of applications we have documented in Table 2. All our conclusions remain unchanged. We also analyze parenthood gaps in search timing during weekends and school holidays (see discussion in Appendix D.2). In contrast with the patterns observed during weekdays, we find no variation around typical school times. Instead, there is a stable negative motherhood gap in applications sent between 9am and 10pm, and no fatherhood gap. Hence, this analysis provides additional evidence that the presence of children drives the differences in search timing between parents and non-parents and that mothers react more than fathers. Finally, we directly examine the relation between childcare and job search. For all 10-minute intervals, Figure C.8 presents in x-axis the proportion of parents in presence of children (in gray) or actively providing childcare (in red) and in y-axis the corresponding parenthood gaps in job applications. Consistent with Figure 2, we observe a negative correlation between the proportion of parents in presence of children and the parenthood gap in search that is more pronounced for mothers than for fathers. Moreover, we find that there is an even stronger negative correlation between the proportion of parents providing childcare and the parenthood gap and that it is similar in magnitude for mothers and fathers. This is consistent with our interpretation that childcare is at least partially incompatible with job search. Fathers appear to adjust the timing of their search activities to children's schedule less than mothers, not because they face a lower degree of incompatibility between childcare and job search, but because they provide less childcare.

The magnitude of the search timing reallocation We quantify the magnitude of the reallocation of search activities around children's schedule for mothers and fathers in Table 3. Mothers have a 24% lower rate of applications than non-mothers in the hours when children are typically neither at school nor sleeping (Panel A, col (1a)). In contrast, mothers' application rate is not significantly different from that of non-mothers during

children's school or sleep hours (col (1b)). Therefore, beyond the variation that all women experience in their applications through the day, mothers experience a 23% drop in search in the specific hours when children are typically under parents' responsibility (col (1c)). In Panel B, we see similar patterns but much attenuated for fathers: fathers have a 8.2% lower rate of applications when children are neither at school nor sleeping (col (1a)), a 6.2% higher rate of applications in children's school or sleep time (col (1b)). Having children under parents' responsibility is associated with a 13.5% decrease in fathers' rate of applications (col (1c)). The magnitude of the reallocation of search activity around children's schedules during weekdays hence appears almost half smaller for fathers than for mothers.

We also examine the allocation of job search *across days* in Table 3, columns (2).[19] We find that mothers send 17.5% fewer applications than non-mothers in the days when there is no school, i.e. weekends or school holidays (col (2a)). Mothers send 11.4% fewer applications than non-mothers during school days (col (2b)). So, for mothers, not having children at school on a given day is associated with a 6.9% decrease in the application rate. Turning to men, we see no evidence of any reallocation of search activities across days associated with parenthood. Fathers send roughly the same number of applications than non-fathers, both on days with no school and on days with school. One can note that, for both mothers and fathers, the magnitude of the reallocation of search activities appears smaller across days (col (2)) than within (col (1)). One reason could be that the organization of leisure is very influenced by the timing of weekends and school holidays for all individuals, including non-parents in France, potentially because of leisure complementarities between households with and without children (Georges-Kot et al., 2017). Finally, we present in columns (3) the allocation of job search both within and across days. The estimates presented in col (3c) summarize the overall amount of reallocation around school schedule: not having children at school is associated with a 20.3% decrease in job applications for mothers and a 9.4% decrease in job applications for fathers. Overall, the various analyses presented in Table 3 consistently show that mothers reallocate their search activities around children's schedule more than fathers by a large amount, i.e. roughly twice more.

We then analyze the heterogeneity of the parenthood gap in the timing of search activities. In Figure 3, we report for different demographic groups the coefficients corresponding to the overall reallocation of search across hours and days (like in col (3c) of Table 3). As expected, mothers appear to reallocate more their search activities around school schedule when they are younger, especially between 25-35 years old—i.e. when their children are likely to be relatively young and in school age (Panel (1)). But the most striking takeaway is that the reallocation of search activities is visible for all unemployed mothers *across the board*. Single and married mothers, as well as mothers from all education levels, exhibit similar reallocation patterns (Panels (2)-(3)). Besides, mothers who sorted in different careers

[19] We exclude the summer holidays of July-August since the job vacancies posted during this period might be very different (e.g., seasonal work).

also exhibit similar reallocation patterns: mothers with various prior wage levels (Panel (4)) those who were previously in a full-time position vs part-time position (Panel (5)), those searching for jobs in a more male- or female-dominated occupation (Panel (6)). These results suggest that mothers who sorted into different careers value similarly providing childcare relative to searching when children are home. In our setting, the value for providing childcare encompasses various elements: how productive mothers are in rearing children relative to market work, how costly it is to use an alternative childcare arrangement, how much utility they get from doing childcare or from having "high-quality" children. As noted by Cortés and Pan (2024), there are probably differences across mothers in some dimensions, but they appear to roughly cancel each other out. For instance, mothers who were in high-paying jobs might be less productive in child rearing relative to market work but get more utility from having "high-quality" children.

6.2 The effect of a school schedule reform on job search timing

We then analyze the effect of a reform of school schedule on the timing of search activities. The reform both increased the overall amount of school time and spread school time more evenly across weekdays (see Section 4.1). The evaluation of this reform provides three key insights. First, it confirms the direct link between parents' search timing and children's schedule. Second, it sheds light on the costs associated with having constrained search timing for parents. Third, it shows that workers' time use can respond in the short run to policy changes.

Main results The reform implemented in 2013-2014 in France introduced teaching time on Wednesday morning, without reducing the amount of school time on other days. As explained in Section 3, the reform may have both increased mothers' incentives to search and decreased their cost of searching for a job. We expect the reform to increase mothers' search efforts overall. If there are costs associated with departing from the typical timing of search activities observed among non-parents, we also expect the reform to allow mothers to smooth their search more evenly across weekdays. Here, we hence investigate empirically how the reform affected the overall amount of search effort and its timing. We first present in Figure 4 the estimates for the effect of the reform of school schedule on the amount of applications sent each day of the week, in the morning and the afternoon. The reform significantly increased the application rate of mothers on Wednesday morning (by about 15%), i.e. precisely at the moment when school time was added for children (Panel A). On other days, it had a generally positive but smaller and non-significant impact on the rate of applications of mothers. In contrast, the reform did not affect the application rate of fathers (Panel B), neither on Wednesday morning nor on other days.

In Table 4, we then quantify the effects of the reform on mothers' job applications on Wednesdays versus other days. The reform increased by 8.7% the rate of applications sent

by mothers on Wednesday (col (1)). It did not significantly affect the rate of applications sent on other days (col (2)). We also see from Table 4 that before the reform, mothers were sending especially few job applications on Wednesdays: 19.1% less than non-mothers (col (1)) versus 13.4% less on other days (col (2)). The reform hence allowed mothers to get closer to the allocation of search across weekdays of non-mothers. Finally, col (3) indicates that the reform's overall effect on mothers' job applications was positive: the reform allowed them to increase their rate of applications by 4% overall. In contrast, we see no significant response for fathers, neither on Wednesdays nor on other days (col (4)-(6)). Our results allow us to test our model predictions in several ways. First, we find that the reform increased mothers' overall number of job applications. This is consistent with the predictions for the effect of a decrease in the value of childcare, for all calibrations. Second, we find that mothers chose to send the bulk of their extra applications on Wednesdays. This second effect is particularly insightful to uncover the cost of search experienced by mothers: it highlights that there are gains from smoothing job search effort and adopting a time allocation of search close to that observed among non-parents.

Additional results and robustness checks The effect of the reform on the number of job applications sent by mothers might not only capture changes in search effort but also changes in search criteria and, hence, in the amount of adequate job offers mothers can apply to. To disentangle these mechanisms, we first re-estimate the effect of the reform on job applications after adding search criteria as controls (Figure C.11 and Table C.9). The effect of the reform on job applications remains the same—which suggests that it mainly captures an increase in search effort rather than a change in search criteria. We then directly estimate the effect of the reform on search criteria. We find that the reform had virtually no effect on mothers' selectivity—except that it slightly increased their propensity to search for a full-time job by 0.6 percentage points. This is consistent with the finding by Duchini and Effenterre (2023) that the reform increased the likelihood that mothers work in full-time jobs. Finally, we find that the reform had a small positive effect on mothers' job finding rate, consistent with what one would expect from the effects on search behavior. We discuss in more detail the effect of the reform on these outcomes in Appendix D.3.

Further, we analyze the heterogeneity of the reaction to the reform in Figure C.13. We focus on the effect of the reform on parents' applications on Wednesdays (Table 4, col (1) and (4)), and examine how this effect varies across demographic groups. Since we have less statistical power when we study the effect of the reform than in our other analyses, our ability to detect differences across groups is more limited. Overall, similar to what we documented previously, the effect of the reform appears quite homogeneous.

Finally, we probe the robustness of our estimates of the reform's effect in several ways. First, we conduct differences-in-differences around the time of the late implementation of the reform in September 2014, restricting our sample to cities that implemented the reform

in 2014. We confirm that mothers increased their rate of applications on Wednesday after September 2014 relative to non-mothers, while fathers kept a similar rate as non-fathers (Table C.10, Panel A). We then estimate the same empirical model in the sample of cities that implemented the reform in 2013 to provide a placebo test. As expected, the rate of applications on Wednesday evolves similarly for parents and non-parents around September 2014 in these cities (Table C.10, Panel B). Figure C.12 presents the corresponding graphical analysis and allows us to verify that parents and non-parents have a similar evolution of their Wednesday applications before September 2014, consistent with the parallel trend assumption. We also show in Table C.11 that our estimates for the effects of the reform remain unchanged when we exclude individuals looking for jobs related to education or childcare for primary and kindergarten children—who might be affected by the reform through a different channel (e.g., increased labor demand).

The cost of reallocating search activities The reaction of mothers to the reform of school schedule indirectly reveals there are costs associated with departing from a smooth allocation of search activities across weekdays. In addition, we now directly test for one type of cost potentially associated with the reallocation of search activities that we can measure in our data: a decrease in application quality. Intuitively, when people concentrate their search efforts on small time intervals, they might experience a decrease in the quality of their applications because they get tired or exhaust the pool of good vacancies. We measure the average quality of applications by their success rate—i.e. the fraction of workers who start working in the firm where they applied in the following year. We can hence test whether there are differences in the quality of applications sent in different time intervals. In Table C.12, we document that mothers have a similar applications' success rate than non-mothers when children are home (col (1a), (2a), (3a)), i.e. in the periods when mothers tend to send fewer applications than non-mothers. But they have a 11.2-29.6% lower success rate than non-mothers when children are at school (col (1b), (2b), (3b)). Having children home is hence associated with a decreases in the rate of applications (Table 3, col (1c), (2c), (3c)) but an increase in the probability of success of applications (Table C.12, col (1c), (2c), (3c)). Overall, this analysis provides suggestive evidence that the quality of mothers' job applications decreases when they send many of them in short time intervals. This is consistent with our model assumption in Section 3 that within-period returns to search are decreasing.

7 Discussion

We now discuss the positive and normative implications of our results.

7.1 Determinants of the "child penalty"

Our empirical analysis allowed us to confirm two types of model predictions. First, our analyses of the traditional search outcomes in Section 5 highlight there are motherhood gaps in job search behavior that are broadly consistent with the predictions of a model where mothers value more home production and there are search frictions. Even though mothers might have had the same career as non-mothers up to the point of job loss, they should stay unemployed longer. Their incentives to work are lower, so they should search less and be more selective regarding the job amenities of their next job than non-mothers. Second, our analyses of high-frequency search activities in Section 6 allow us to dig into the mechanisms. They confirm that searching for jobs is at least partially incompatible with doing childcare. In our theoretical framework, this implies that mothers face higher costs of searching for a job, to the extent that there are costs associated with reallocating search activities from one period to another. We provide various evidence that this is the case: in particular, mothers appear to prefer to spread their search evenly over time, similar to non-mothers. Overall, our high-frequency analysis suggests that mothers do indeed experience higher search costs, in addition to lower incentives to search.

Our findings help explain why mothers get a larger drop in earnings after being displaced, as documented by Illing et al. (2023), Ivandić and Lassen (2023) and also in this paper. Our model can directly explain why mothers stay unemployed longer than other workers after being displaced. Moreover, there are various reasons why mothers might end up being re-employed at lower wages than non-mothers within our theoretical framework. First, our various calibration exercises have illustrated that the higher the mothers' cost of searching for a job, the less they can ask for good amenities. Second, while mothers might get jobs providing better amenities overall, they might get re-employed at lower wages because of labor demand: the distribution of job offers meeting their search criteria might tilt towards jobs that provide relatively low wages and relatively high non-wage amenities. Third, unemployed workers might decrease in their search criteria over time and especially their reservation wage. As demonstrated in Marinescu and Skandalis (2021), this should happen since they receive finite duration benefits and since their job market prospects might deteriorate with unemployment duration (e.g., because of human capital depreciation or stigma associated with long-term unemployment). This implies that mothers might get re-employed in jobs offering amenities further below their initial search criteria because they stay unemployed longer.[20] Overall, search frictions likely contribute to both making displaced mothers stay unemployed longer and getting re-employed at lower wages.

Moreover, our findings can also explain why women search less on-the-job and experience a slower career progression. The mechanisms we highlight during unemployment are

[20]We present a static model in this paper for simplicity. An extended model could easily incorporate these dynamic effects by assuming a finite duration of UI benefits and/or deterioration of search prospects over time, e.g. as in Marinescu and Skandalis (2021).

also likely to be at play during on-the-job search. Mothers might have lower incentives to search on-the-job since fewer jobs can match their search criteria. Moreover, searching on-the-job might be particularly costly since employed mothers probably have to do most of their search activities after regular work hours, i.e., when children are home. Therefore, we expect mothers to also search less when they are employed. Ultimately, this implies that mothers should be less often able to climb up the job ladder by moving to better jobs or using outside offers to bargain up their wages. This is in line with recent evidence that women are less likely than men to use information about job opportunities at other firms to increase their wage (Caldwell and Harmon, 2019) and that women experience a slower career progression within their firms (e.g., Bronson and Thoursie (2023)). This might also contribute to mothers being less well informed about the labor market, in line with recent evidence that women have more (downward) biased beliefs about the market wage for their resume (Roussille (Forthcoming)), especially those with long work experience. Overall, our findings suggest that mothers are more exposed to search frictions, which contribute to the child penalty both by worsening their transitions back to work after unemployment and by continuously slowing down their career progression on-the-job.

7.2 Policy implications

Our results imply that gender differences in the value for childcare create inequality in the labor market, even beyond the gender differences in preferred work arrangements previously analyzed in the literature (e.g. Goldin (2014)): They also generate gender differences in activities that are essential for workers' career progression but not directly paid work, like job search. Relieving mothers from some of their childcare responsibilities would be key to reduce gender inequality on the labor market. However, it is not clear how public policies can achieve this since mothers may take these responsibilities for various reasons: they may lack affordable and flexible childcare substitutes, they may have strong preferences for doing childcare themselves (possibly influenced by social norms), they may perceive especially high returns to maternal time inputs in child-rearing (Cortés and Pan (2024)). In line with Duchini and Effenterre (2023) and Price and Wasserman (2023), our findings of the impact of the reform introducing school on Wednesday on job search highlight that school schedules are a powerful policy instrument: parents use school as a substitute for maternal childcare—even when school provides optional extracurricular activities rather than mandatory teaching.[21]

Moreover, parents may face specific obstacles in getting access to childcare services *when they are unemployed* which could be removed: e.g., financial constraints, delays in adjustment of means-tested services to changes in income, lack of flexibility, prioritization

[21] Duchini and Effenterre (2023) underline that mothers likely did not lack affordable childcare options on Wednesdays before the reform in France. Instead, the school schedule reform might have affected mothers' labor supply by relaxing the social norm on them taking care of children on Wednesdays.

of employed parents.[22] For instance, unemployed parents should in principle have access to various forms of subsidized childcare options for children below three years old in France. Yet, the take-up of publicly subsidized childcare options is low among unemployed workers: parents represent the primary childcare provider for 81% of children below three years when the mother is unemployed versus 37% when the mother is employed (Caenen and Virot (2023)).[23] There might be various explanations: e.g., public daycare spots are insufficient in many cities and alternative options such as subsidized childminders can require substantial upfront payments which might be unaffordable to unemployed parents. In recent years, various policy initiatives have tried to increase the access to public childcare for unemployed mothers, such as the opening of daycare spots specifically dedicated to unemployed parents, and the provision of temporary daycare spots to unemployed parents when they have a job search related appointment.[24]

Finally, our findings suggest that policies designed to decrease search frictions can also help reduce gender inequality on the labor market. It might hence be beneficial to design some versions of these policies targeted at mothers (e.g. counseling programs for jobseekers), for instance by taking into account their schedule constraints. The fact that mothers search less suggests they might have worse information about the market wage corresponding to their skills, which provides another reason why pay transparency policies might help reduce the gender gap—though these policies might lead to lower wages for all workers in equilibrium (Bennedsen et al. (2022), Cullen and Pakzad-Hurson (2023), Baker et al. (2023), Roussille (Forthcoming)). Within organizations, having transparent procedures for internal promotions and actively encouraging women's promotions might also help mitigate the impact of search costs on mothers' careers (Hospido et al. (2022), Haegele (2023)).

8 Conclusion

Does motherhood change the way women search for jobs, and what are the mechanisms? We analyze uniquely rich information on search behavior for unemployed workers who lost their jobs involuntarily in France. We track the job applications that individuals send during their unemployment spell, and we exploit for the first time the information on *the exact time when the application is sent*. We combine it with data from the mandatory administrative survey on job seekers' selectivity and various administrative datasets providing rich information on individuals' backgrounds and employment outcomes.

[22] For instance, the United Kingdom only offers extended free childcare to working parents. See https://www.gov.uk/30-hours-free-childcare?step-by-step-nav=f517cd57-3c18-4bb9-aa8b-1b907e279bf9.

[23] Frequently, this might not reflect families' choice: among all families who use the parents as primary childcare, 37% would prefer an alternative childcare arrangement (and 22% would specifically prefer to use public daycare).

[24] See https://solidarites.gouv.fr/les-creches-vocation-dinsertion-professionnelle-avip.

We provide the first evidence of differences in job search associated with motherhood. We find that mothers send 12.2% fewer job applications than observationally similar women with no children. They are also more selective regarding all job amenities: wage, commuting distance, etc. Consistently, they have a lower job finding rate. We then analyze the *timing* of search activities at a high frequency. We show that mothers further decrease their rate of job applications systematically in the periods when children are not at school. We evaluate the effect of a reform that introduced school time on Wednesdays in France: when school time became more evenly spread across weekdays, mothers also spread their search more evenly and adopted a search timing more similar to that of non-mothers.

We use a simple partial equilibrium search model to help rationalize our empirical findings. Our results are consistent with the predictions of a model where mothers provide valuable home production when they do childcare and there are search frictions. Our high-frequency show that mothers cannot fully provide childcare if they are searching, and that there are costs associated with reallocating search activities to atypical times. They suggest that not only do mothers face lower incentives to search, but they also face higher costs of job search. While we focus on job search during unemployment in our analysis, the mechanisms we analyze are likely also at play during on-the-job search. In particular, it is likely that employed mothers have to search after work, in moments when children are home—which must generate very high cost. The effects of these search frictions for mothers hence likely accumulate through their careers and contribute to the persistent penalty in their earnings.

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TABLES AND FIGURES

Table 1: Descriptive statistics for main study sample

Variable	(1) All	(2) Women	(3) Men
Individual characteristics			
Has at least one child	0.45	0.52	0.36
	(0.50)	(0.50)	(0.48)
Age	33.98	33.89	34.11
	(9.91)	(9.91)	(9.92)
Marital status: single	0.57	0.55	0.60
	(0.49)	(0.50)	(0.49)
Education: $\leq$ highschool degree	0.07	0.06	0.09
	(0.26)	(0.24)	(0.28)
Education: vocational highschool degree	0.26	0.29	0.23
	(0.44)	(0.45)	(0.42)
Education: general highschool degree	0.33	0.28	0.40
	(0.47)	(0.45)	(0.49)
Education: higher degree	0.34	0.37	0.28
	(0.47)	(0.48)	(0.45)
Cumulated past unemployment episodes	1.94	1.90	1.98
	(1.97)	(1.90)	(2.06)
Potential benefit duration (months)	17.88	18.05	17.63
	(8.07)	(7.99)	(8.17)
Benefits amount (monthly)	988.28	928.80	1073.04
	(348.06)	(319.69)	(368.68)
Prior wage (monthly, full-time equivalent)	1862.40	1820.21	1922.53
	(673.76)	(650.47)	(701.26)
Last job was part-time	0.31	0.40	0.19
	(0.46)	(0.49)	(0.39)
Application and job finding rates			
Count of applications in first 3 months	1.08	1.12	1.02
	(1.92)	(1.94)	(1.90)
Finds job within 1 year	0.58	0.57	0.60
	(0.49)	(0.49)	(0.49)
Search criteria			
Reservation wage (monthly, full-time equivalent)	1722.50	1667.72	1800.56
	(497.48)	(446.19)	(553.27)
Maximum commute distance (km)	29.48	26.54	33.67
	(61.44)	(51.47)	(73.14)
Wants open ended-contract	0.95	0.94	0.95
	(0.22)	(0.23)	(0.22)
Wants part-time job	0.07	0.11	0.02
	(0.26)	(0.31)	(0.14)
Observations	347,715	202,951	142,419

Notes: This table describes the unemployed workers in our main study sample.

Table 2: Parenthood gaps in search and re-employment outcomes

A/ Motherhood gaps in:	**Job search**						**Re-employment**
	Application rate		Reservation wage, log	Max commute distance, log	Open-ended contract	Part-time job	Re-employment rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Child	-0.122***	-0.089***	0.006***	-0.078***	0.013***	0.051***	-0.089***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ind. controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Search criteria		Yes					
Outcome mean	1.27	1.27	1634.99	28.80	0.93	0.06	0.65
No. of Obs.	202,951	202,951	202,951	202,951	202,951	202,951	202,951
B/ Fatherhood gaps in:	**Job search**						**Re-employment**
	Application rate		Reservation wage, log	Max commute distance, log	Open-ended contract	Part-time job	Re-employment rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Child	-0.001	-0.003	0.009***	0.005	0.008***	-0.001	0.008
	(0.02)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Ind. controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Search criteria		Yes					
Outcome mean	1.05	1.05	1723.91	33.20	0.94	0.02	0.62
No. of Obs.	142,419	142,419	142,419	142,419	142,419	142,419	142,419

Notes: This table presents the parenthood gap in various outcomes for women (A/) and men (B/): the rate of job applications (col (1)-(2)), reservation wage (col (3)), maximum commute distance (col (4)), desired type of contract (open-ended vs short-term contract) (col (5)), preferred working time (part-time vs full-time) (col (6)), and rate of re-employment within one year (col (7)). For the application and the re-employment rates, we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. For all other outcomes, we estimate linear models. We control for individuals' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, prior work hours. In column (2), we additionally control for the reservation wage, maximum commute distance, desired type of contract, and preferred working time. We report robust SE in parentheses. Outcome mean corresponds to the non-logged average outcome among non-parents.

Table 3: Parenthood gaps in job search timing

	A/ Women								
	(1) Hours of day			(2) Days of year			(3) Overall		
	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)
Child	-0.240***	-0.013	-0.013	-0.175***	-0.114***	-0.114***	-0.213***	-0.013	-0.013
	(0.012)	(0.014)	(0.014)	(0.015)	(0.011)	(0.011)	(0.011)	(0.014)	(0.014)
ChildXNo-School			-0.230***			-0.069***			-0.203***
			(0.016)			(0.021)			(0.016)
No-School			Yes			Yes			Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.383	0.486	0.434	0.260	0.890	0.575	0.643	0.486	0.565
No. of Obs.	202,971	202,971	405,942	202,971	202,971	405,942	202,971	202,971	405,942
	B/ Men								
	(1) Hours of day			(2) Days of year			(3) Overall		
	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)
Child	-0.082***	0.062***	0.062***	0.023	-0.003	-0.003	-0.038**	0.062***	0.062***
	(0.021)	(0.021)	(0.021)	(0.025)	(0.017)	(0.017)	(0.018)	(0.021)	(0.021)
ChildXNo-School			-0.135***			0.026			-0.094***
			(0.026)			(0.031)			(0.025)
No-School			Yes			Yes			Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.310	0.401	0.356	0.224	0.735	0.480	0.534	0.401	0.468
No. of Obs.	142,423	142,423	284,846	142,423	142,423	284,846	142,423	142,423	284,846

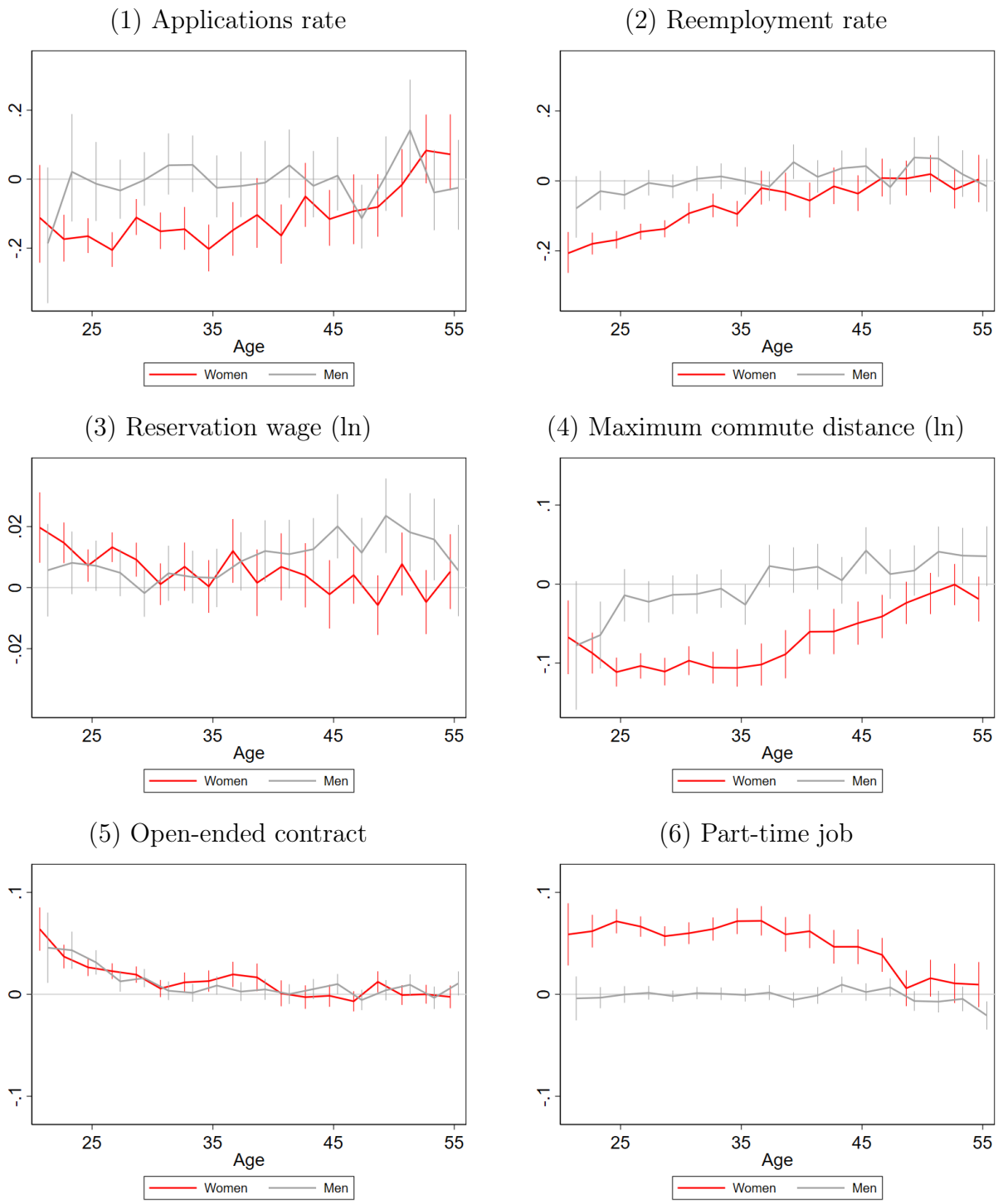
Notes: This table presents parenthood gaps in the rate of applications sent at different times for women (A/) and men (B/). In col (1), we compare children's typical school or sleep hours (8:30-11:30am, 1:30-4:30pm, 9pm-midnight) with other hours during weekdays, excluding night time. In col (2), we compare weekdays to weekends or school holidays, excluding summer months. In col (3), we compare children's typical school or sleep hours during weekdays with other weekdays' hours or days with no school. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We control for job seekers' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, prior work hours. Robust SE in parentheses.

Table 4: The effect of the school schedule reform on job applications at different times

	A/ Women			**B/ Men**		
	Wednesday	Other days	Any day	Wednesday	Other days	Any day
	(1)	(2)	(3)	(4)	(5)	(6)
ChildXReform	0.087***	0.029	0.040**	-0.016	-0.035	-0.031
	(0.033)	(0.019)	(0.018)	(0.037)	(0.024)	(0.022)
Child	-0.191***	-0.134***	-0.145***	-0.037	0.036	0.022
	(0.022)	(0.015)	(0.015)	(0.034)	(0.025)	(0.023)
Reform	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.257	1.046	1.303	0.205	0.860	1.065
No. of Obs.	195,547	195,547	195,547	138,028	138,028	138,028

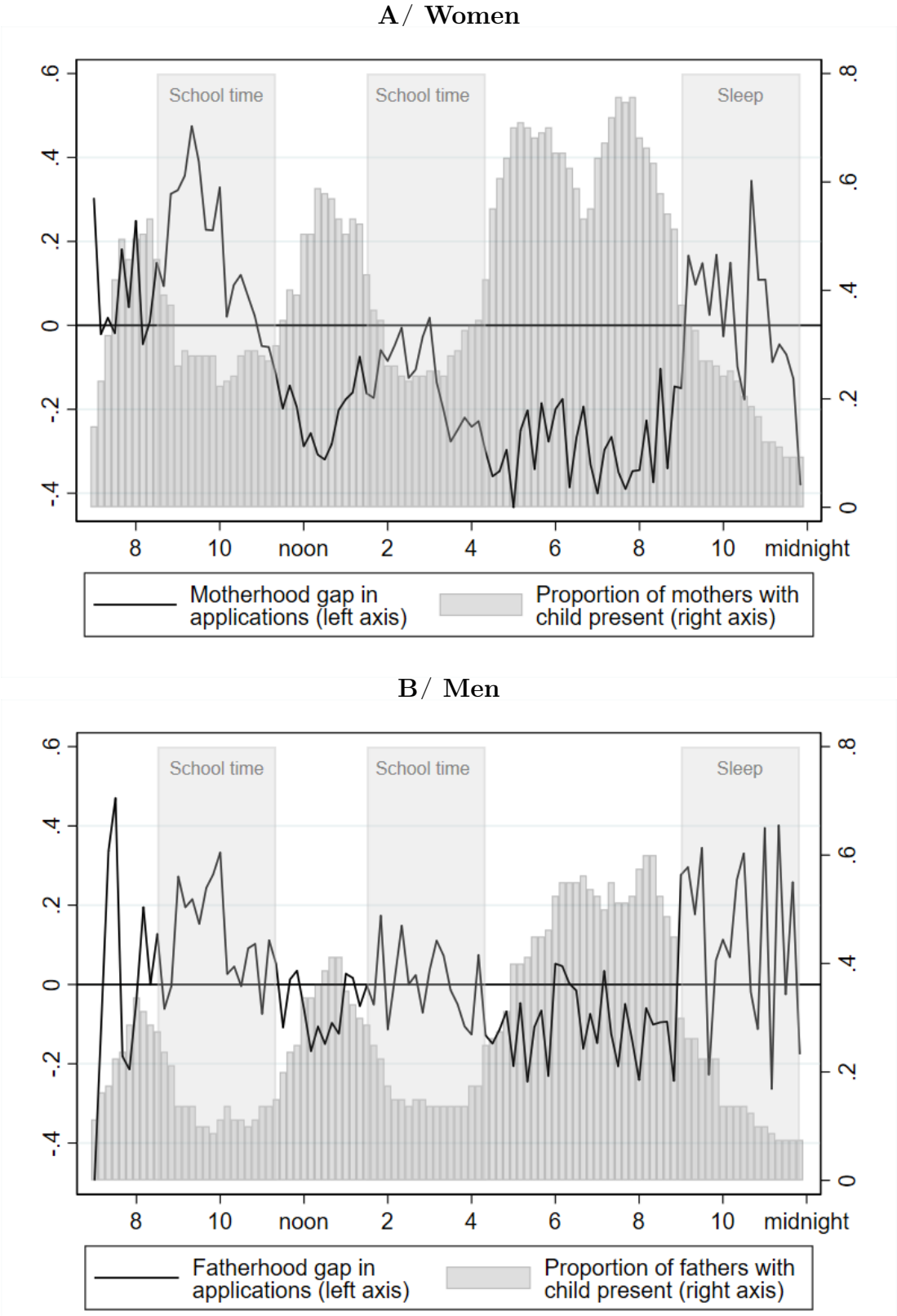
Notes: This table presents the effect of the reform of school schedule on the rate of applications sent on different days (see empirical model (2)). We estimate the effect separately for women (in Panel A) and men (in Panel B) on various outcomes: In col (1)-(4), we consider the rate of applications send on Wednesdays. In col (2)-(5), we consider the rate of applications sent on any other day. And in col (3)-(6), we consider the rate of applications sent overall. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We control for job seekers' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, prior work hours. Robust SE in parentheses.

Figure 1: Parenthood gaps in various outcomes, by age



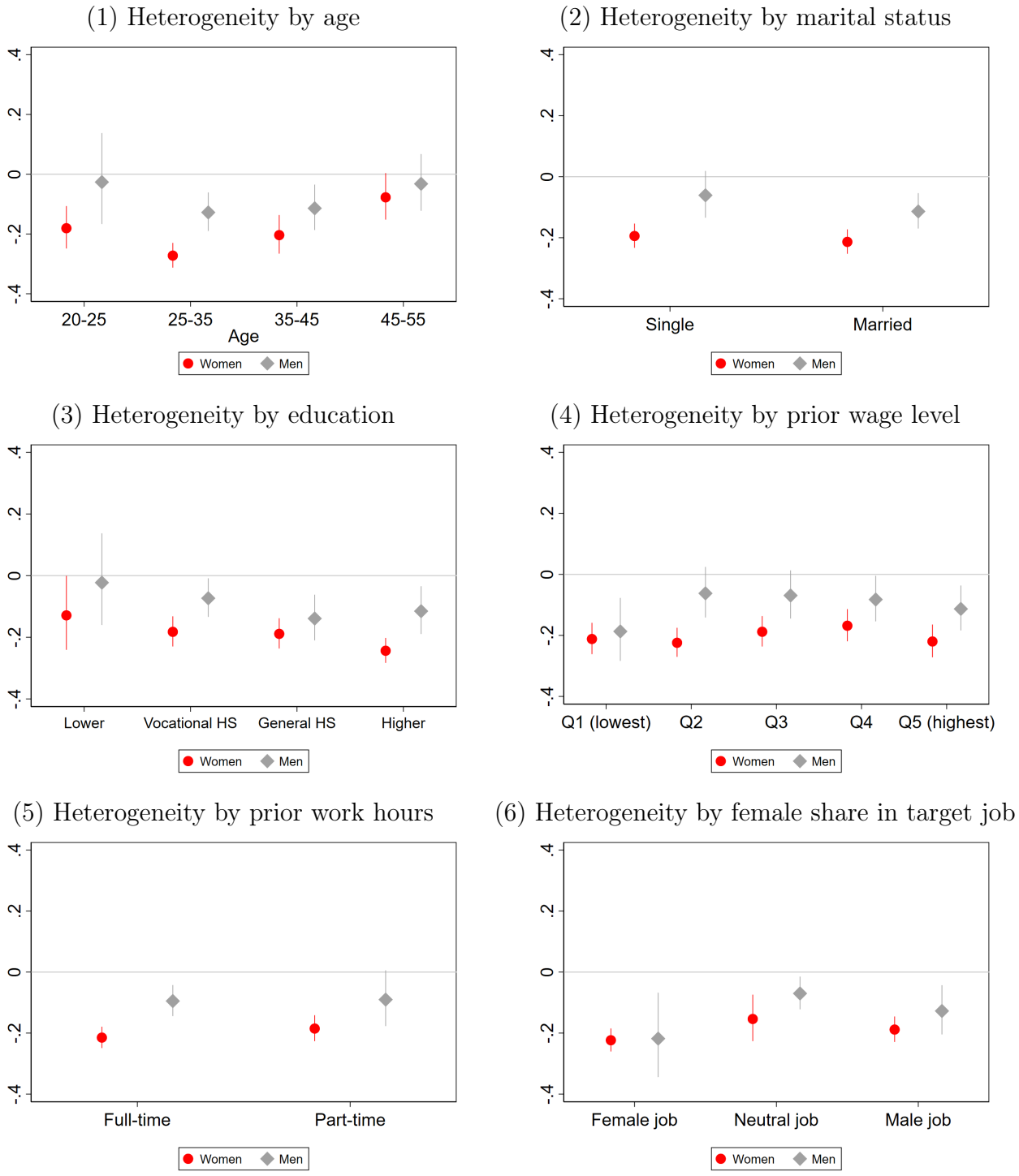
Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for people with a different marital status (single or married). We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities ; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Figure 2: Parenthood gaps in job search timing



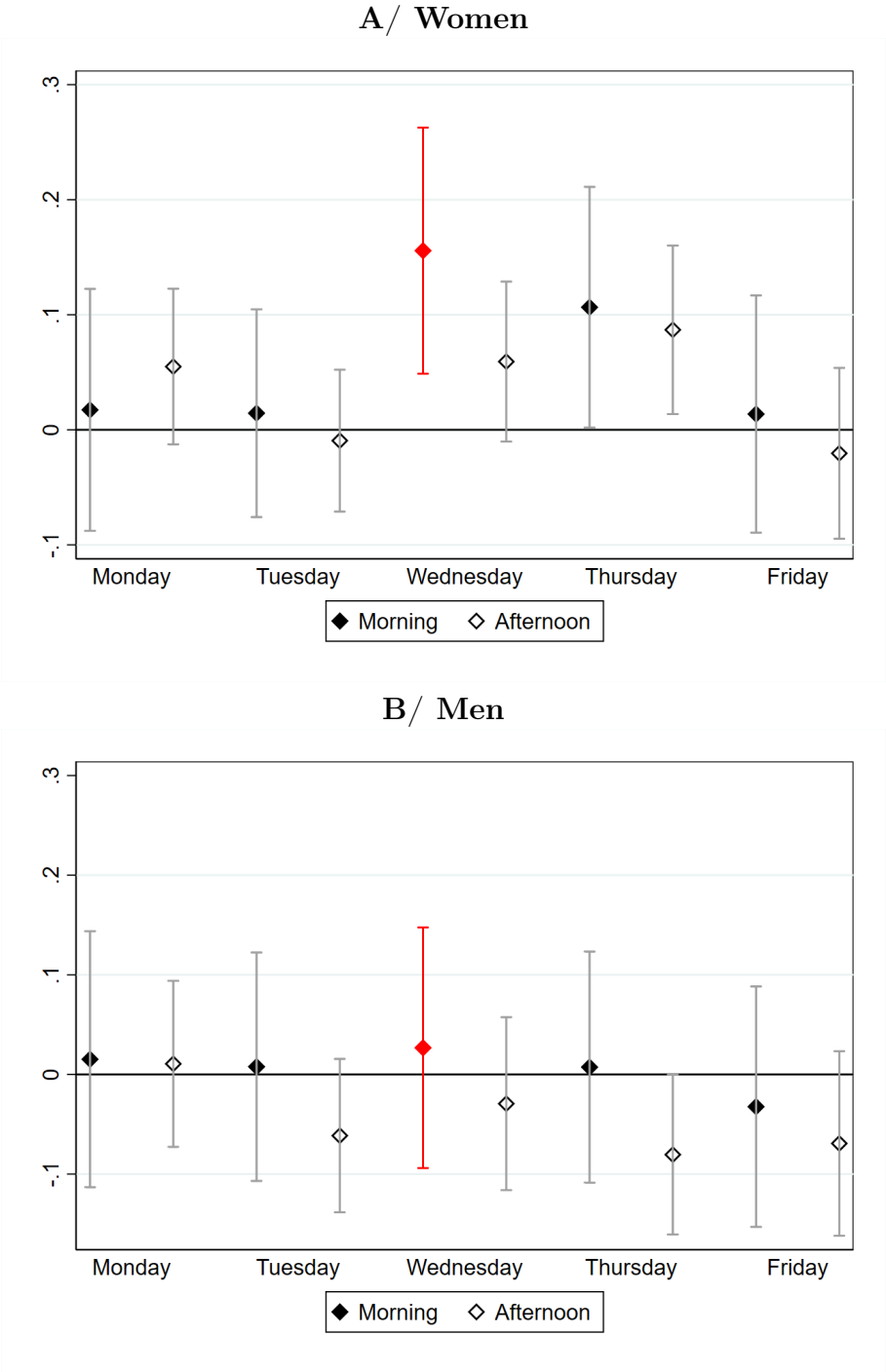
Notes: This Figure presents the estimates for the parenthood gap in the rate of applications sent in 10-minutes intervals during weekdays (black line). The parenthood gap coefficients are obtained in separate regressions for men and women. We control for job seekers' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, prior work hours. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. It also presents the fraction of unemployed parents who report being in presence of at least one child during the same 10-minutes intervals in the French Time Use Survey (gray bars).

Figure 3: Heterogeneity in the magnitude of parents' time reallocation of search activities



Notes: In this Figure, we analyze the heterogeneity of the effect of having children out of school on the rate of applications, corresponding to the coefficient associated with *ChildXNo-School* in col (3c) of Table 3. For each Panel and each gender, we obtain the reported coefficients in a single regression: we estimate the same empirical model as in col (3c) Table 3, except that we fully interact *Child*, *ChildXNo-School* and *No-School* with all the categories of the heterogeneity dimension considered. We successively consider heterogeneity by age (Panel (1)), by marital status (Panel (2)), by diploma level (lower than high school, vocation high school, general high school or diploma from higher education; Panel (3)), by wage level at the prior job (Panel (4)), by hours worked at prior job (Panel (5)) and by proportion of women in the job looked for (highest quartile, middle, lowest quartile; Panel (6)). We present the 95% confidence intervals based on robust SE.

Figure 4: The effect of the school schedule reform on job applications at different times



Notes: This Figure presents the estimates for the effect of the reform of school schedule on the rate of applications sent at different times (see empirical model 2). We estimate Poisson count models and report the incidence rate ratios minus one which can be interpreted as semi-elasticities for the coefficients associated with $ChildXReform$. We present the 95% confidence intervals based on robust SE.

ONLINE APPENDIX

A Model

A.1 Additional model assumptions

We have assumed in Section 3 that there are two time periods, T_1 and T_2. Mothers generate value when they perform childcare in T_1, which amounts to an instantaneous income μ. Unemployed workers choose the proportion of each period they spend on job search or on childcare: $s_1 \leq 1$, $s_2 \leq 1$, $h_1 \leq 1$, ($h_2 = 0$ since mothers cannot perform childcare in T_2). In T_1, unemployed workers are subject to the time constraint $h_1 + (\psi \cdot s_1) \leq 1$, where $\psi \in [0, 1]$. The search production function has the form: $\lambda(s_1, s_2) = \lambda_0 \cdot (0.5 \cdot s_1^{\gamma} + 0.5 \cdot s_2^{\gamma})^{\frac{1}{\gamma}}$ where $\gamma \leq 1$. Additionally, unemployed workers also choose their reservation job amenities, which can be summed up and converted in monetary terms to the hourly income r.

Moreover, we assume that unemployed people receive two sources of income in each period: their home production $\mu h_1 T_1$, and the flow of unemployment benefits b. In each period, employed people only receive the job amenities, which can be summed up and converted in monetary terms to the hourly income a. For simplicity, we assume that all individuals consume all their income in each period.

The Bellman equation for the value of being unemployed is:

$$(1 - \beta) \cdot U = u(b + \mu h_1 T_1) - c(s_1, s_2) + \beta \cdot \lambda(s_1, s_2) \int_r^{\infty} \Big(E(a) - U\Big) dF(a)$$

The Bellman equation for the value of being employed is:

$$(1 - \beta) \cdot E(a) = u(a) + \beta \cdot \delta(U - E(a))$$

A.2 Calibration

We calibrate the model's parameters with realistic values. We assume that the utility is given by the log function. We calibrate the model at the monthly frequency, with a discount factor of 0.996 (about a 5 percent annual discount rate). Employed workers may lose their jobs with a monthly probability of 0.05. Based on descriptive statistics for our sample, we set unemployment benefits to 6.5 euros/hour (we convert monthly incomes in hourly income by assuming that they correspond to the payments of 151,67 hours, corresponding to the number of hours of work per month for standard full-time jobs in France). We assume that the distribution of amenities in job vacancies F is log-normal with a mean of 2.15 and a standard deviation of 1.4. This is similar to the mean hourly wage in posted job offers distribution in our vacancy data but with a larger dispersion. This aims to capture both wage and non-wage amenities on a monetary scale. As frequently the case in the literature (Paserman (2008), DellaVigna et al. (2017), Marinescu and Skandalis (2021)), we assume

the search cost function is convex, and of the form: $c(s_1, s_2) = \beta_1 \cdot (s_1 + s_2)^{1+\beta_2}$. We set the proportional term to $\beta_1 = 0.5$ and the curvature of search cost to $\beta_2 = 0.5$. We assume that the two time periods are equally long: $T_1 = T_2 = 0.5$.

Our calibration for all parameters is summarized in Table A.1.

Table A.1: Model calibration

Parameter	Value
Standard parameters	
Monthly discount factor β	0.996
Prior job amenity, converted in monetary terms (€, hourly) w	12
Unemployment benefits (€, hourly) b	6.5
Mean of log amenity (converted in monetary terms) in job offer distribution F	2.15
Standard deviation of log amenity (converted in monetary terms) in job offer distribution F	1.4
Job destruction rate δ	0.05
Search cost parameter β_1	0.5
Search cost parameter β_2	0.5
Parameters concerning motherhood and job search	
Mothers' value of childcare relative to prior wage ($100\mu/w$)	$\in [0, 15]$
Incompatibility between childcare and job search ψ	$\in \{0, 0.25, 0.75\}$
Degree of substitution between search in different hours γ	$\in \{0.4, 0.9, 1\}$

Notes: In this Table, we present the value of parameters we use to calibrate our model.

A.3 Predictions about search and re-employment outcomes

We examine the model predictions about mothers' job search, depending on the key parameters describing mothers' environment that we have introduced: μ, ψ, and γ. Overall, motherhood is associated with a decrease in search effort and an increase in selectivity for all the calibrations considered. First, we consider how mothers' job search differs from non-mothers' when motherhood increases the value of home production ($\mu > 0$) but not search costs ($\psi = 0$ and $\gamma = 1$). This is denoted by dashed lines in Figure A.1. The model predicts that mothers decrease their search effort relative to non-mothers and increase their reservation amenities. The more valuable mothers' home production is, the larger those differences in search. Intuitively, it reflects the fact that when mothers' home production becomes more valuable, the opportunity cost of work rises and the incentives to search diminish.

Second, we consider how mothers' job search differ from non-mothers' when mothers face higher search costs, since searching for a job is partially incompatible with doing childcare and reallocating search effort to school hours is costly ($\psi > 0$ and $\gamma < 1$). This is denoted by continuous lines in Figure A.1. The predictions of the model only differ quantitatively but not qualitatively in that case. Motherhood decreases search effort

even more: for every value of mothers' home production, mothers' search effort is even lower. Conversely, the effect of motherhood on selectivity is attenuated. Intuitively, mothers cannot afford to be as selective when searching for jobs is more costly.

Next, we consider the model predictions about mothers' time allocation of job search activities in Figure A.2. When we assume that motherhood increases the value of home production with no further assumptions on the job search process, the model naturally predicts that mothers should search similarly during school and no-school hours (Panel (1)). If we assume that childcare and job search are at least partially incompatible ($\psi > 0$), and that search activities in periods 1 and 2 are imperfect substitutes ($\gamma < 1$), the model predicts that mothers moderately reallocate their search activities to periods when children are at school (Panels (2)).

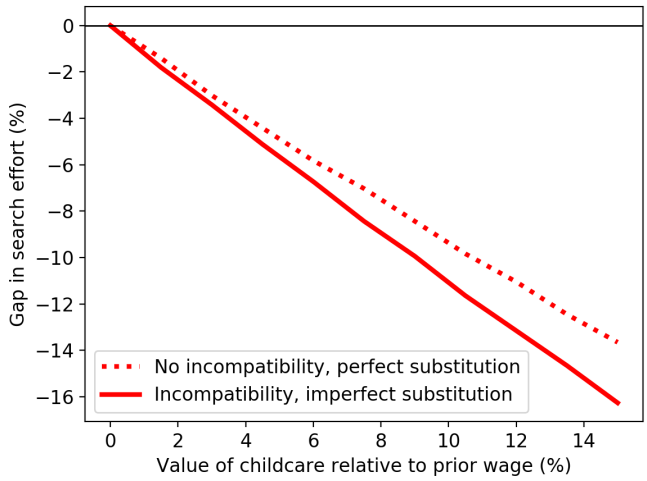
A.4 Alternative calibrations

When the is imperfect substitution between search in different hours ($\gamma < 1$), the larger the incompatibility between search and childcare (ψ), the more the search cost channel affects mothers' search and re-employment: see Panels (1), (2), (3), (4) of Figures A.3, A.4, A.5. However, if there is perfect substitution between search in different hours ($\gamma = 1$), mothers will not face a higher cost of job search—irrespective of the degree of incompatibility between childcare and job search (see Figures A.3, A.4, A.5, Panels (5), (6)).

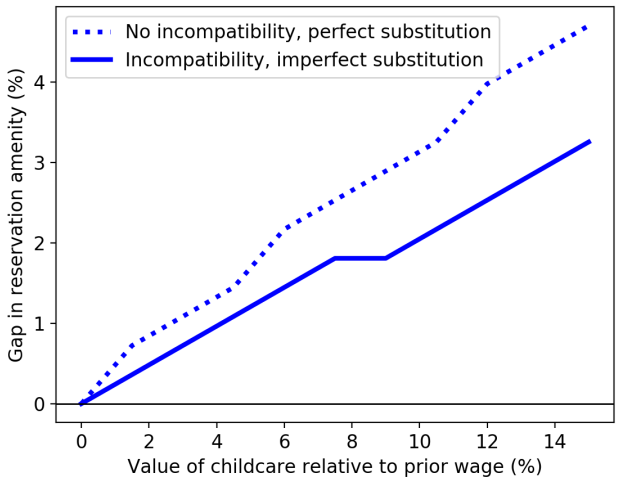
For a given degree of imperfect substitution between search in different hours $\gamma < 1$, the larger the incompatibility between search and childcare (ψ), the more mothers and non-mothers diverge in their search timing: see Panels (1), (2), (3), (4) of Figures A.6. If search activities during school hours and no-school hours are perfect substitutes ($\gamma = 1$), any degree of incompatibility between search and childcare ($\psi > 0$) will cause mothers to entirely stop searching for jobs during no-school hours and *increase* their search in school hours (Panel (5)-(6) in Figure A.6).

Figure A.1: Predicted motherhood gaps in job search and re-employment outcomes

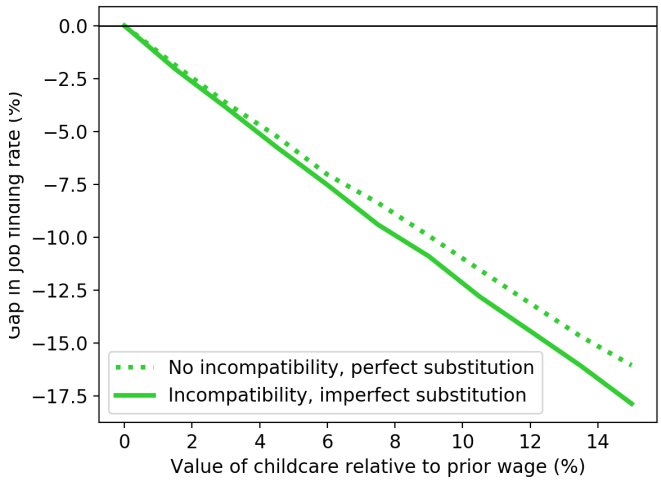
(1) Motherhood gap in search effort



(2) Motherhood gap in reservation amenity



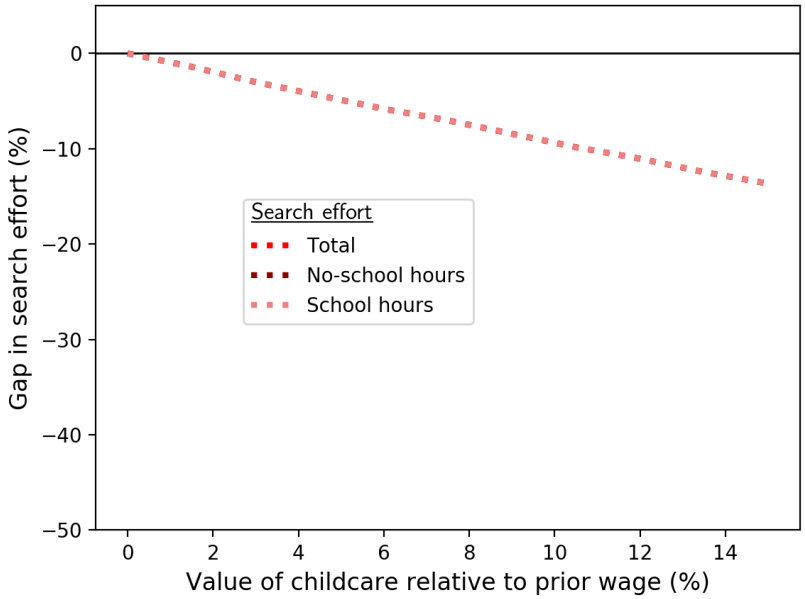
(3) Motherhood gap in job finding rate



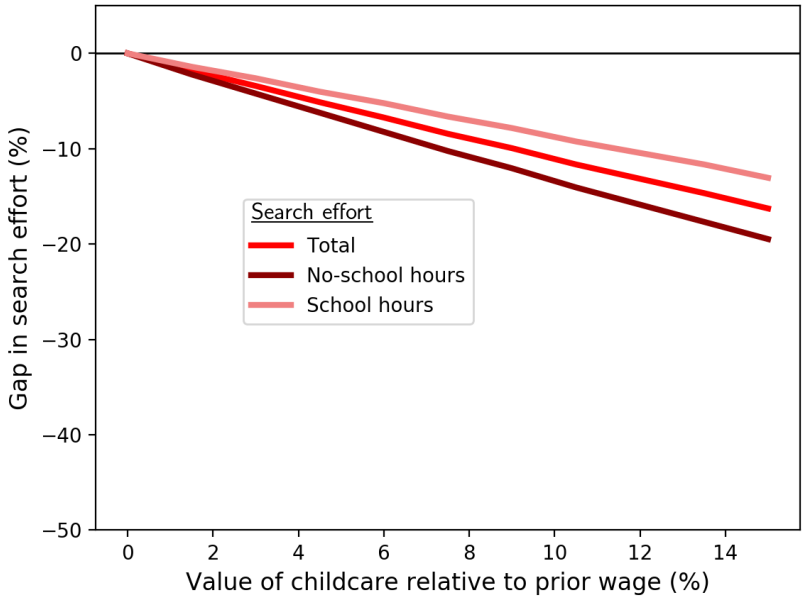
Notes: This Figure illustrates the predictions from the model presented in Section 3. We show the predicted relative gap between mothers and non-mothers in various outcomes (y-axis) for different calibration of mothers' value for childcare (x-axis): search effort in Panel (1), reservation job in Panel (2), job finding rate in Panel (3). The dotted line represents the predictions when we assume that $\psi = 0$ and $\gamma = 1$, the continuous line represents the predictions when we assume that $\psi = 0.75$ and $\gamma = 0.4$.

Figure A.2: Predicted motherhood gap in the timing of job search

(1) No incompatibility ($\psi = 0$), **Perfect substitution** ($\gamma = 1$)



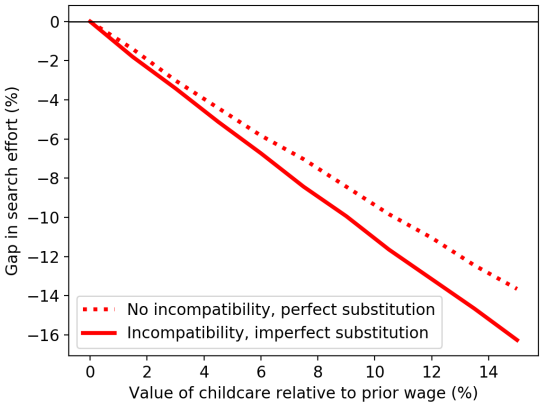
(2) Large incompatibility ($\psi = 0.75$) **Imperfect substitution** ($\gamma = 0.4$)



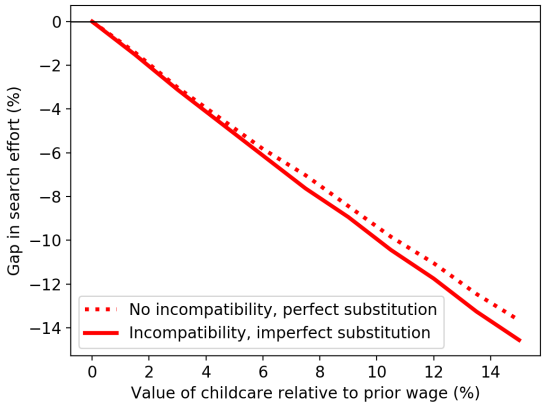
Notes: This Figure illustrates the predictions from the baseline model presented in Section 3 We show the predicted relative gap between mothers and non-mothers in search effort in different periods (y-axis) for different calibration of mothers' value for childcare (x-axis). In Panel (1), we present the predictions when we assume that $\psi = 0$ and $\gamma = 1$. In Panel (2), we present the predictions when we assume that $\psi = 0.75$ and $\gamma = 0.4$.

Figure A.3: Predicted motherhood gap in search effort, alternative calibrations

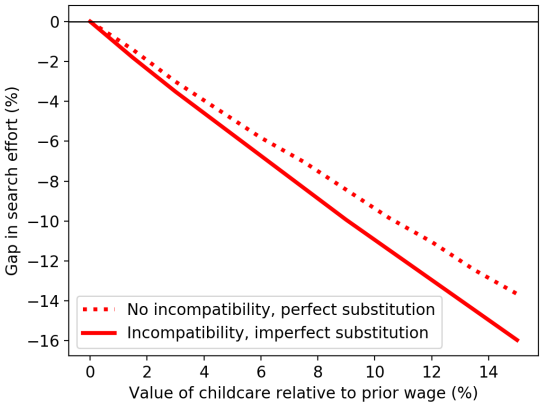
(1) Large incompatibility ($\psi = 0.75$), Low substitution ($\gamma = 0.4$)



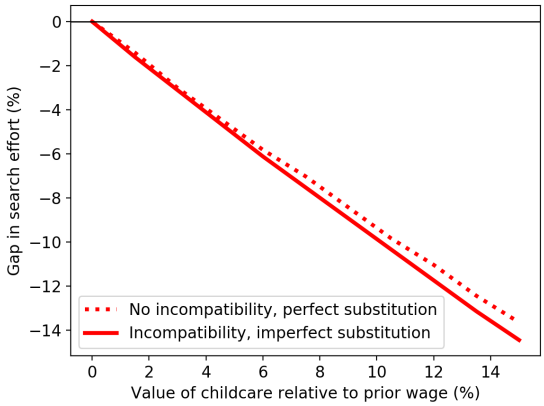
(2) Small incompatibility ($\psi = 0.25$), Low substitution ($\gamma = 0.4$)



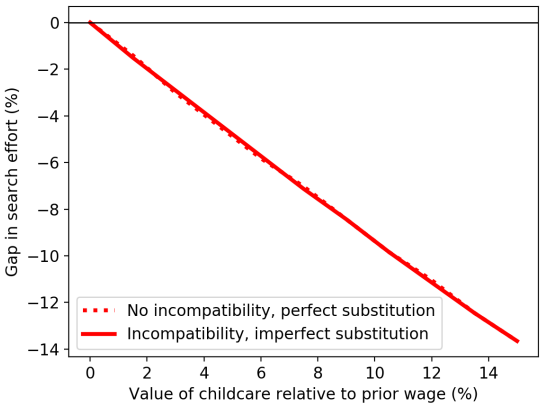
(3) Large incompatibility ($\psi = 0.75$), Moderate substitution ($\gamma = 0.9$)



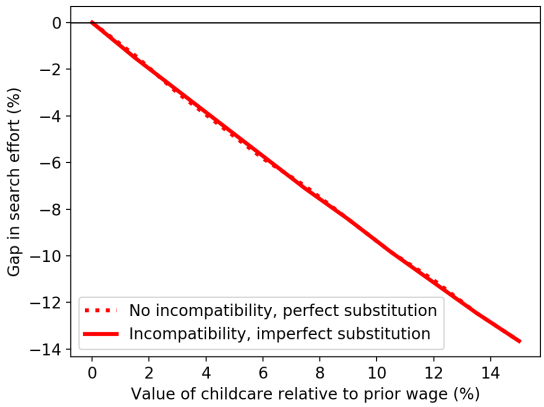
(4) Small incompatibility ($\psi = 0.25$), Moderate substitution ($\gamma = 0.9$)



(5) Large incompatibility ($\psi = 0.75$), Perfect substitution ($\gamma = 1$)



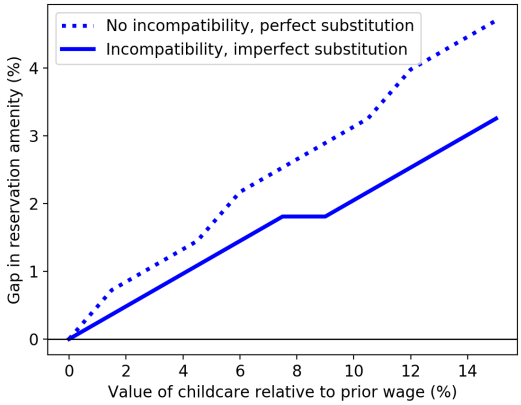
(6) Small incompatibility ($\psi = 0.25$), Perfect substitution ($\gamma = 1$)



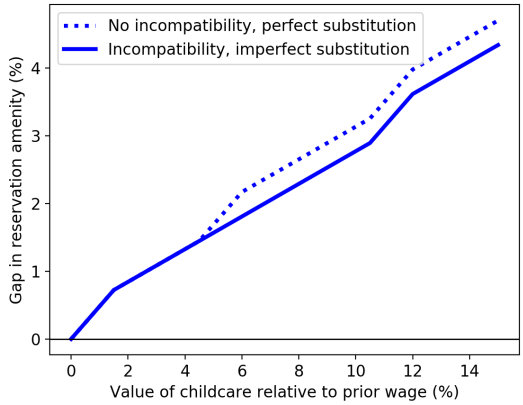
Notes: This Figure illustrates the predictions from the baseline model presented in Section 3 We show the predicted relative gap between mothers and non-mothers in search effort (y-axis) for different calibration of mothers' value for childcare (x-axis). Each panel presents the predictions for a different calibration of parameters ψ and γ.

Figure A.4: Predicted motherhood gap in reservation amenities, alternative calibrations

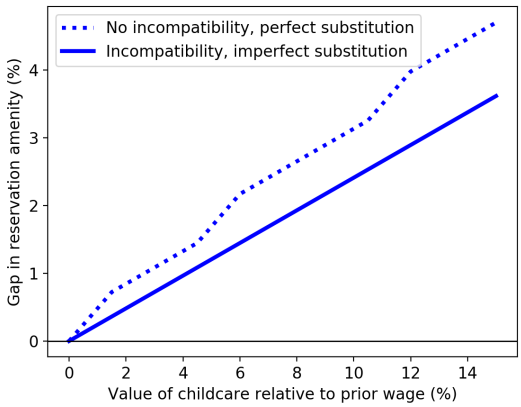
(1) Large incompatibility ($\psi = 0.75$), Low substitution ($\gamma = 0.4$)



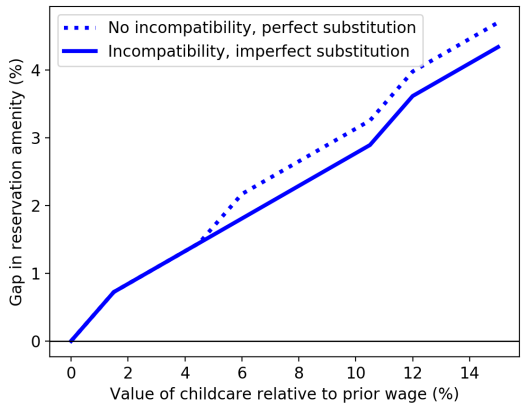
(2) Small incompatibility ($\psi = 0.25$), Low substitution ($\gamma = 0.4$)



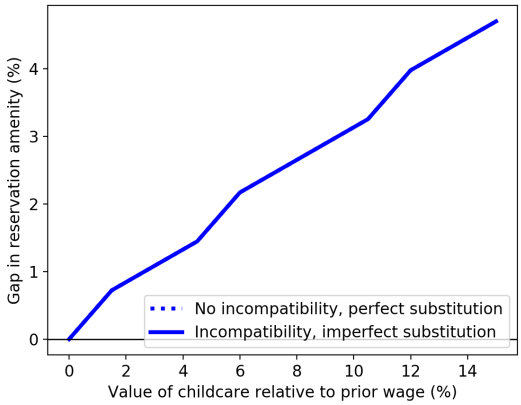
(3) Large incompatibility ($\psi = 0.75$), Moderate substitution ($\gamma = 0.9$)



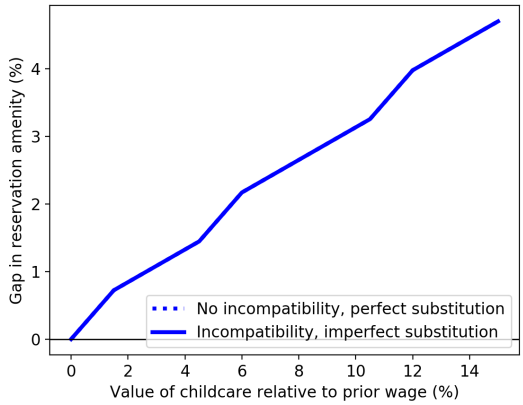
(4) Small incompatibility ($\psi = 0.25$), Moderate substitution ($\gamma = 0.9$)



(5) Large incompatibility ($\psi = 0.75$), Perfect substitution ($\gamma = 1$)



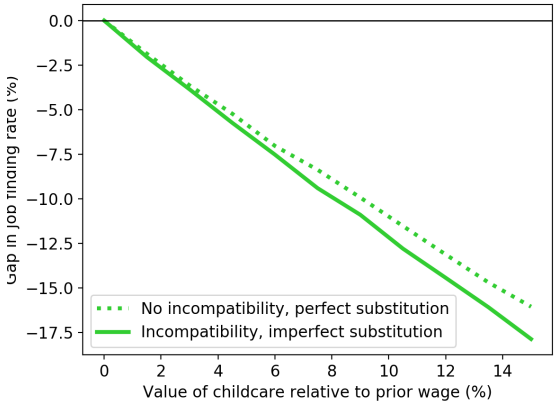
(6) Small incompatibility ($\psi = 0.25$), Perfect substitution ($\gamma = 1$)



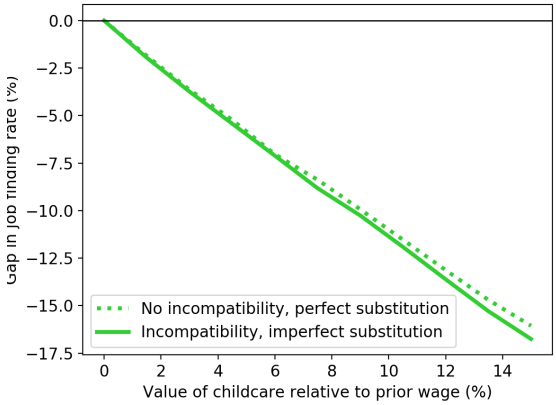
Notes: This Figure illustrates the predictions from the baseline model presented in Section 3 We show the predicted relative gap between mothers and non-mothers in reservation amenities (y-axis) for different calibration of mothers' value for childcare (x-axis). Each panel presents the predictions for a different calibration of parameters ψ and γ.

Figure A.5: Predicted motherhood gap in job finding rate, alternative calibrations

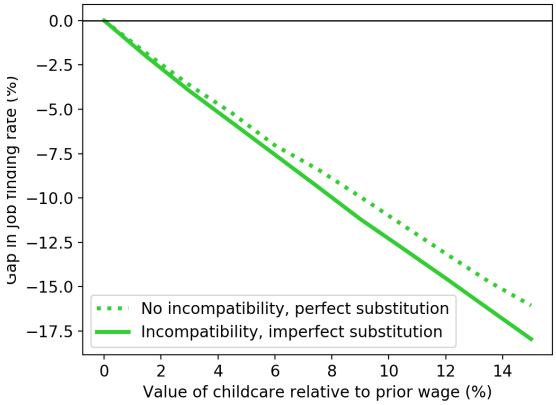
(1) Large incompatibility ($\psi = 0.75$), Low substitution ($\gamma = 0.4$)



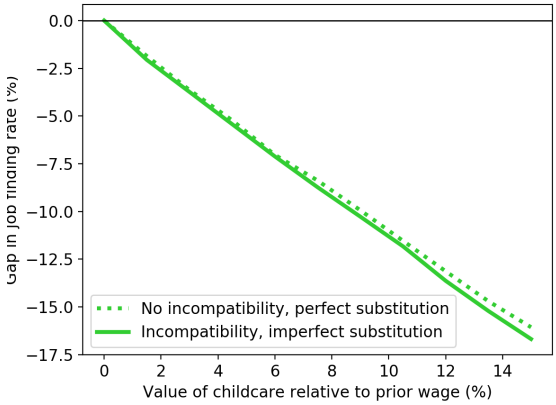
(2) Small incompatibility ($\psi = 0.25$), Low substitution ($\gamma = 0.4$)



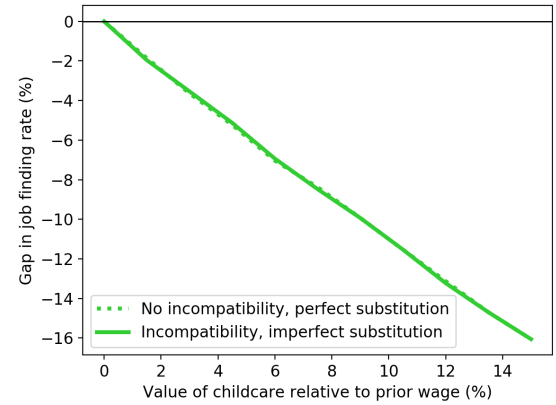
(3) Large incompatibility ($\psi = 0.75$), Moderate substitution ($\gamma = 0.9$)



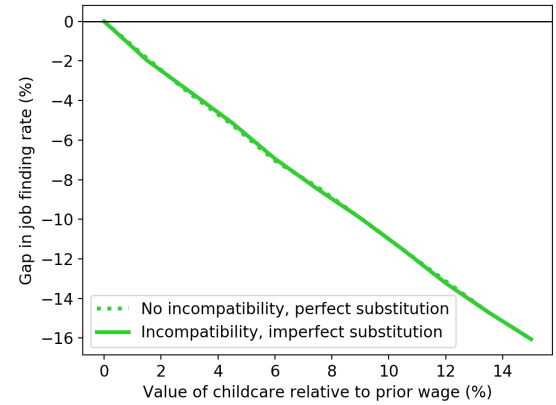
(4) Small incompatibility ($\psi = 0.25$), Moderate substitution ($\gamma = 0.9$)



(5) Large incompatibility ($\psi = 0.75$), Perfect substitution ($\gamma = 1$)



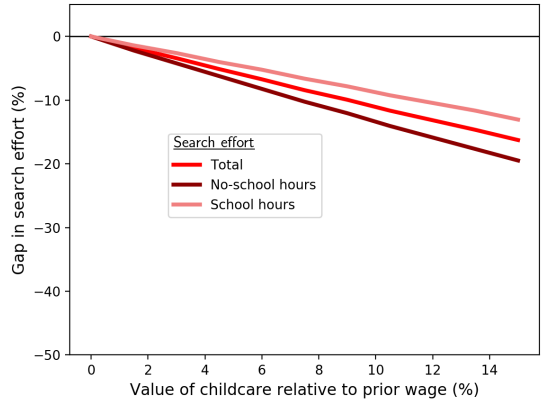
(6) Small incompatibility ($\psi = 0.25$), Perfect substitution ($\gamma = 1$)



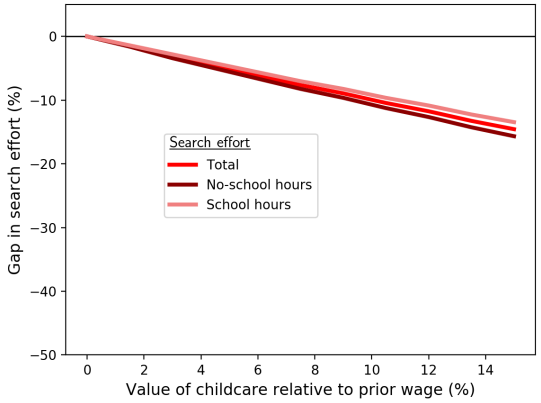
Notes: This Figure illustrates the predictions from the baseline model presented in Section 3 We show the predicted relative gap between mothers and non-mothers in job finding rate (y-axis) for different calibration of mothers' value for childcare (x-axis). Each panel presents the predictions for a different calibration of parameters ψ and γ.

Figure A.6: Predicted motherhood gap in the timing of job search, alternative calibrations

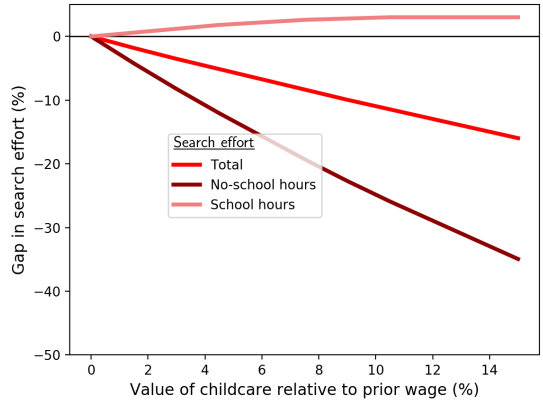
(1) Large incompatibility ($\psi = 0.75$), Low substitution ($\gamma = 0.4$)



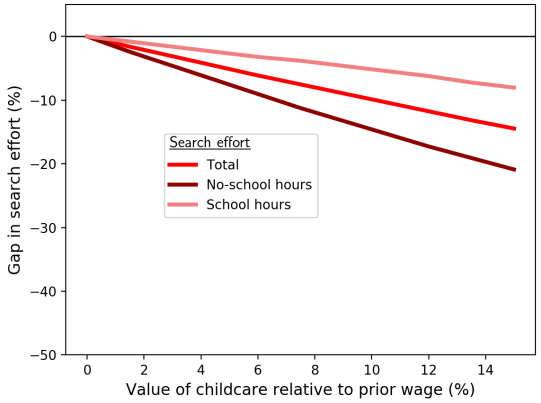
(2) Small incompatibility ($\psi = 0.25$), Low substitution ($\gamma = 0.4$)



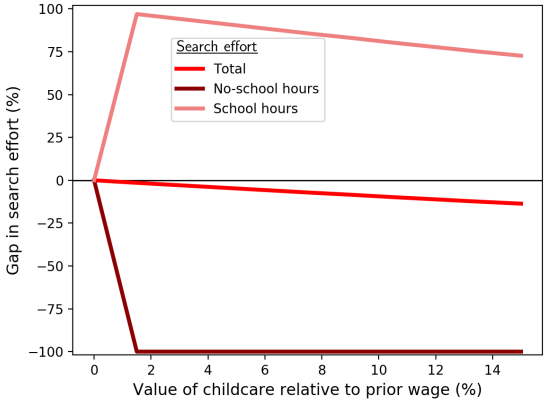
(3) Large incompatibility ($\psi = 0.75$), Moderate substitution ($\gamma = 0.9$)



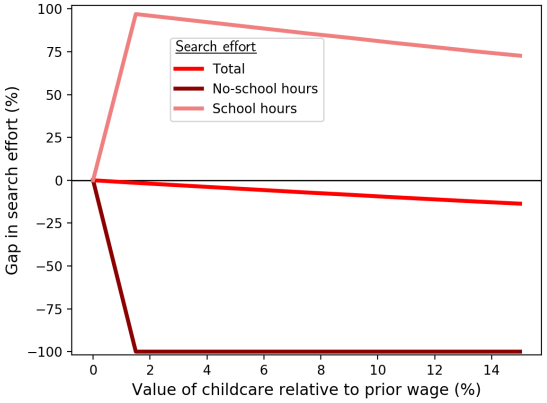
(4) Small incompatibility ($\psi = 0.25$), Moderate substitution ($\gamma = 0.9$)



(5) Large incompatibility ($\psi = 0.75$), Perfect substitution ($\gamma = 1$)



(6) Small incompatibility ($\psi = 0.25$), Perfect substitution ($\gamma = 1$)



Notes: This Figure illustrates the predictions from the baseline model presented in Section 3 We show the predicted relative gap between mothers and non-mothers in search effort in different periods (y-axis) for different calibration of mothers' value for childcare (x-axis). Each panel presents the predictions for a different calibration of parameters ψ and γ.

B Additional descriptive statistics

Table B.1: Descriptive statistics on the sample used to study the school schedule reform

Variable	(1) All	(2) Women	(3) Men
Individual characteristics			
Has at least one child	0.45	0.51	0.36
	(0.50)	(0.50)	(0.48)
Age	33.93	33.84	34.07
	(9.90)	(9.90)	(9.90)
Marital status: single	0.58	0.56	0.60
	(0.49)	(0.50)	(0.49)
Education: $\leq$ highschool degree	0.07	0.06	0.09
	(0.26)	(0.24)	(0.28)
Education: vocational highschool degree	0.26	0.28	0.23
	(0.44)	(0.45)	(0.42)
Education: general highschool degree	0.33	0.28	0.40
	(0.47)	(0.45)	(0.49)
Education: higher degree	0.34	0.37	0.29
	(0.47)	(0.48)	(0.45)
Cumulated past unemployment episodes	1.94	1.91	1.99
	(1.97)	(1.90)	(2.06)
Potential benefit duration (months)	17.86	18.04	17.61
	(8.06)	(7.98)	(8.17)
Benefits amount (monthly)	988.46	929.37	1072.16
	(348.37)	(320.20)	(368.92)
Prior wage (monthly, full-time equivalent)	1862.47	1820.56	1921.84
	(674.48)	(651.23)	(701.84)
Last job was part-time	0.31	0.40	0.19
	(0.46)	(0.49)	(0.39)
Application and job finding rates			
Count of applications in first 3 months	1.08	1.11	1.02
	(1.93)	(1.94)	(1.91)
Finds job within 1 year	0.58	0.57	0.60
	(0.49)	(0.49)	(0.49)
Search criteria			
Reservation wage (monthly, full-time equivalent)	1723.62	1669.33	1800.53
	(498.90)	(448.50)	(553.58)
Maximum commute distance (km)	29.34	26.44	33.46
	(60.90)	(52.23)	(71.20)
Wants open ended-contract	0.95	0.94	0.95
	(0.22)	(0.23)	(0.22)
Wants part-time job	0.07	0.11	0.02
	(0.26)	(0.31)	(0.14)
Observations	333,555	195,527	138,028

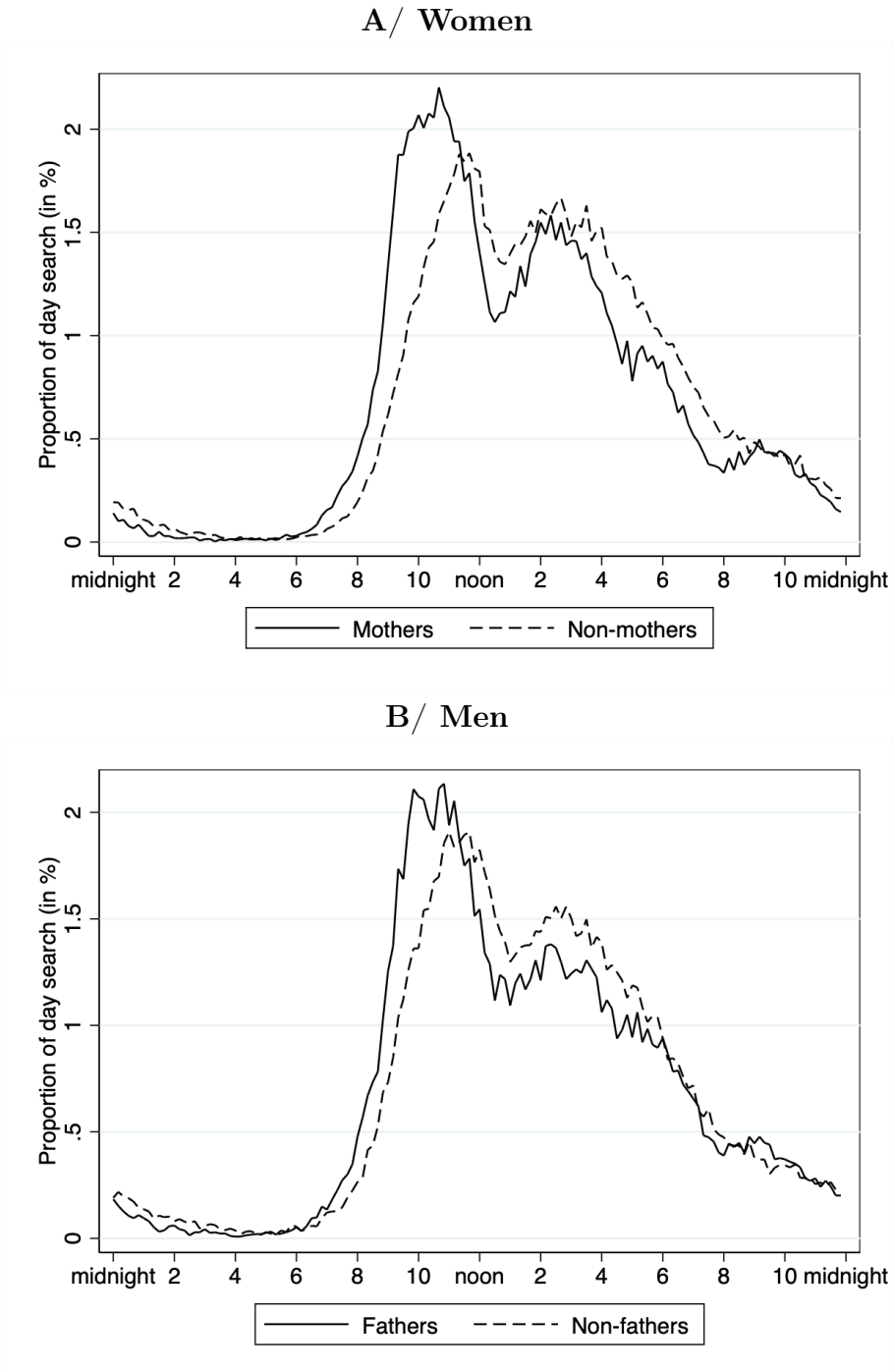
Notes: This table describes the sample we use for the analysis of the school reform. It has 3% fewer observations than our main sample (Table 1), as it excludes individuals living in cities where we could not identify a public school or kindergarten.

Table B.2: Descriptive statistics on jobs advertised on the PES search platform

Variable	(1) Job on PES platform	(2) Job at re-employment
Contract: Open-ended (CDI)	0.42	0.55
	(0.49)	(0.50)
Contract: Finite duration (CDD)	0.50	0.22
	(0.50)	(0.42)
Contract: Temporary (interim, etc.)	0.08	0.23
	(0.27)	(0.42)
Size of establishment: less than 5 employees	0.38	0.56
	(0.49)	(0.50)
Size of establishment: 6-19 employees	0.22	0.16
	(0.42)	(0.36)
Size of establishment: 20-49 employees	0.15	0.10
	(0.36)	(0.30)
Size of establishment: at least 50 employees	0.24	0.19
	(0.43)	(0.39)
Sector: Manufacturing	0.07	0.04
	(0.26)	(0.21)
Sector: Trade	0.18	0.15
	(0.38)	(0.35)
Sector: Hostels and restaurants	0.13	0.10
	(0.33)	(0.29)
Sector: Scientific and technical services	0.05	0.05
	(0.23)	(0.22)
Sector: Administrative services	0.10	0.30
	(0.30)	(0.46)
Sector: Public administration	0.05	0.04
	(0.23)	(0.20)
Sector: Education	0.06	0.03
	(0.24)	(0.18)
Sector: Health and social assistance	0.13	0.10
	(0.34)	(0.31)
Sector: Other services	0.05	0.03
	(0.22)	(0.18)
Observations	754,787	476,999

Notes: In this table, we compare the characteristics of the jobs that unemployed workers in our sample get re-employed in and the jobs that they apply to on the PES online search platform.

Figure B.1: *Within day evolution of parents' and non parents' applications*

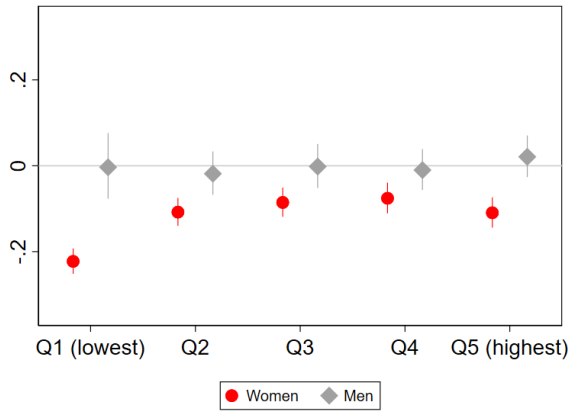


Notes: This Figure presents the proportion of applications sent by women (Panel A) and men (Panel B), with (solid line) or without (dashed line) children, per 10-minute intervals during weekdays.

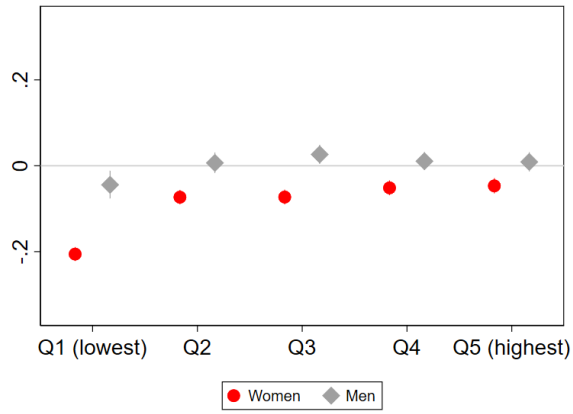
C Additional results

Figure C.1: Parenthood gaps in various outcomes, by prior wage level

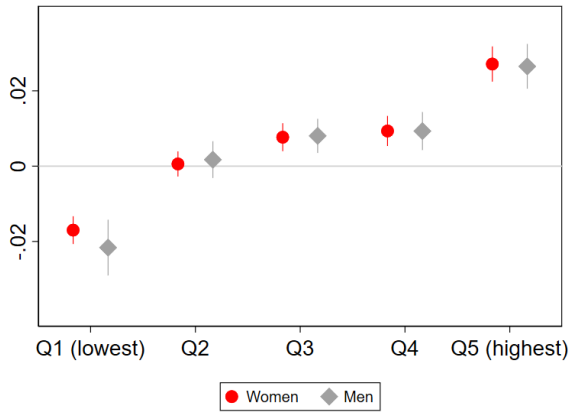
(1) Applications rate



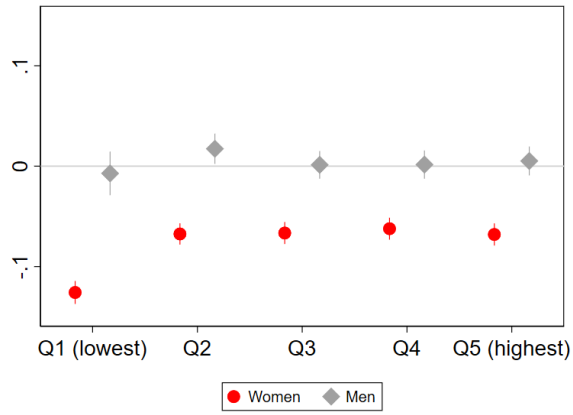
(2) Reemployment rate



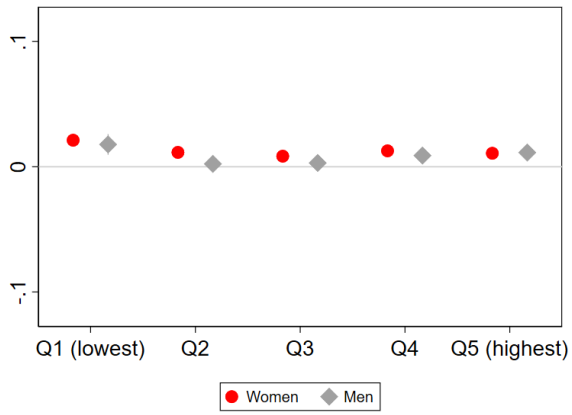
(3) Reservation wage (ln)



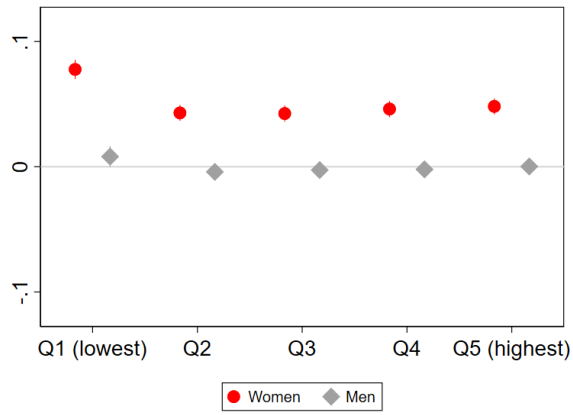
(4) Maximum commute distance (ln)



(5) Open-ended contract

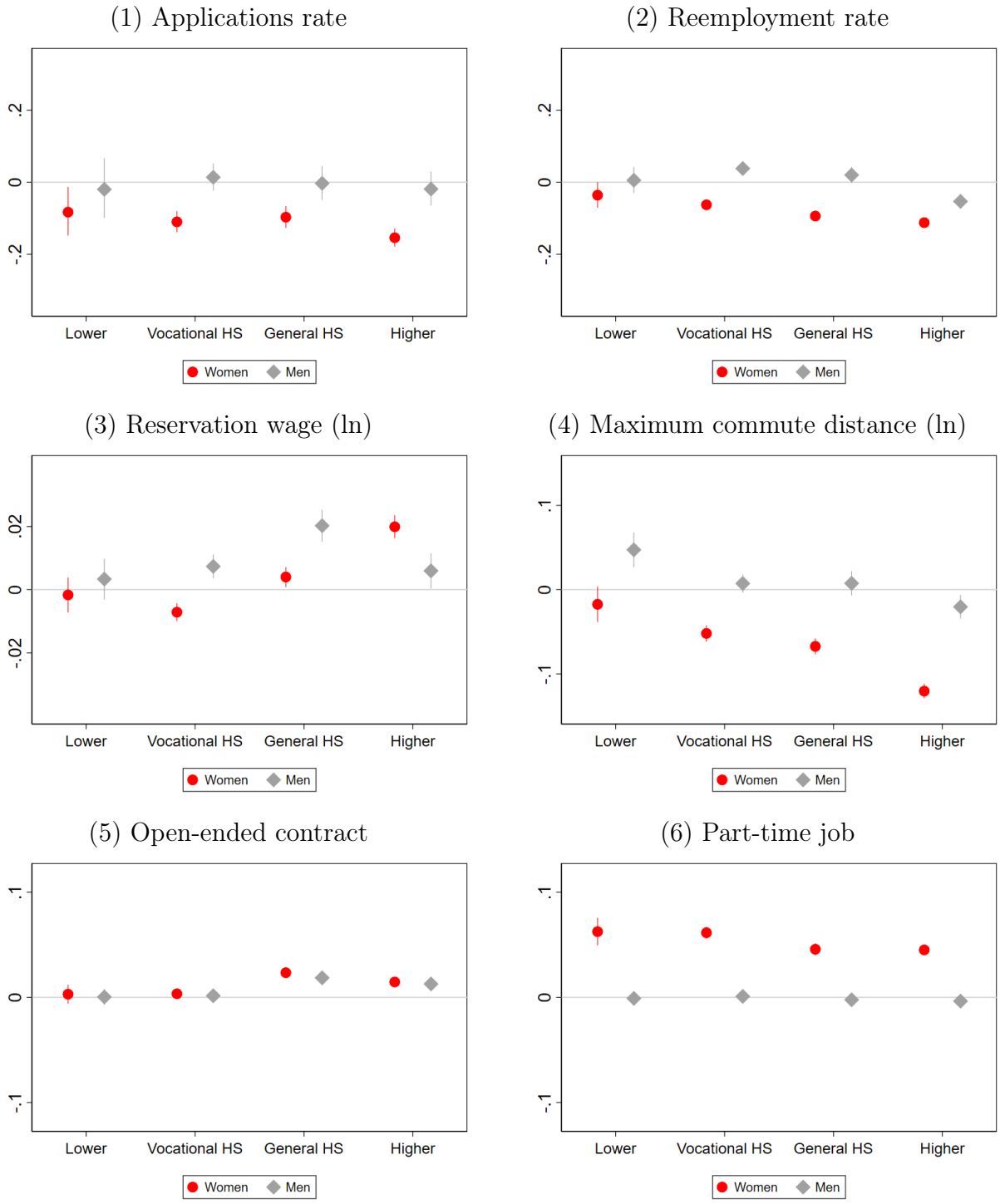


(6) Part-time job



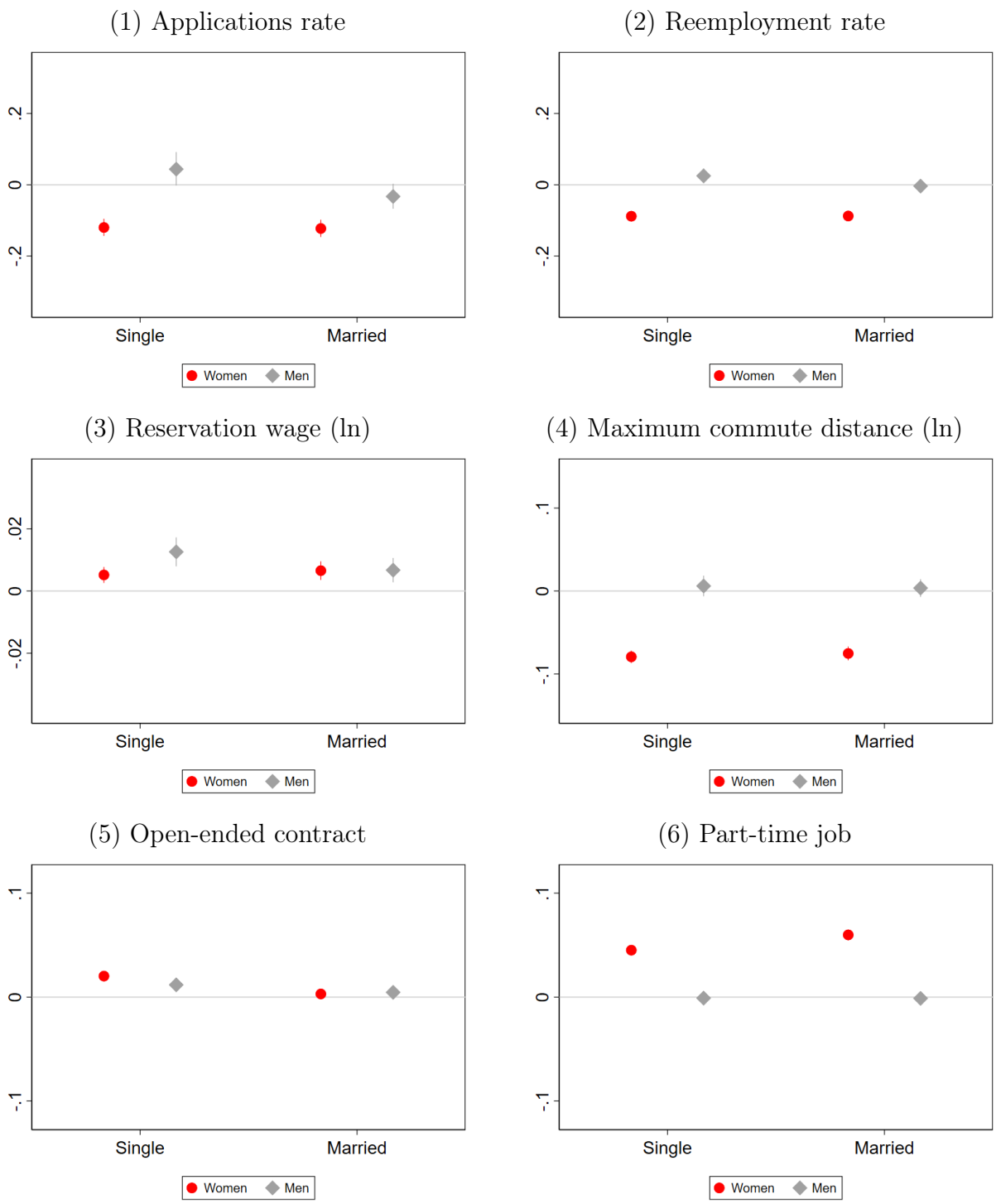
Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for people in different quintiles of the prior wage distribution. We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Figure C.2: Parenthood gaps in various outcomes, by education



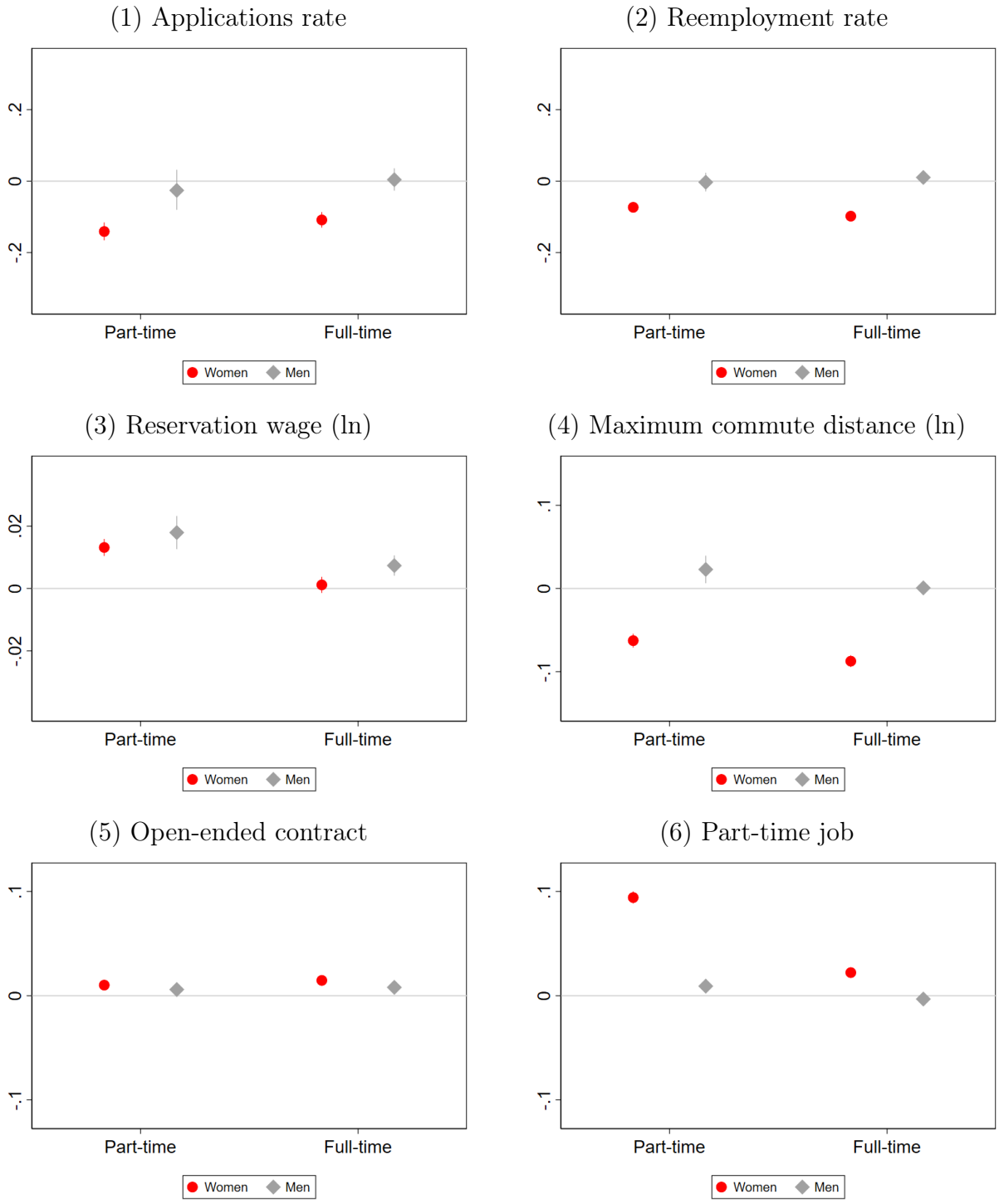
Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for different education groups (less than high school diploma, vocational high school diploma, general high school diploma, higher education diploma). We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Figure C.3: Parenthood gaps in various outcomes, by marital status



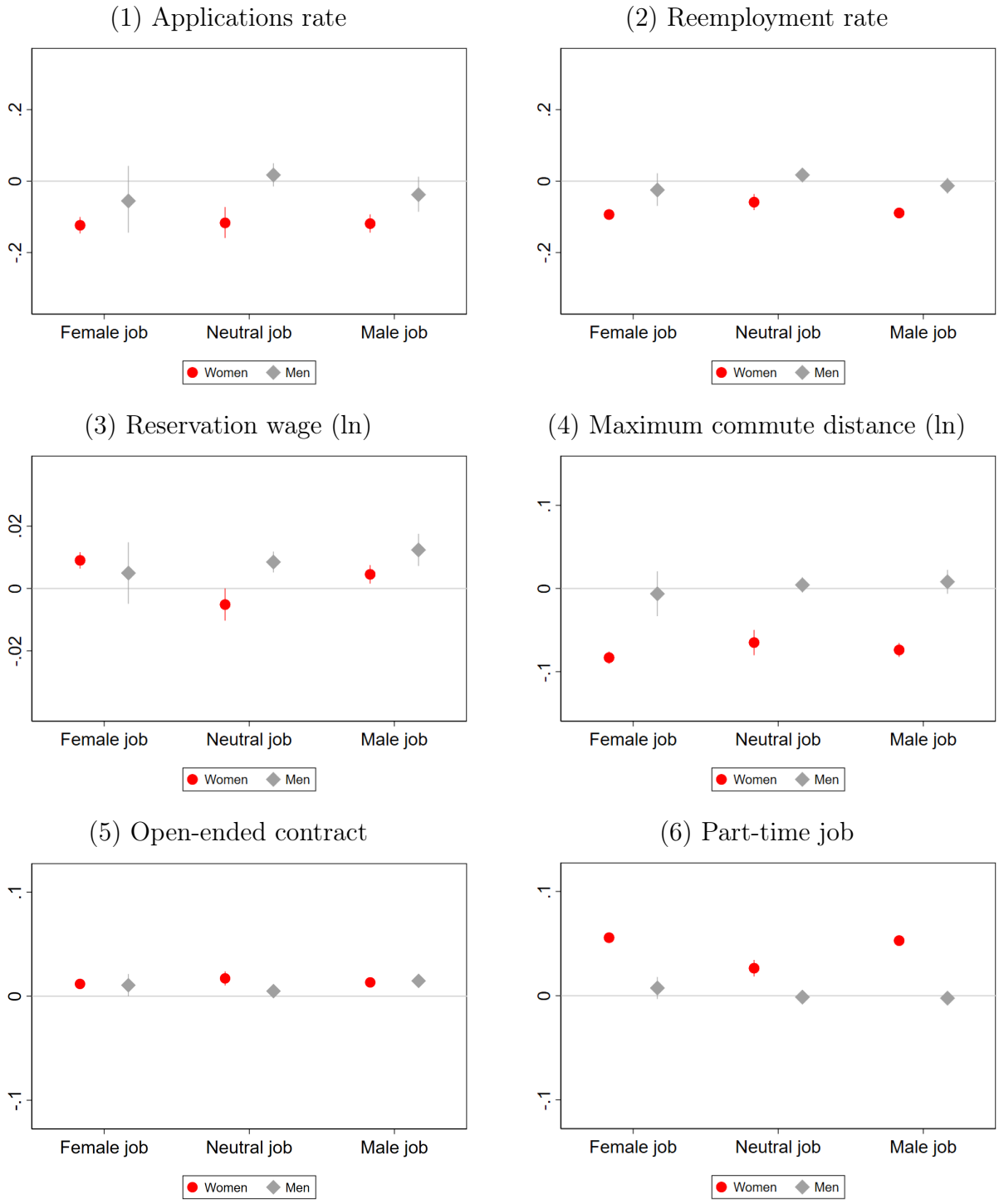
Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for people with a different marital status (single or married). We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Figure C.4: Parenthood gaps in various outcomes, by work arrangement in prior job (part-time versus full-time)



Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for people who were working part-time or full-time in their prior job. We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Figure C.5: Parenthood gaps in various outcomes, by prevalence of women in prior occupation



Notes: This Figure presents estimates of parenthood gaps (similar to Table 2) for people who are in occupations where women are over-represented, equally represented, or under-represented (based on the share of women among the unemployed workers from that occupation in our sample). We consider various outcomes: the count of applications (Panel (1)), the rate of re-employment within one year (Panel (2)), and search selectivity (Panels (3)-(6)). We run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). In col (1)-(2), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE.

Table C.1: Parenthood gaps in application and job finding rate, depending on the number of children

	A/ Motherhood gap			
	Application rate		Re-employment rate	
	(1)	(2)	(3)	(4)
One child	-0.113***	-0.086***	-0.091***	-0.073***
	(0.01)	(0.01)	(0.01)	(0.01)
Two children	-0.128***	-0.092***	-0.073***	-0.049***
	(0.01)	(0.01)	(0.01)	(0.01)
Three children	-0.158***	-0.105***	-0.127***	-0.090***
	(0.02)	(0.02)	(0.01)	(0.01)
Ind. controls	Yes	Yes	Yes	Yes
Search criteria		Yes		Yes
Outcome mean	1.27	1.27	0.65	0.65
No. of Obs.	202,951	202,951	202,951	202,951
	B/ Fatherhood gap			
	Application rate		Re-employment rate	
	(1)	(2)	(3)	(4)
One child	-0.013	-0.013	0.011	0.010
	(0.02)	(0.02)	(0.01)	(0.01)
Two children	0.032	0.031	0.024***	0.022**
	(0.02)	(0.02)	(0.01)	(0.01)
Three children	-0.031	-0.035	-0.031***	-0.034***
	(0.02)	(0.02)	(0.01)	(0.01)
Ind. controls	Yes	Yes	Yes	Yes
Search criteria		Yes		Yes
Outcome mean	1.05	1.05	0.62	0.62
No. of Obs.	142,419	142,419	142,419	142,419

Notes: This table presents the parenthood gap in the count of online applications on the PES search platform at the start of the spell (col (1)-(2)), and the rate of re-employment within one year (col (3)-(4)). We estimate the same empirical models as for Table 2, but instead of including a dummy variable for having any number of children, we include three dummy variables for having one child, two children, or three or more children. As for Table 2, We estimate Poisson count models and re report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We report robust SE in parentheses.

Table C.2: Parenthood gap in re-employment outcomes after job loss, by gender

	Women				Men			
Model:	Poisson	Poisson	OLS	OLS	Poisson	Poisson	OLS	OLS
Outcome:	Finds job within 1 year	Finds stable job within 1 year	ln(wage) at first job	ln(wage) at first stable job	Finds job within 1 year	Finds stable job within 1 year	ln(wage) at first job	ln(wage) at first stable job
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Child	-0.085***	-0.083***	-0.013***	-0.014***	0.011	0.005	0.005	0.004
	(0.009)	(0.011)	(0.003)	(0.003)	(0.009)	(0.014)	(0.003)	(0.004)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	57,422	55,689	47,172	41,662	59,949	56,838	49,775	40,605

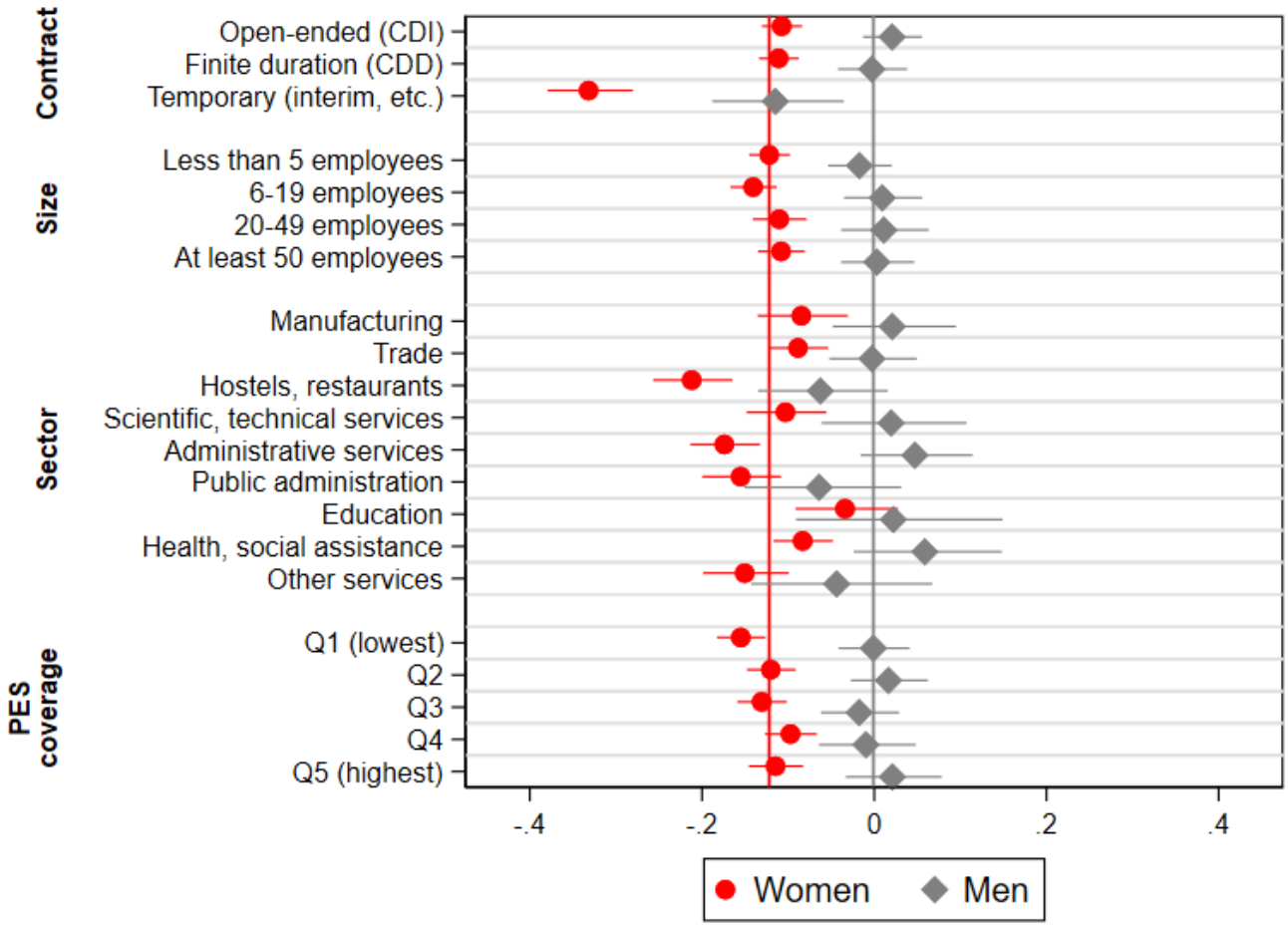
Notes: This Table presents the differences in re-employment associated with parenthood, estimated on the sample of individuals who lost their job involuntarily at age 20 to 45. We present three types of hazards: the hazard of finding any job, the hazard of finding a stable job, and the hazard of leaving the unemployment register. Child is a dummy variable indicating that the individual had at least one child when she became unemployed. We include a wide range of control variables: individuals' age, education level, skill level, previous work experience, prior time spent unemployed, prior wage, and potential benefits duration. Robust SE in parentheses.

Table C.3: Motherhood and fatherhood gaps in search and re-employment outcomes

	A/ Motherhood gaps in:			
	Reservation wage, log	Max commute distance, log	Open-ended contract	Part-time job
	(1)	(2)	(3)	(4)
Child	-0.004***	-0.112***	0.016***	0.065***
	(0.00)	(0.00)	(0.00)	(0.00)
Ind. controls	Yes	Yes	Yes	Yes
Outcome mean	1623.53	29.21	0.92	0.04
No. of Obs.	157,245	157,245	157,245	157,245
	B/ Fatherhood gaps in:			
	Reservation wage, log	Max commute distance, log	Open-ended contract	Part-time job
	(1)	(2)	(3)	(4)
Child	0.023***	-0.006	0.013***	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)
Ind. controls	Yes	Yes	Yes	Yes
Outcome mean	1711.23	33.54	0.94	0.02
No. of Obs.	114,796	114,796	114,796	114,796

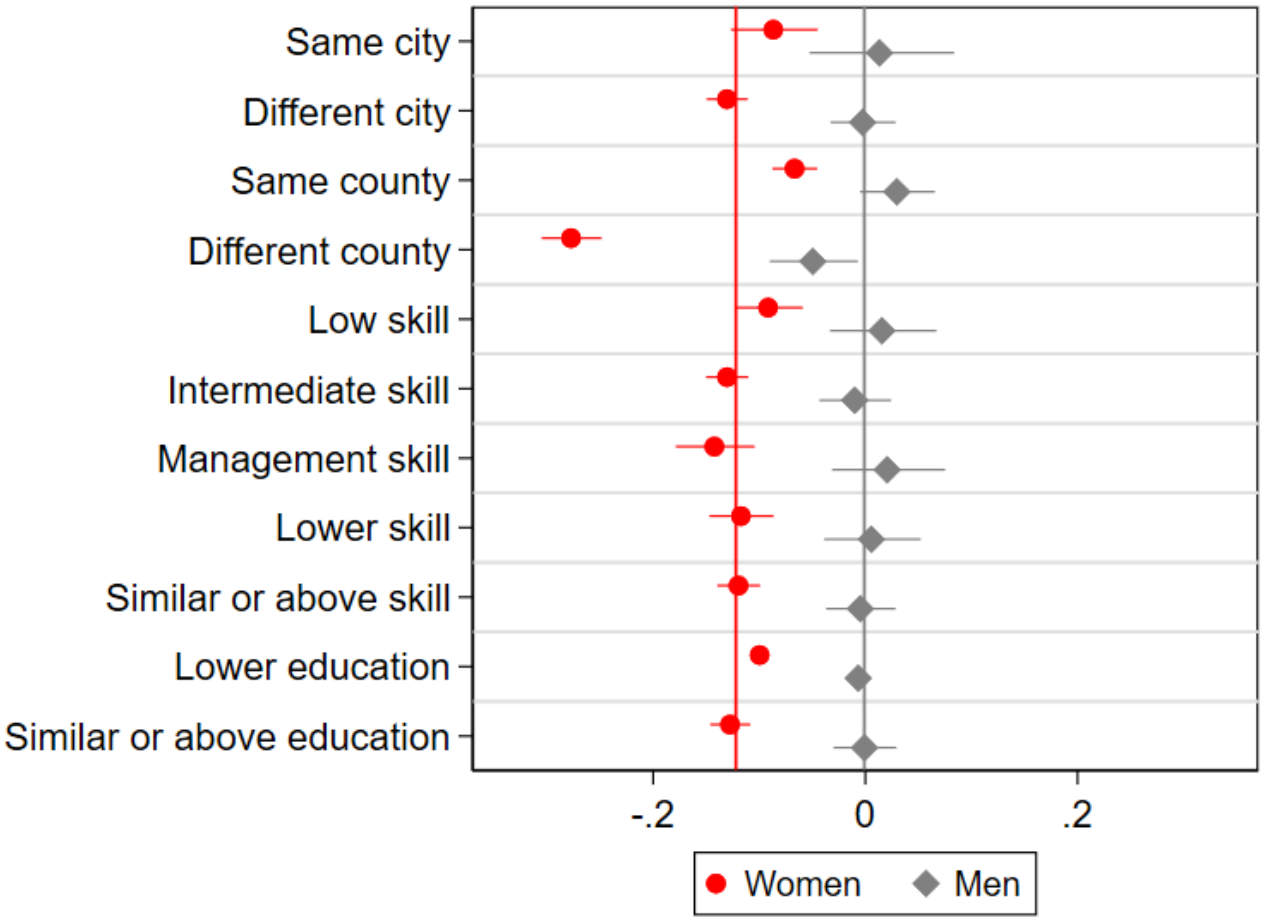
Notes: This table presents the parenthood gap in various outcomes for women (A/) and men (B/), similar to Table 2 except that we restrict our sample to workers who found a job within two years. We consider various outcomes measuring workers' search selectivity: reservation wage (col (1)), maximum commute distance (col (2)), desired type of contract (open-ended vs short-term contract) (col (3)), preferred working time (part-time vs full-time) (col (4)), We report robust SE in parentheses. Outcome mean corresponds to the non-logged average outcome among non-parents.

Figure C.6: Parenthood gap in applications to different types of jobs



Notes: This Figure presents estimates of parenthood gaps in the count of applications (similar to Table 2), except that we consider separately the applications to different types of jobs: we consider jobs with different types of contract, in establishments of different sizes, in different sectors (descriptive statistics of jobs in terms of those characteristics are presented in Table B.2). Finally, we use an index for whether the job has characteristics (in terms of contract, establishment size, and sector) that are highly represented on the PES search platform relative to their prevalence among hires. We divide jobs into quintiles of this index: the lowest quintile Q1 includes the jobs with characteristics that tend to be the most underrepresented on the PES search platform, while the highest quintile Q5 includes the jobs with characteristics that are the most overrepresented. Like in the rest of the analysis, we run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE. The vertical lines indicate the parenthood gap in all applications, estimated for women in red and men in gray (they correspond to the estimates presented in columns (1) and (3) of Table 2).

Figure C.7: Parenthood gap in applications to different types of jobs



Notes: This Figure presents estimates of parenthood gaps in the count of applications (similar to Table 2), except that we consider separately the applications to different types of jobs: we consider jobs in different locations, and requiring different skill and education levels. Like in the rest of the analysis, we run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities; in col (3)-(6), we estimate linear regression models. We present the 95% confidence intervals based on robust SE. The vertical lines indicate the parenthood gap in all applications, estimated for women in red and men in gray (they correspond to the estimates presented in columns (1) and (3) of Table 2).

Table C.4: Parenthood gap in the speed of job applications

	Women			
	Duration vacancy (log)		Duration $\leq$ 1 day	
	(1)	(2)	(3)	(4)
Child	0.026***	0.050***	-0.010***	-0.018***
	(0.008)	(0.014)	(0.003)	(0.005)
Individual characteristics	Yes	Yes	Yes	Yes
Vacancy FE		Yes		Yes
Outcome mean (non logged)	11.196	11.196	0.398	0.398
No. of Obs.	224,331	224,331	224,331	224,331
	Men			
	Duration vacancy (log)		Duration $\leq$ 1 day	
	(1)	(2)	(3)	(4)
Child	-0.001	-0.026	-0.002	0.008
	(0.012)	(0.026)	(0.004)	(0.010)
Individual characteristics	Yes	Yes	Yes	Yes
Vacancy FE		Yes		Yes
Outcome mean (non logged)	15.257	15.257	0.329	0.329
No. of Obs.	143,587	143,587	143,587	143,587

Notes: This table presents differences in the speed of applications between parents and non-parents, estimated in the sample of applications. We measure the speed of an application as the delay between the day when a vacancy is posted and the day when the application is sent (in days). In all specifications, we include the same individual controls as in other analyses (e.g., in Table 2), and additionally include vacancy fixed effects in columns (2) and (4). Robust SE in parenthesis.

Table C.5: Parenthood gap in search selectivity, using survey or job application data

	A/ Women: Survey answers			
	Reservation wage, log	Max commute distance, log	Open-ended contract	Part time
	(1)	(2)	(3)	(4)
Child	0.002	-0.075***	0.014***	0.035***
	(0.002)	(0.005)	(0.002)	(0.002)
Individual controls	Yes	Yes	Yes	Yes
Outcome mean	1667.08	27.62	0.95	0.07
No. of Obs.	61,926	98,644	105,864	105,864
	B/ Women: Applications			
	Wage, log	Commute distance, log	Open-ended contract	Part time
	(1)	(2)	(3)	(4)
Child	0.016***	-0.111***	0.009**	0.028***
	(0.002)	(0.008)	(0.004)	(0.003)
Individual controls	Yes	Yes	Yes	Yes
Outcome mean	1768.31	26.65	0.43	0.24
No. of Obs.	61,926	98,644	105,864	105,864
	C/ Men: Survey answers			
	Reservation wage, log	Max commute distance, log	Open-ended contract	Part time
	(1)	(2)	(3)	(4)
Child	0.009***	0.006	0.010***	-0.002
	(0.003)	(0.007)	(0.002)	(0.002)
Individual controls	Yes	Yes	Yes	Yes
Outcome mean	1805.80	34.43	0.95	0.01
No. of Obs.	44,192	62,800	71,777	71,777
	D/ Men: Applications			
	Wage, log	Commute distance, log	Open-ended contract	Part time
	(1)	(2)	(3)	(4)
Child	0.003	-0.026**	0.012**	-0.000
	(0.003)	(0.012)	(0.005)	(0.003)
Individual controls	Yes	Yes	Yes	Yes
Outcome mean	1707.09	30.06	0.50	0.11
No. of Obs.	44,192	62,800	71,777	71,777

Notes: This Figure presents estimates of parenthood gaps in job selectivity (similar to Table 2), except that we compare the results obtained when measuring selectivity in two data sources. In Panels A/ and C/ we use the answers to the mandatory administrative survey, like in our main specification. In Panels B/ and D/ we instead analyze the characteristics of the jobs individuals apply to, using the job application data—for those who send an application in the first 3 months. Note that the sample is smaller than in our main specification (Table 2), as we restrict to individuals for which we observe both measures. Like in the rest of the analysis, we run separate regressions for men and women and control for a wide range of individual characteristics (see Section 4.4). Robust SE in parenthesis.

Table C.6: Robustness check: Parenthood gaps in application and job finding rate, with different set of covariates

	A/ Applications rate									
	Women					Men				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Child	-0.134***	-0.106***	-0.110***	-0.122***	-0.122***	-0.021*	-0.027*	-0.015	-0.002	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marital, Educ, City		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Experience, skill, occupation			Yes	Yes	Yes			Yes	Yes	Yes
Prior ubemployment, UI				Yes	Yes				Yes	Yes
Prior wage, Prior hours					Yes					Yes
No. of Obs.	202,951	202,951	202,951	202,951	202,951	142,419	142,419	142,419	142,419	142,419
	B/ Job finding rate									
	Women					Men				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Child	-0.121***	-0.092***	-0.088***	-0.090***	-0.089***	0.035***	0.007	0.003	0.008	0.008
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marital, Educ, City		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Experience, skill, occupation			Yes	Yes	Yes			Yes	Yes	Yes
Prior ubemployment, UI				Yes	Yes				Yes	Yes
Prior wage, Prior hours					Yes					Yes
No. of Obs.	202,951	202,951	202,951	202,951	202,951	142,419	142,419	142,419	142,419	142,419

Notes: This table presents the parenthood gap in the count of online applications on the PES search platform at the start of the spell (Panel A/) and the rate of re-employment within one year (Panel B/). We estimate the same empirical models as for Table 2, except that we successively include the individual controls. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We report robust SE in parentheses.

Table C.7: Robustness check: Parenthood gaps in application, with alternative measures of application counts

	A/ Motherhood gap					
	Sum of applications			Sum of applications over duration of search		
	2 months	**3 months**	**6 months**	**2 months**	**3 months**	**6 months**
	(1)	(2)	(3)	(4)	(5)	(6)
Child	-0.131***	-0.122***	-0.099***	-0.152***	-0.141***	-0.116***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Ind controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.76	1.05	1.70	1.19	1.48	2.13
No. of Obs.	202,971	202,971	202,971	202,971	202,971	202,971
	B/ Fatherhood gap					
	Sum of applications			Sum of applications over duration of search		
	2 months	**3 months**	**6 months**	**2 months**	**3 months**	**6 months**
	(1)	(2)	(3)	(4)	(5)	(6)
Child	0.007	-0.001	-0.013	-0.010	-0.012	-0.019
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Ind controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.76	1.05	1.70	1.19	1.48	2.13
No. of Obs.	142,423	142,423	142,423	142,423	142,423	142,423

Notes: This table presents the parenthood gap in the count of online applications on the PES search platform at the start of the spell among women (Panel A/) and among men (Panel B/). We estimate the same empirical models as for Table 2, but we consider alternative outcome variables. First, we count the number of applications sent in the last 2/3/6 months or until the end of the search spell if the spell is interrupted before (col (1), (2), (3)). Second, we count the number of applications sent in the last 2/3/6 months divided by the duration of the search spell up to 2/3/6 months (col (4), (5), (6)). Note that our main outcome variable in the rest of the analysis corresponds to the one presented in column (2). Like in Table 2, we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We report robust SE in parentheses.

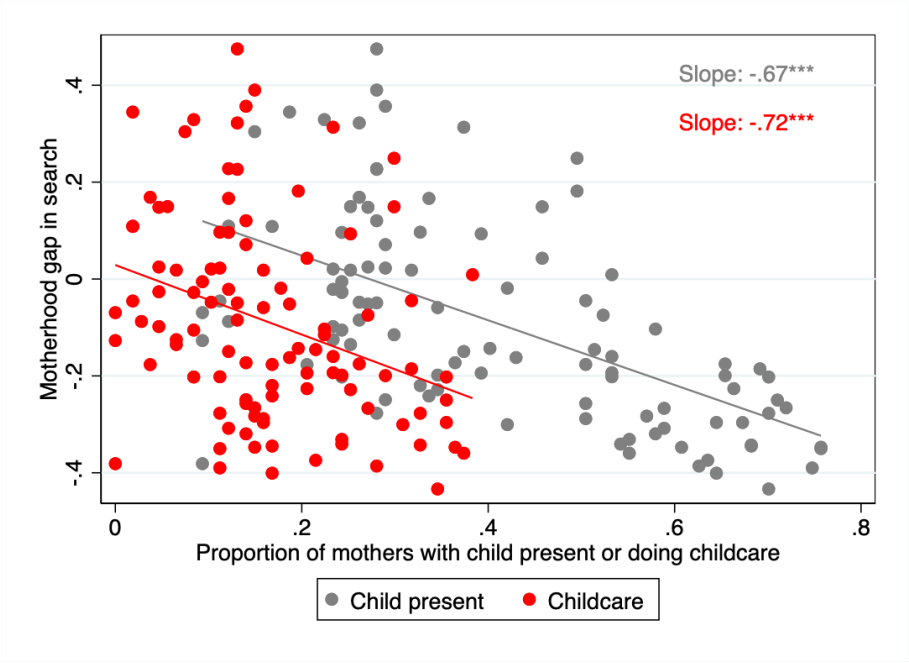
Table C.8: Robustness check: Parenthood gaps in application, with alternative measures of application counts

	A/ Motherhood gap					
	Duration before first job		**Duration before first long-term job**		**Duration before unemployment exit**	
	≤ 6 months	≤ 1 year	≤ 6 months	≤ 1 year	≤ 6 months	≤ 1 year
	(1)	(2)	(3)	(4)	(5)	(6)
Child	-0.152***	-0.088***	-0.118***	-0.060***	-0.142***	-0.083***
	(0.01)	(0.00)	(0.02)	(0.01)	(0.01)	(0.01)
Ind controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.37	0.62	0.11	0.22	0.18	0.43
No. of Obs.	202,971	202,971	202,971	202,971	202,220	180,986
	B/ Fatherhood gap					
	Duration before first job		**Duration before first long-term job**		**Duration before unemployment exit**	
	≤ 6 months	≤ 1 year	≤ 6 months	≤ 1 year	≤ 6 months	≤ 1 year
	(1)	(2)	(3)	(4)	(5)	(6)
Child	-0.009	0.007	0.027	0.038**	-0.062***	-0.008
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
Ind controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.37	0.62	0.11	0.22	0.18	0.43
No. of Obs.	142,423	142,423	142,423	142,423	142,031	129,011

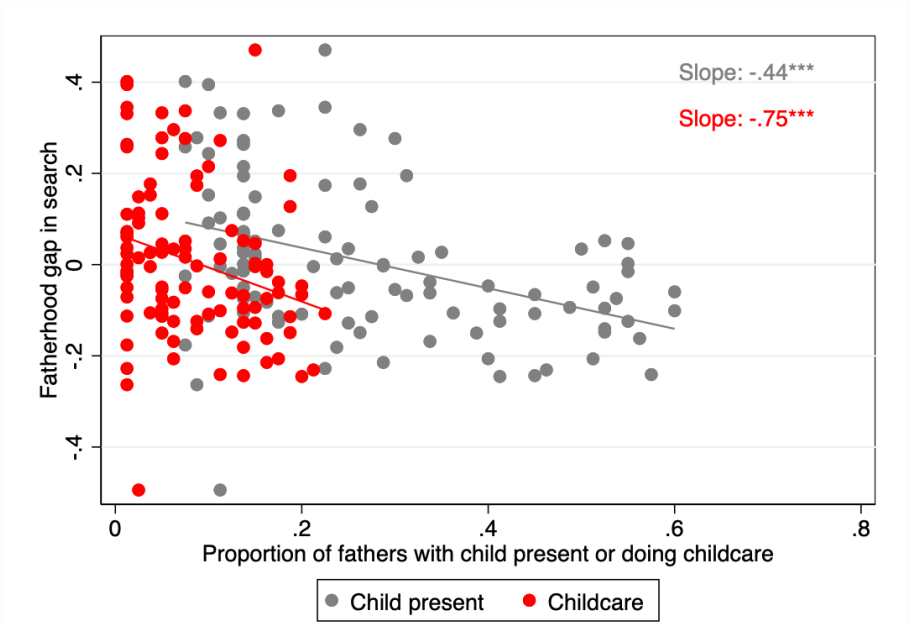
Notes: This table presents the parenthood gap in the re-employment rate among women (Panel A/), and among men (Panel B/). We estimate the same empirical models as for Table 2, but we consider alternative outcome variables. We consider first the duration before the individual starts any job (col (1)-(2)), then the duration before the first job long-term job (col (3)-(4)), and finally the duration before the individual leaves the unemployment register (col (5)-(6)). Each time, we take as an outcome a dummy for the duration being below 6 months or 1 year. Note that our main outcome variable in the rest of the analysis corresponds to the one presented in column (2). Like in Table 2, we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We report robust SE in parentheses.

Figure C.8: Correlation between parenthood gap in job search, child presence and childcare

A/ Women

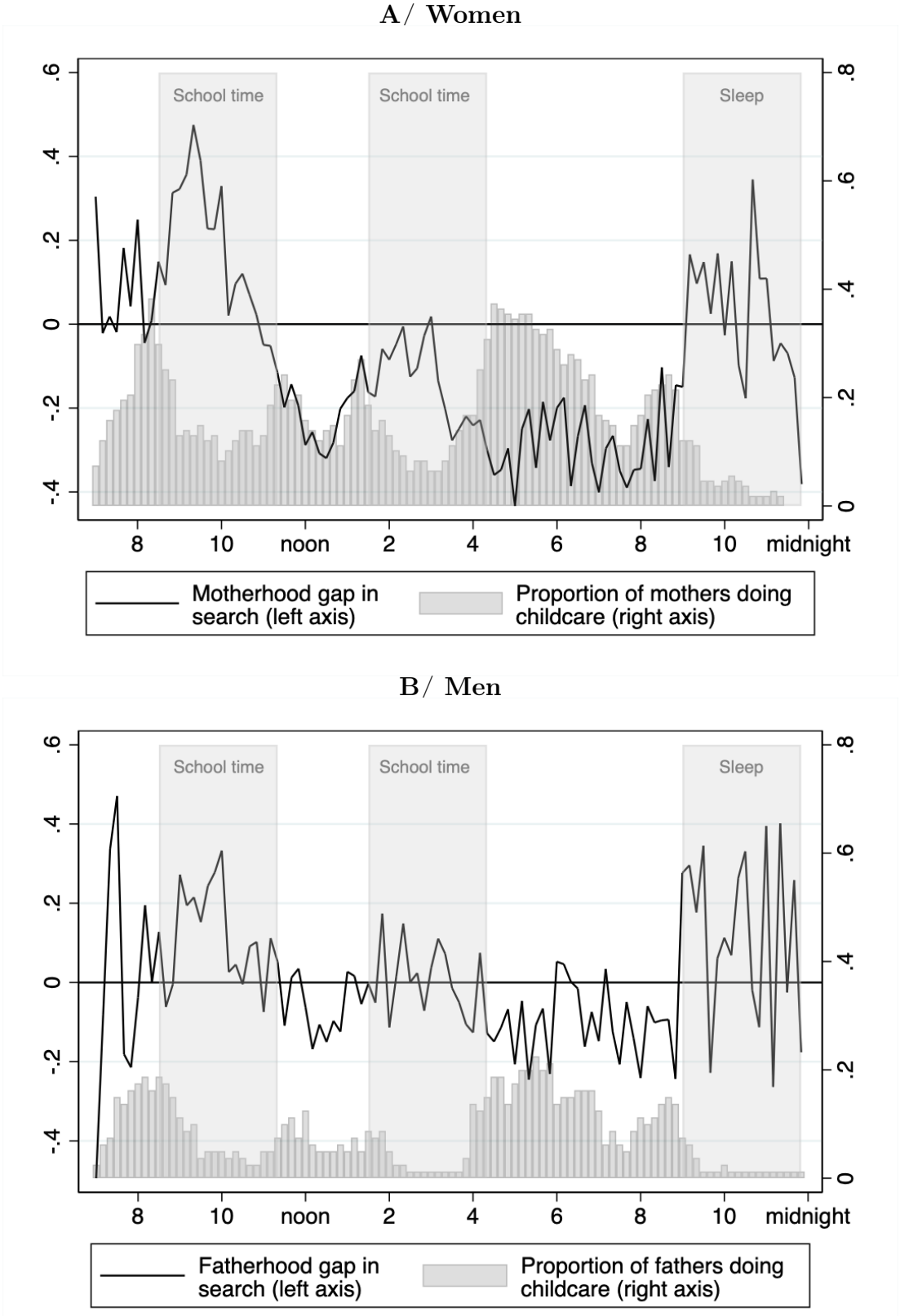


B/ Men



Notes: In gray, the figure presents the correlation of the coefficients of the parenthood gap in search activities with the proportion of parents in presence of their children from Figure 2, for all 10-minute time intervals. In red, the figure presents the same coefficients of the parenthood gap in search activities with the proportion of parents doing childcare, for all 10-minute time intervals. We present the corresponding Figure in Appendix Figure C.9. We present separately the statistics corresponding to women in Panel A and men in Panel B.

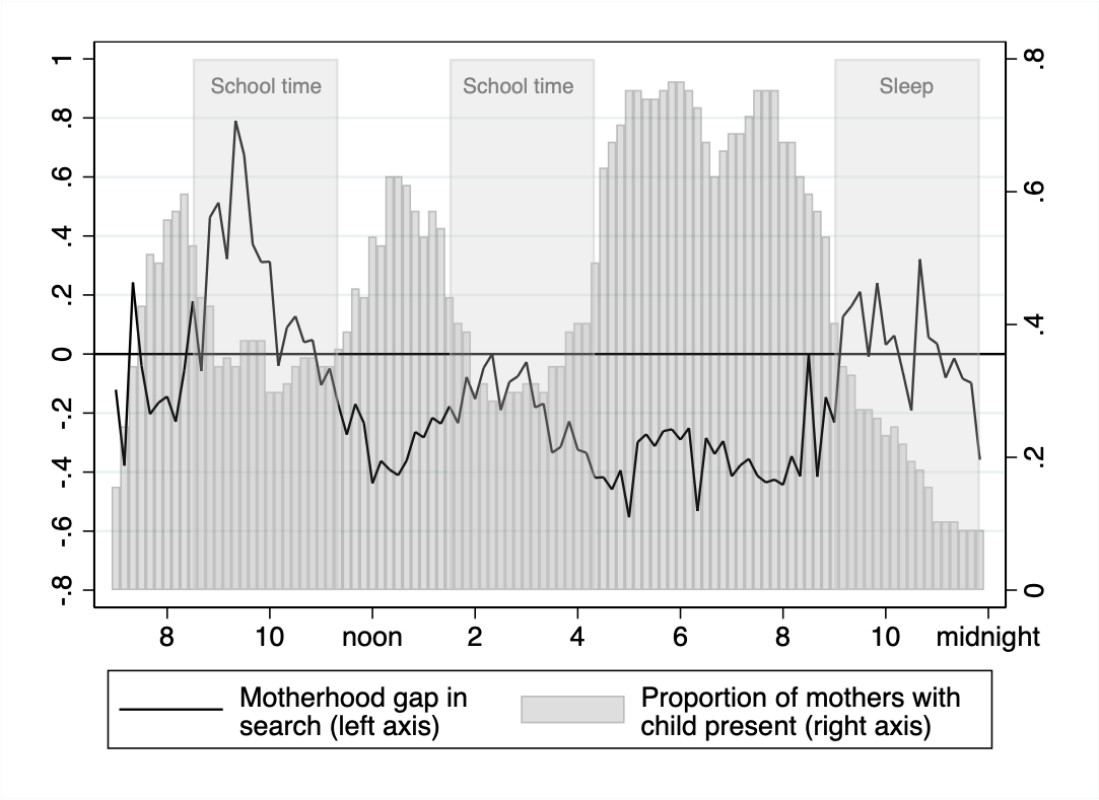
Figure C.9: Parenthood gap in applications and proportion of parents doing childcare



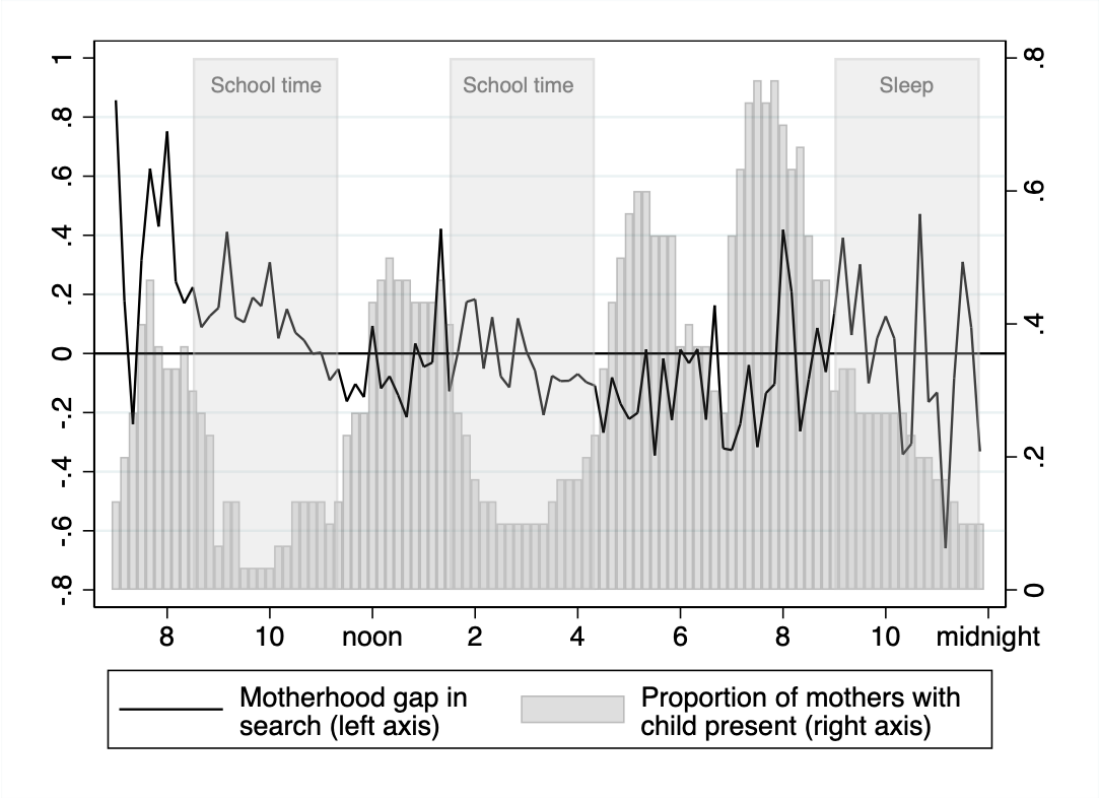
Notes: This Figure presents the estimates for the parenthood gap in the rate of applications sent in 10-minute intervals during weekdays (black line) as in Figure 2. In addition, it presents the fraction of unemployed parents who report doing childcare activities during the same 10-minute intervals in the French Time Use Survey (gray bars).

Figure C.10: *Motherhood gap in applications at different times of the day, heterogeneity*

(a) 20-38 years old

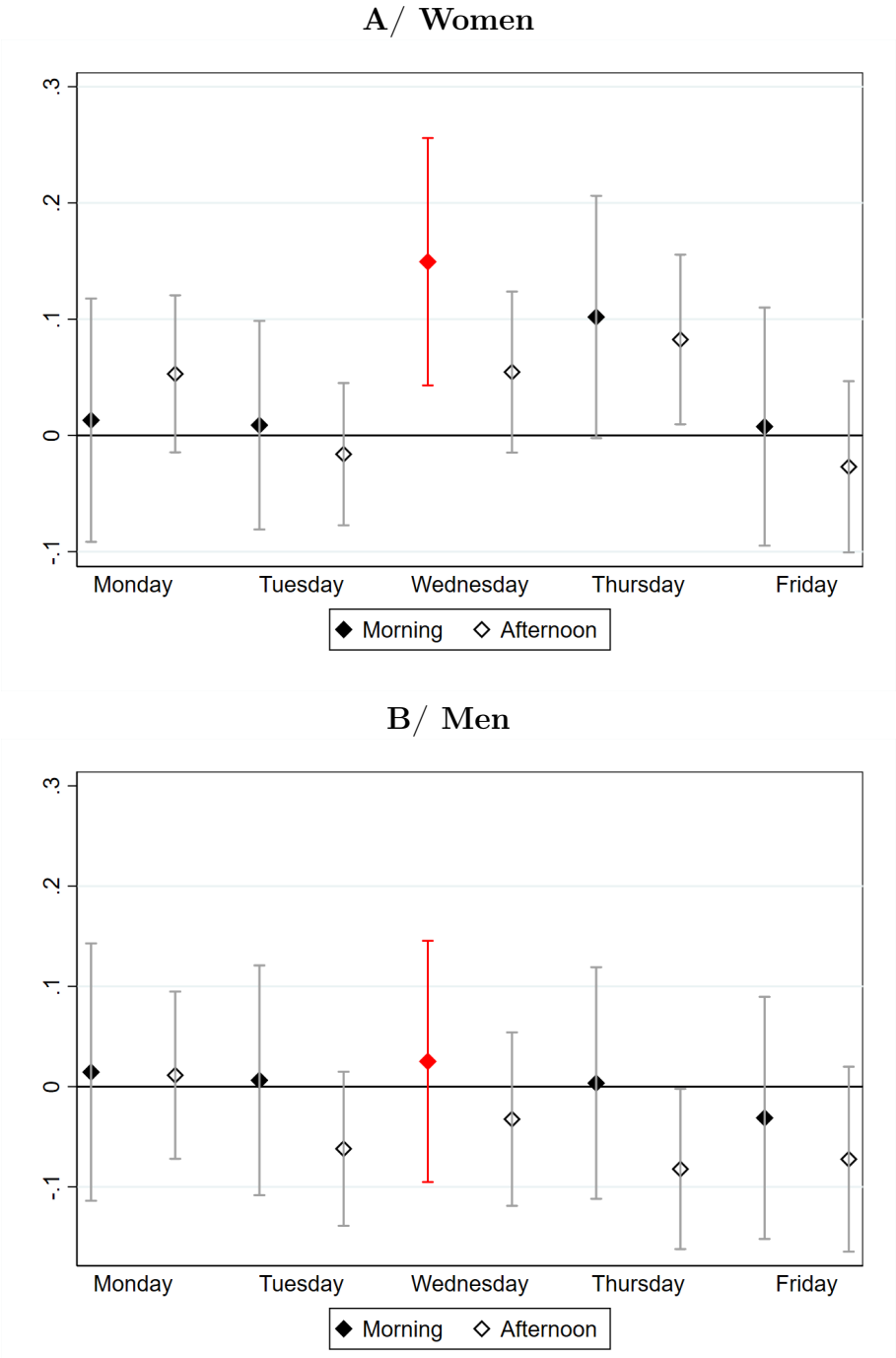


(b) 39-55 years old



Notes: This Figure presents the estimates for the parenthood gap in the rate of applications sent in 10-minute intervals during weekdays (black line) as in Figure 2, but for different age groups.

Figure C.11: Robustness check: Effect of the school schedule reform on parents' application, controlling for search criteria



Notes: This Figure presents the estimates for the effect of the reform of school schedule (i.e. adding school time on Wednesday morning) on the rate of applications sent on different days of the week. We use the same specifications as in Figure 4, except that we include search criteria as additional controls. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We present the 95% confidence intervals based on robust SE.

Table C.9: Robustness check: Impact of the school schedule reform on the time allocation of search activities, controlling for search criteria

	A/ Women			**B/ Men**		
	Wednesday	Other days	Any day	Wednesday	Other days	Any day
	(1)	(2)	(3)	(4)	(5)	(6)
ChildXReform	0.082***	0.024	0.035*	-0.018	-0.036	-0.032
	(0.033)	(0.019)	(0.018)	(0.037)	(0.024)	(0.022)
Child	-0.159***	-0.099***	-0.111***	-0.035	0.035	0.021
	(0.023)	(0.016)	(0.015)	(0.034)	(0.025)	(0.023)
Reform	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Other search criteria	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.257	1.046	1.303	0.205	0.860	1.065
No. of Obs.	195,547	195,547	195,547	138,028	138,028	138,028

Notes: This table presents the effect of the reform of school schedule on the rate of applications sent on different days by parents. We present the same specifications as in Table 4, except that we include search criteria as additional controls. We estimate the effect separately for women (in Panel A) and men (in Panel B). In col (1) and (4), we consider the rate of applications sent on Wednesdays. In col (2) and (5), we consider the rate of applications sent on any other day. And in col (3) and (6), we consider the rate of applications sent overall. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We control for job seekers' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, and prior work hours. Robust SE in parentheses.

Table C.10: Effects of the 2014 reform and placebo test

A/ Effect of reform in cities which implemented the reform in 2014

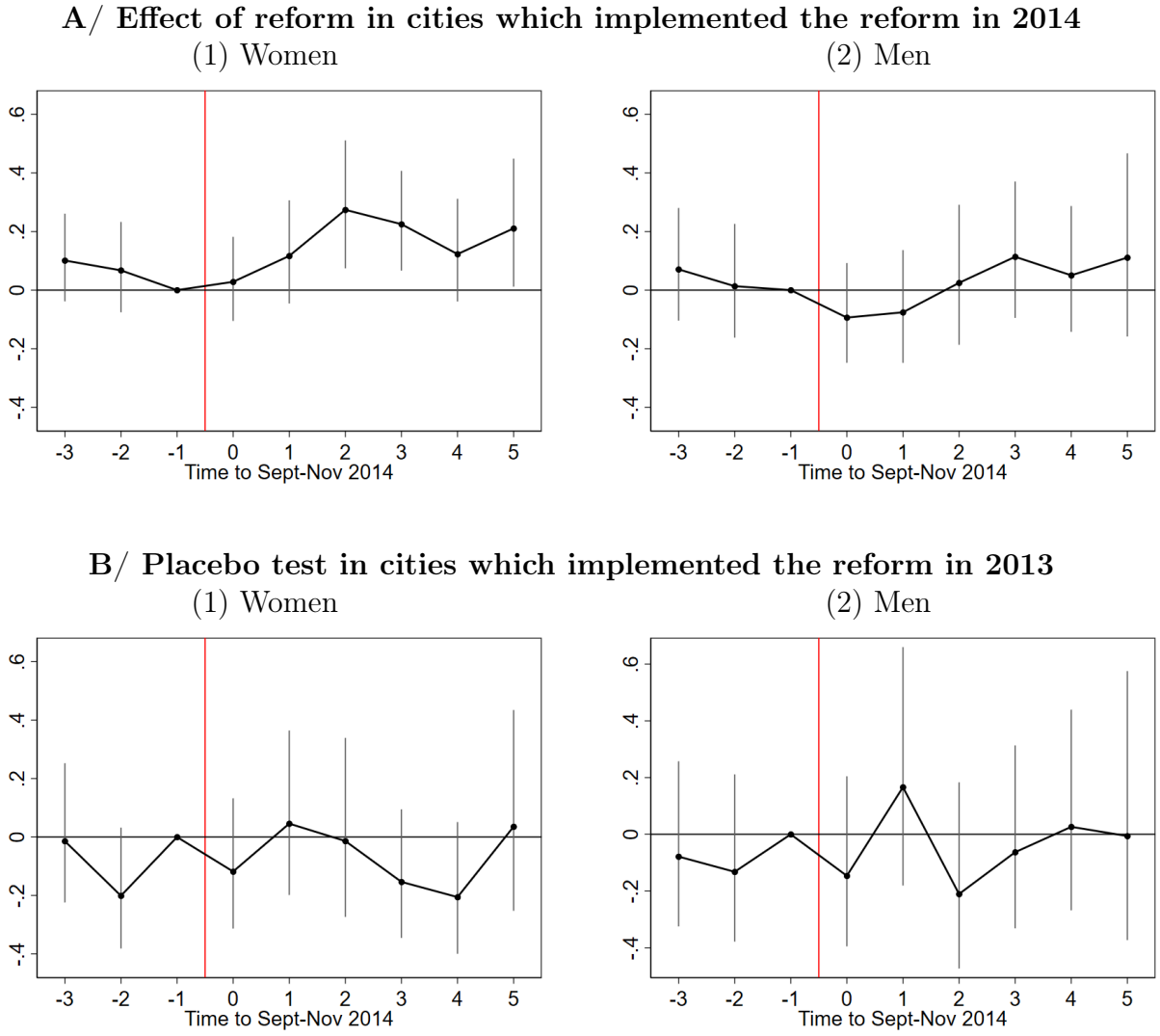
	Women			Men		
	Wednesday	Other days	Any day	Wednesday	Other days	Any day
	(1)	(2)	(3)	(4)	(5)	(6)
ChildXAfterSep2014	0.076**	0.021	0.031*	-0.014	-0.039	-0.035
	(0.033)	(0.020)	(0.019)	(0.041)	(0.025)	(0.024)
Child	-0.179***	-0.130***	-0.139***	-0.021	0.039	0.027
	(0.022)	(0.015)	(0.014)	(0.036)	(0.024)	(0.023)
AfterSep2014	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.257	1.045	1.302	0.205	0.859	1.064
No. of Obs.	150,697	150,697	150,697	105,813	105,813	105,813

B/ Placebo test in cities which implemented the reform in 2013

	Women			Men		
	Wednesday	Other days	Any day	Wednesday	Other days	Any day
	(1)	(2)	(3)	(4)	(5)	(6)
ChildXAfterSep2014	-0.042	0.036	0.021	0.038	0.062	0.058
	(0.053)	(0.036)	(0.034)	(0.074)	(0.049)	(0.047)
Child	-0.119***	-0.133***	-0.131***	-0.121**	-0.045	-0.059
	(0.042)	(0.027)	(0.026)	(0.056)	(0.041)	(0.038)
AfterSep2014	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.247	1.052	1.299	0.213	0.842	1.055
No. of Obs.	44,830	44,830	44,830	32,215	32,215	32,215

Notes: This table presents the estimates obtained when estimating an alternative differences-in-differences model than in our main specification (presented in Table **??**): instead of the dummy variable $Reform$ indicating that the individual became unemployed after the reform was implemented in her city, we use the dummy $AfterSep2014$ indicating that the individual became unemployed after September 2014. This allows us to estimate the effect of the reform when we restrict our sample to the cities which implemented the reform in 2014 (Panel A/), and this provides a placebo test when we restrict our sample to the cities which implemented the reform in 2013 (Panel B/). We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. Robust SE in parentheses.

Figure C.12: Effect of the 2014 reform on applications sent on Wednesday and placebo test



Notes: This Figure presents the estimates obtained in a similar specification as in Table C.10 col (1), except that instead of having one dummy $AfterSep2014$, we include several dummies representing 3-month periods relative to the implementation of the reform in Sept-Nov 2014: $D_\tau = \mathbb{1}[t = SeptNov2014 + \tau]$. We include all 3-month periods covered in our sample, except the last period before the implementation of the 2014 reform (i.e. June-August 2024) which serves as the reference period. We report the coefficients associated with $ChildXD_\tau$. For $\tau \geq 0$, the coefficients allow us to estimate the effect of the reform on the applications sent on Wednesday when we restrict our sample to the cities which implemented the reform in 2014 (Panel A/), and this provides a placebo test when we restrict our sample to the cities which implemented the reform in 2013 (Panel B/). For $\tau < 0$, the coefficients allow us to test the parallel trend assumption when we restrict our sample to the cities which implemented the reform in 2014 (Panel A/). We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We present the 95% confidence intervals based on robust SE.

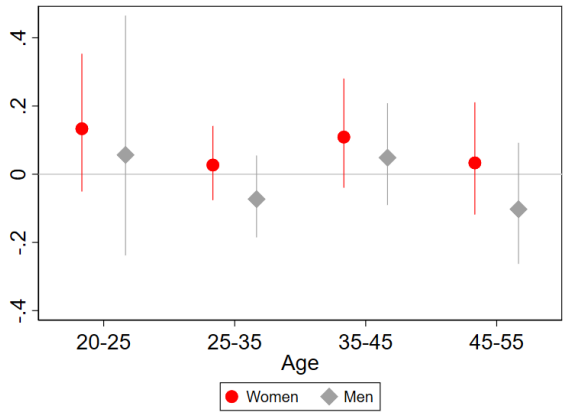
Table C.11: Robustness check: Impact of the school schedule reform on the time allocation of search activities, excluding teachers

	A/ Women			**B/ Men**		
	Wednesday	Other days	Any day	Wednesday	Other days	Any day
	(1)	(2)	(3)	(4)	(5)	(6)
ChildXReform	0.080***	0.022	0.033*	-0.011	-0.034	-0.030
	(0.031)	(0.019)	(0.018)	(0.037)	(0.023)	(0.022)
Child	-0.187***	-0.129***	-0.141***	-0.039	0.034	0.020
	(0.022)	(0.015)	(0.014)	(0.034)	(0.023)	(0.022)
Reform	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.257	1.048	1.306	0.206	0.861	1.067
No. of Obs.	191,776	191,776	191,776	137,260	137,260	137,260

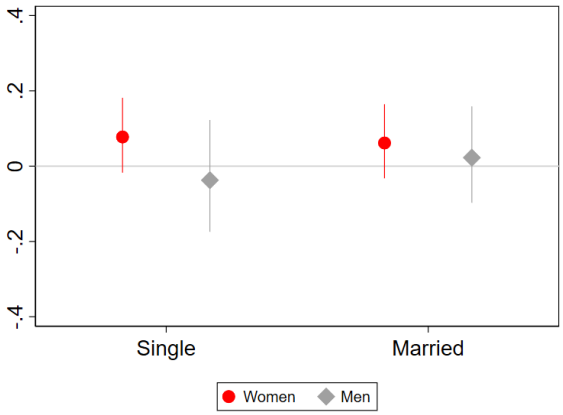
Notes: This table presents the effect of the reform of school schedule on the rate of applications sent on different days (see empirical model (2)). We estimate the effect separately for women (in Panel A) and men (in Panel B) on various outcomes: In col (1) and (4), we consider the rate of applications sent on Wednesdays. In col (2) and (5), we consider the rate of applications sent on any other day. And in col (3) and (6), we consider the rate of applications sent overall. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. We control for job seekers' education, experience, marital status, age, city of residence, sector, unemployment insurance entitlement, prior wage, and prior work hours. Robust SE in parentheses.

Figure C.13: Heterogeneous effect of school schedule reform on applications on Wednesdays

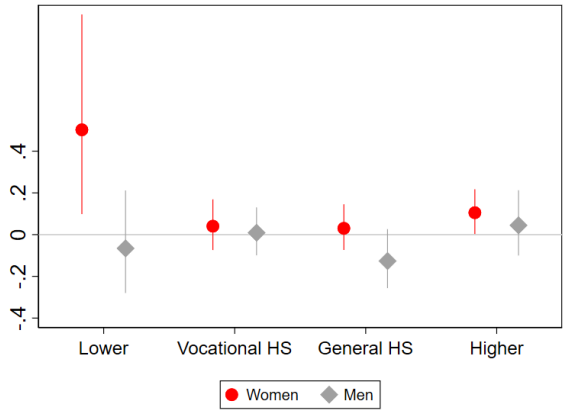
(1) Heterogeneity by age



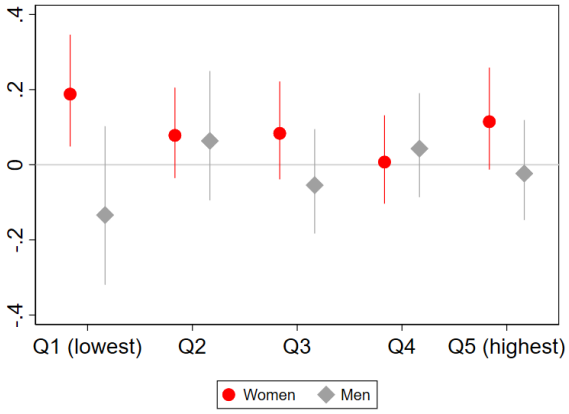
(2) Heterogeneity by marital status



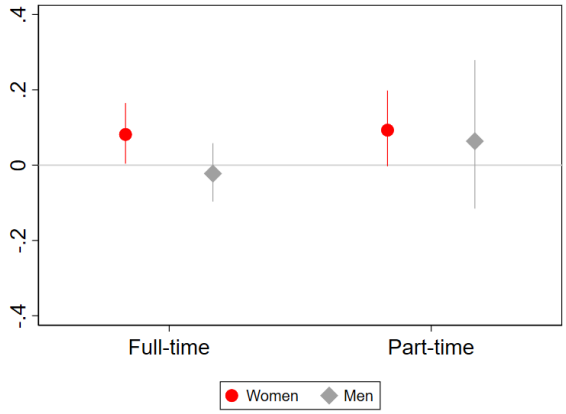
(3) Heterogeneity by education



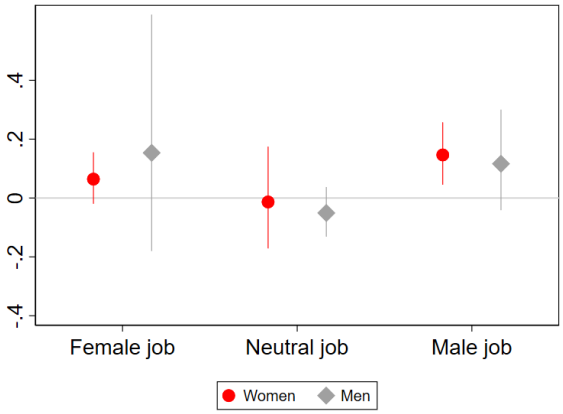
(4) Heterogeneity by prior wage level



(5) Heterogeneity by prior work hours



(6) Heterogeneity by female share in target job



Notes: In this Figure, we analyze the heterogeneity of the effect of the school reform on applications sent on Wednesday, corresponding to the coefficient associated with *ChildXReform* in col (2) and (5) of Table 4. For each Panel and each gender, we obtain the reported coefficients in a single regression: we estimate the same empirical model as in Table 4, except that we fully interact *Child*, *ChildXReform* and *Reform* with all the categories of the heterogeneity dimension considered. We successively consider heterogeneity by age (Panel (1)), by marital status (Panel (2)), by diploma level (lower than high school, vocation high school, general high school or diploma from higher education; Panel (3)), by wage level at the prior job (Panel (4)), by hours worked at prior job (Panel (5)) and by proportion of women in the job looked for (highest quartile, middle, lowest quartile; Panel (6)). We present the 95% confidence intervals based on robust SE.

Table C.12: Parenthood gap in the success rate of applications sent at different times

	A/ Women								
	(1) Hours of day			(2) Days of year			(3) Overall		
	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)
Child	-0.061	-0.155**	-0.155**	0.150	-0.113**	-0.113**	0.003	-0.155**	-0.155**
	(0.080)	(0.060)	(0.060)	(0.124)	(0.045)	(0.045)	(0.062)	(0.060)	(0.060)
ChildXNo-School			0.112			0.296**			0.187*
			(0.123)			(0.155)			(0.111)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.0240	0.0237	0.0238	0.0228	0.0238	0.0236	0.0235	0.0237	0.0236
No. of Obs.	62,802	91,801	154,603	44,164	157,723	201,887	106,966	91,801	198,767
	B/ Men								
	(1) Hours of day			(2) Days of year			(3) Overall		
	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)	No-School (a)	School (b)	All (c)
Child	-0.004	0.070	0.070	0.052	0.012	0.012	0.005	0.070	0.070
	(0.125)	(0.107)	(0.107)	(0.156)	(0.073)	(0.073)	(0.086)	(0.107)	(0.107)
ChildXNo-School			-0.069			0.040			-0.061
			(0.149)			(0.171)			(0.124)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome mean	0.0244	0.0234	0.0238	0.0222	0.0237	0.0233	0.0234	0.0234	0.0234
No. of Obs.	41,059	56,268	97,327	30,748	100,241	130,989	71,807	56,268	128,075

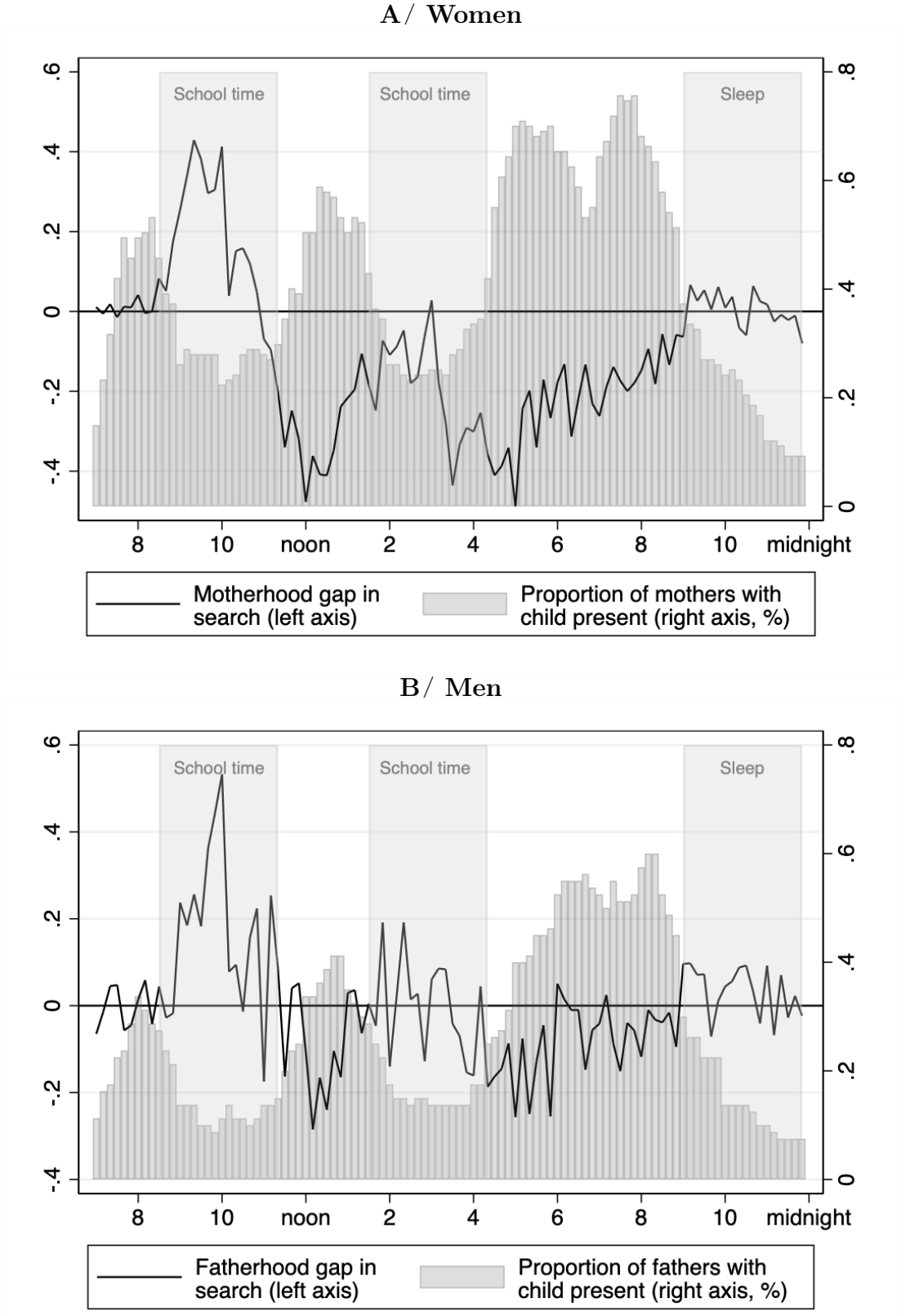
Notes: This table presents parenthood gaps in the probability of success of applications sent at different times. We use the sample of all the applications sent by unemployed workers in our main study sample. We consider as successful an application that is followed by a hire of the applicant at the firm in the following year. We distinguish between applications sent in different periods, like in Table 3: in (1), we compare the hours of the day corresponding to typical school time vs others (during daytime, weekdays, and non-holiday weeks). In (2), we compare weekdays to weekend days (during non-holiday weeks). In (3), we compare holiday weeks to school weeks. We run separate regressions for men and women and control for a wide range of individual characteristics. We estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities.

D Additional empirical analyses

D.1 Motherhood gaps in search timing, using OLS regressions

In Figure 2, we have estimated the parenthood gaps in applications sent in each 10-minute interval using Poisson regression models, similar to the rest of the analysis of gaps in applications (e.g., in Table 2). The coefficients give the differences between parents and non-parents in the rate of application sent during each 10-minute interval, *relative to the rate of application of non-parents in the same 10-minute interval*. As a complement, we also estimate the parenthood gaps in applications sent in all 10-minute intervals using OLS regressions. To ease interpretation, we re-scale them to obtain the differences in applications between parents and non-parents in each 10-minute interval, *relative to the average number of applications non-parents typically send in 10 minutes during weekdays*. This Figure confirms that mothers reallocate their job search activities more than fathers. Moreover, since we use the same baseline rate of applications for all the parenthood gaps in Figure D.1, they are not affected by large fluctuations in the baseline rate of applications throughout the day. It is hence easier to see how the gaps in the applications sent every 10 minutes from this Figure map into the overall gap estimated in Table 3. For instance, after 9pm the baseline application rate is very low for all workers. So the large relative increase in applications after 9pm that we can observe for parents in Figure 2 actually corresponds to a few extra applications in Figure D.1—and contributes very little to the overall difference in application rate between parents and non-parents.

Figure D.1: Parenthood gap in applications at different times of the day, using OLS regressions

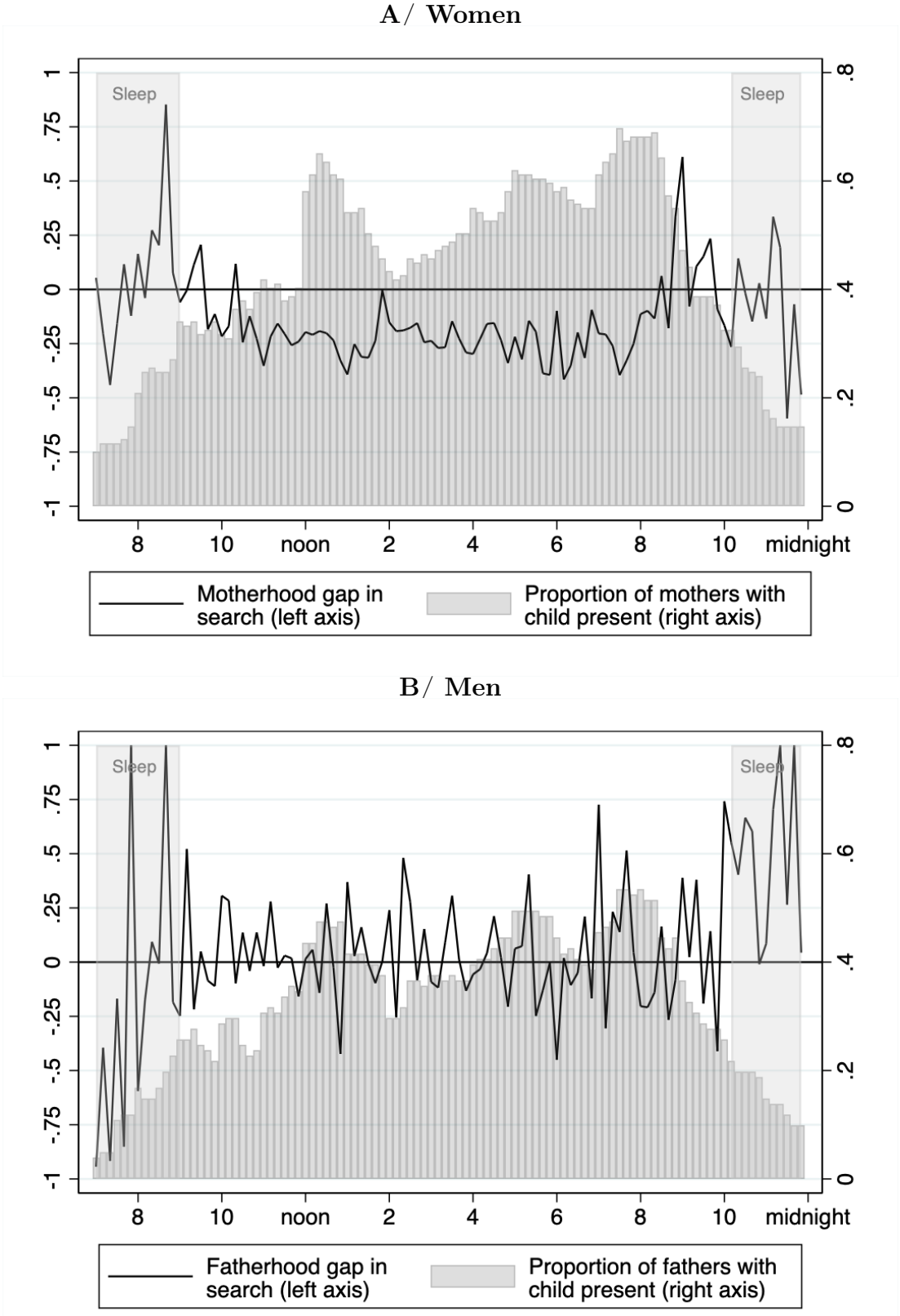


Notes: This figure is similar to Figure 2 except that we use a different method to estimate the parenthood gaps in applications. We first estimate the parenthood gaps in applications sent in all 10-minute intervals in absolute terms using OLS regressions, then we re-scale the obtained coefficients by dividing them by the number of applications sent by non-mothers (respectively non-fathers in Panel B) on average across all the in 10-minutes intervals considered (i.e. between 7am and midnight during weekdays).

D.2 Motherhood gaps in search timing, during weekends and school holidays

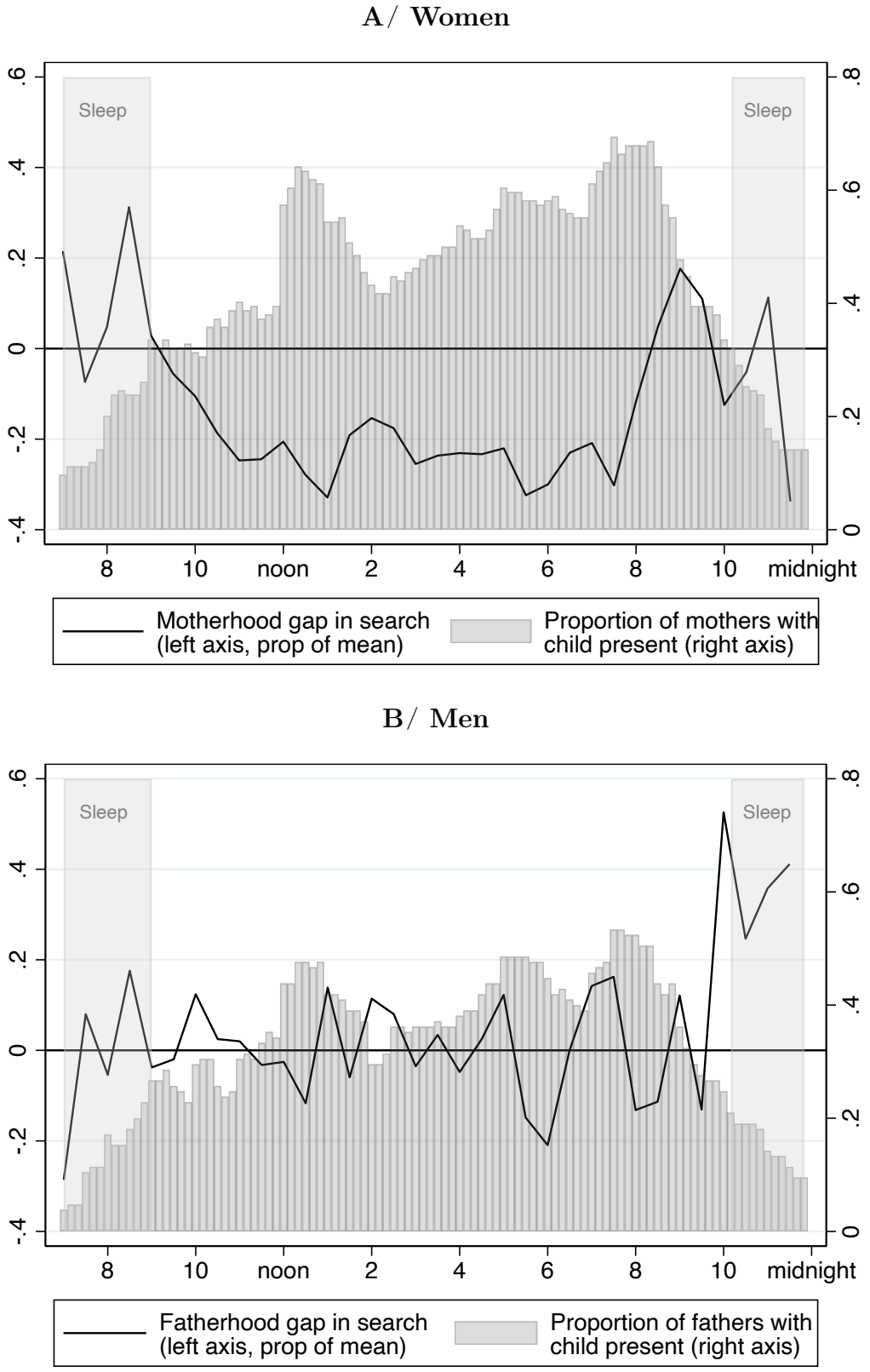
We analyze parenthood gaps in the timing of search activities across hours of the day, during weekends or school holidays rather than during weekdays in Figure D.2. Since all unemployed workers send fewer applications in those days, the estimated parenthood gap in job applications is noisier. In addition to presenting the results using 10-minute intervals like before, we also present them using 30-minute intervals in Figure D.3. We see that there is much less variation in the parenthood gaps through the day during weekends or school holidays. Mothers consistently send around 20% fewer applications than similar women with no children between 9am and 10pm (Panel A). Meanwhile, the proportion of mothers in presence of their children is quite stable and almost always ranges between 40 and 60% in this period. Fathers send broadly the same number of job applications than other men throughout the day, and more after 10pm (Panel B). The proportion of fathers in presence of their children is also quite stable, ranging approximately between 30 and 50% in this period. These Figures hence clearly confirm that the reallocation of search activities observed during weekdays is driven by school schedules. Moreover, they also confirm that mothers reallocate their search activities around children's schedules more than fathers.

Figure D.2: Parenthood gap in applications, during weekends and school holidays



Notes: Just like Figure 2, this Figure presents the estimates for the parenthood gap in the rate of applications sent in 10-minute intervals during weekdays (black line), and the fraction of unemployed parents who report being in presence of at least one child during the same 10-minutes intervals in the French Time Use Survey (gray bars). However, these statistics are obtained during weekends or school holidays (excluding July-August), instead of during weekdays as in Figure 2.

Figure D.3: Parenthood gap in applications, during weekends and school holidays (30-minute intervals)



Notes: This Figure presents the same statistics as in Figure D.2 but obtained for each 30-minute interval instead of each 10-minute interval.

D.3 The effect of the reform on other outcomes

We analyze the effect of the reform on other outcomes. We estimate the effect of the reform on mothers' and fathers' search criteria in Table D.1. In Panel A/, col (1)-(4), we see that the reform had no effect on mothers' selectivity—except that it might have slightly increased their propensity to search for a full-time job by 0.6 percentage points. This is consistent with the finding by Duchini and Effenterre (2023) that the reform increased the likelihood that mothers worked in full-time jobs. We observe virtually no effect on the search selectivity of fathers, and in particular, no effect on their propensity to search for a full-time job. Finally, we examine the effect of the reform on the re-employment rate of parents. However, we note that to the extent that there might be spillover effects on the labor market, our estimates of the effect on parents' re-employment rate might be overestimated. Indeed, parents might get re-employed in jobs that similar non-parents would have otherwise taken, thereby negatively affecting the re-employment of non-parents. In that case, our estimates will capture both the increased job finding rate of parents and the decrease in job finding rate of non-parents caused by the reform. We find that the reform increased mothers' probability to find a job within 1 year by 2.3% (Panel A/, col (5)). This effect is consistent with our finding that mothers increased their rate of applications. We observe that fathers also seem more likely to find a job within one year: we estimate a 1.8% in their job finding rate relative to non-fathers, though this coefficient is imprecisely estimated (Panel B/, col (5)).

Table D.1: Effect of the reform on search selectivity and re-employment

A/ Women:	**Search selectivity**				**Employment**
	Reservation wage, log	Max commute distance, log	Long contract	Part time	Re-employment rate
	(1)	(2)	(3)	(4)	(5)
ChildXReform	0.000	0.003	0.002	-0.006*	0.022**
	(0.002)	(0.005)	(0.002)	(0.003)	(0.009)
Child	0.005***	-0.080***	0.011***	0.055***	-0.104***
	(0.002)	(0.005)	(0.002)	(0.003)	(0.007)
Individual controls	Yes	Yes	Yes	Yes	Yes
Reform	Yes	Yes	Yes	Yes	Yes
Outcome mean	1637.512	29.576	0.932	0.054	0.646
No. of Obs.	195,527	195,527	195,527	195,527	195,527
B/ Men:	**Search selectivity**				**Employment**
	Reservation wage, log	Max commute distance, log	Long contract	Part time	Re-employment rate
	(1)	(2)	(3)	(4)	(5)
ChildXReform	0.003	0.011*	0.004*	0.002	0.018*
	(0.002)	(0.007)	(0.002)	(0.002)	(0.011)
Child	0.008***	-0.003	0.005**	-0.002	-0.004
	(0.002)	(0.006)	(0.002)	(0.002)	(0.010)
Individual controls	Yes	Yes	Yes	Yes	Yes
Reform	Yes	Yes	Yes	Yes	Yes
Outcome mean	1732.977	33.709	0.941	0.020	0.609
No. of Obs.	138,028	138,028	138,028	138,028	138,028

Notes: This table presents the estimates for the effect of the reform of school schedule (adding school time on Wednesday morning) on various outcomes. We present the effect on the selectivity in search reported in a mandatory survey at the start of the spell (col (1)-(4)), and the rate of re-employment within one year (col (5)). In col (1)-(4), we estimate linear regression models; in col (5), we estimate Poisson count models and report the incidence rate ratios minus one, which can be interpreted as semi-elasticities. Robust SE in parentheses.