



# Does signaling childcare support on job applications reduce the motherhood penalty?

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## Abstract

There is substantial evidence that due to perceived childcare obligations, mothers are disadvantaged in labor markets. To what extent can childcare support ameliorate such a disadvantage? To answer this question, we ran a CV experiment in a large Indian city and examined whether indicating access to childcare support in a CV may offset the motherhood penalty associated with labor market entry. We randomly varied motherhood, as well as access to childcare in CVs sent to online applications for service sector jobs in Delhi. Indicating motherhood on a CV led to a 57% or 20 percentage point reduction in callback rates for interviews as compared to non-mothers. A simple indication of access to childcare support offsets the motherhood penalty by 20% or 4 percentage points. We interpret the findings in the Indian context and with respect to potential sources of discrimination.

**Keywords** Motherhood penalty · Childcare · Audit experiment · India

**JEL Codes** J13 · J16 · J71 · C93

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## 1 Introduction

While gender differences in labor market indicators are tapering off in many parts of the world (Goldin, 2014), the presence of women and even more so of mothers in labor markets remains low in many developing countries.<sup>1</sup> One much discussed case is India (Klasen & Pieters, 2015; Das & Zumbyte, 2017; Verick, 2018), where less than 30% of women participate in the labor force notwithstanding improvements in socio-economic and demographic conditions in recent years. The country's overall female labor force participation rate has even dropped from 22 percent in 1987 to 17 percent in 2011 (Klasen & Pieters, 2015), with the labor force participation of women typically falling around first motherhood (see Bedi et al., 2018).<sup>2</sup>

There are several supply and demand side reasons for the decline in labor force participation after becoming a mother. One potential reason why a non-prejudiced employer may be less likely to hire mothers is the belief that due to childcare and other family obligations, mothers are inflexible and are less dedicated to their jobs. This is likely to place mothers, especially in the case of jobs with traditional "9 to 5" work arrangements, at a severe disadvantage. Several studies suggest that mothers experience grave difficulties in balancing job and family demands and require supportive work arrangements (Goldin, 2014; Anderson et al., 2003).<sup>3</sup> Theoretically, such behavior may be related to statistical discrimination against mothers. If statistical discrimination, motivated primarily by the perceived (by employers) inflexibility of mothers and their lack of commitment is a primary factor holding back mothers from participating in the labor market, one way of improving their labor market prospects would be to signal their flexibility to employers. If mothers can signal flexibility, for example, by indicating childcare support at home, then the motherhood penalty should be smaller. Using an experimental approach, where one may credibly control for observable confounding characteristics and abstract from self-selection of applicants into certain jobs, the aim of this article is to identify the potentially mitigating impact of childcare support on the motherhood penalty.

While access to childcare may be expected to mitigate the motherhood penalty, it is possible that if employers are prejudiced against mothers/women (Becker, 1971) or do not believe that access to childcare is strong enough to undo traditional gender norms and patriarchal expectations, then, childcare availability may not have a substantial effect. In a similar vein, Benard and Correll (2010) argue that if mothers show a very strong commitment to paid work, and display traditionally masculine qualities, they may experience 'normative discrimination', that is, they may be "viewed as less warm and more interpersonally hostile (e.g., more selfish, cold, and devious) than other types of workers" (p. 617), which implies that mothers who

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<sup>1</sup> There are wide variations in female labor force participation across the developing world. For example, in North Africa less than 30% of women aged 25 years or older participate in the labor market. In South Asia, the female labor force participation rate ranges from less than 30% in Pakistan to 80% in Nepal. See Verick (2018) for more details.

<sup>2</sup> According to data from the Indian National Sample Survey (NSS), the gap between the labor force participation of mothers and married non-mothers in urban area was 7.5 percentage points in 2011 (Das & Zumbyte, 2017).

<sup>3</sup> Based on NSS 2011 data, in the Indian context, a majority (70%) of married women (aged 25–55) reported that they stay out of the labor market due to domestic obligations.

violate traditional norms and display stronger labor market commitment may continue to experience discrimination as compared to other employees. Their argument is that “evidence of workplace competence and commitment will not eliminate discrimination but merely alter its mechanism” (p. 622), that is, from statistical or status-based discrimination to “normative discrimination”.

In terms of empirical evidence on the motherhood penalty, a growing literature, mostly from sociology but increasingly in economics, finds that mothers experience disadvantages in terms of wages, promotions and job opportunities in the Global North (Anderson et al., 2002; Benard & Correll, 2010; Budig et al., 2012; England et al., 2016; Goldin et al., 2017; Gallen, 2018; Kleven et al., 2019a). For instance, in Germany each child reduces a woman’s wages by 16–18% (Gangl & Ziefle, 2009). In Denmark, having children creates a gender gap in earnings by as much as 20% in the long run (Kleven et al., 2019b).<sup>4</sup> A related experimental literature has explored the motherhood penalty using fictitious CVs sent to actual job advertisements. In a CV experiment, Correll et al. (2007) found that by randomly adding at least one child to otherwise similar CVs, callback rates fell by 50%. Few such experiments have been implemented in the Global South. In closely related work, Bedi et al. (2018) examined the labor market implications of motherhood and the effect of cultural norms (mothers from patrilineal versus matrilineal backgrounds) in India (Delhi, Mumbai, Chennai).<sup>5</sup> Based on callback rates to fictitious job applications in the service sector, they found that the average callback rate was 14% for mothers as opposed to 28% for non-mothers. They also found that the motherhood penalty was restricted to mothers from patrilineal backgrounds while mothers from matrilineal backgrounds (Khasis from Northeast India) did not experience a penalty.

In this paper, we experimentally test for the mitigating impact of childcare support on the motherhood penalty. We employ a CV audit approach with random variation in CV characteristics and evaluate the impact of these characteristics on the likelihood of a callback for an interview.<sup>6</sup> Specifically, we sent three applications to each

<sup>4</sup> In a cross-country analysis Kleven et al. (2019a) find heterogeneity by culture. For example, they find that English speaking countries display a long-run child penalty of 31–44%, while in Germanic countries that penalty reaches 51–61%.

<sup>5</sup> In the Indian context, while there are maternity benefits laws, there are no explicit laws pertaining to hiring of mothers. However, perhaps more relevant, there are a slew of national laws, special initiatives and international treaties to which India is a signatory which make it illegal to discriminate against women in the labor market. Most importantly, the idea of gender equality is enshrined in the Indian Constitution and is mentioned in the Preamble, and in several other sections of the constitution (Fundamental Rights, Fundamental Duties, Directive Principles). In 1993, India ratified the Convention on Elimination of All Forms of Discrimination against Women (CEDAW). For details, see, [http://mospi.nic.in/sites/default/files/reports\\_and\\_publication/cso\\_social\\_stactices\\_division/Constitutional&LegalRights.pdf](http://mospi.nic.in/sites/default/files/reports_and_publication/cso_social_stactices_division/Constitutional&LegalRights.pdf). [Accessed on May 22, 2021].

<sup>6</sup> While audit studies have been conducted in India, none of them have dealt with the effects of motherhood. A systematic search for articles in the *Journal of Economic Literature* over the last twenty years (2001–2021) with the key words: (i) audit study and India (ii) correspondence study and India, and (iii) field experiment, labor markets, and India, yielded three studies (Thorat & Attewell, 2007; Banerjee et al., 2009; Siddique, 2011). These studies deal with caste and religious discrimination and the most recent study was conducted in 2006. Thus, it is unlikely that employers are aware of audit studies and certainly not pertaining to motherhood.

job opening – one non-mother applicant and two mother applicants. In one of the mother CVs, we explicitly reported the availability of strong childcare support at home.<sup>7</sup> Building on previous studies, we searched for entry-level jobs in two relatively new and flourishing sectors in the Indian economy – that is, call centers/business process outsourcing (BPO) and financial sector firms in Delhi.<sup>8</sup> We selected Delhi because it offers the most patriarchal context with the strongest motherhood penalty amongst the three cities in previous studies (Bedi et al., 2018), while at the same time it has a vibrant job-market in the two selected sectors.<sup>9</sup> All our fictitious applicants had a Bachelor's degree and had two years of relevant work experience. In total, we sent 450 CVs to 150 job openings.

This study is related to two strands of the literature. *First*, it is related to the literature on the labor market impact of motherhood (Angelov et al., 2016; Bedi et al., 2018; Kleven et al., 2019a; Kuziemko et al., 2018). By investigating the effect of childcare support on mothers' labor market success we address a potential channel through which the motherhood penalty arises and may be weakened. This study is the first to experimentally quantify the effect of childcare support on callback rates in the Global South.<sup>10</sup> *Second*, our research links to the wider literature on women's participation in labor markets in emerging countries, in particular when it comes to demand side aspects. While there is a sizeable literature which examines the impact of education and fertility on female labor supply (Guo et al., 2018; Heath, 2017; Agüero & Marks, 2011; Bloom et al., 2009; Angrist & Evans, 1998), the influence of demand side factors on women's labor market outcomes have been relatively less investigated.

<sup>7</sup> For instance, the skills section of the CV had statements such as: *Flexible and ready to adapt to corporate needs (strong childcare support at home)* or *Flexible in working hours (strong childcare support at home)*.

<sup>8</sup> The service sector contributes around 61.5% of India's total GDP, and IT/ Fintech are amongst the fastest growing sectors providing over \$155 billion in gross value addition (see <https://www.investindia.gov.in/team-india-blogs/service-sector-india-paradigm-shift>) [Accessed December 22, 2019]. With regard to gender, the BPO sector is amongst the most women-friendly job sectors in India. According to an analysis of 830,929 job ads posted on QuikrJobs.com between 2007 and 2017, Chowdhury et al. (2018) conclude that in the BPO sector employers are least likely to express a preference for males. In terms of actual gender composition, according to Gupta (2015), 69% of employees in the BPO sector are women. In the case of the finance sector, according to ILOSTAT (International Labour Organization, 2020), the share of women in the sector is about 16%.

<sup>9</sup> The other two cities in Bedi et al. (2018) were Mumbai and Chennai where mothers experienced penalties of 12 and 5 percentage points, respectively, compared to a motherhood penalty of 20 percentage points in Delhi. The large motherhood penalty combined with a large and vibrant market in the two sectors led to Delhi as the most opportune choice. For instance, on May 23, 2021, a search for BPO (finance) jobs on naukri.com advertised in the last 30 days, for those with no experience and up to a BA degree, yielded 2878 (549) jobs in Delhi, 1517 (296) jobs in Chennai and 842 (379) jobs in Mumbai.

<sup>10</sup> We were unable to find papers that have used an experimental approach to examine the effects of signaling childcare support in developed countries. There are closely related papers, for instance, Aranda and Glick (2014) have experimentally studied the effect of signaling strong labor market commitment in Spain - devotion to work as opposed to family in the case of mothers.

To preview our results, first, we find a large motherhood penalty, and second, we find that the childcare support signal reduces the motherhood penalty. On average, mothers' callback rates were 20 percentage points lower as compared to non-mothers. This translates to a 57% decrease in the callback rate. The childcare support signal significantly dampens the motherhood penalty by 4 percentage points or by 20%. Taken together, the evidence presented here suggests that childcare support has a modest, albeit a discernible moderating impact on the motherhood penalty.

This paper is organized as follows: Section 2 outlines the research design. Section 3 presents results, and Section 4 discusses the findings, acknowledges limitations as well as alternative interpretations of the findings and concludes the paper.

## 2 Experimental design

This section outlines the experimental design. Our primary aim was to examine the effects of motherhood and childcare support on callback rates. We randomly reported both treatments in fictitious CVs allowing for *within* applicant as well as *within* job postings variation in an Indian city and two industry sectors.<sup>11</sup> We then recorded if each application received a response from employers.<sup>12</sup> Data collection took place between February and April of 2019.

### 2.1 Hypotheses

We test two hypotheses: First, mothers are less likely to receive callbacks as compared to non-mothers (H1). Second, a childcare support signal (via one line in a CV) reduces the mother penalty (H2).

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<sup>11</sup> It might seem unusual to report the number of children or access to childcare support in a CV. However, as compared to CVs in Western countries, CVs in India tend to contain more personal details. The inclusion of details such as age, gender, marital status, number of children, religion, caste will not be considered extraordinary. For instance, see advice provided on writing a resume for the Indian labor market: <https://blog.kickresume.com/2017/08/14/indian-resume-formatguide/> (Accessed on May 18, 2021). Furthermore, an Indian CV writing service, <http://vibranturre.com/best-executive-resume-career-branding-tips.htm>, (Accessed on May 18, 2021) offers the advice, "If the marital status helps, put it in. Actually if your religion, race or caste helps, put that in too." The general advice offered by this service is to include whatever helps within ethical and moral limits. In our specific case it may not help to indicate parental status but the point is that indicating parental status or indicating access to child care and providing other personal details will not be considered out of the ordinary.

<sup>12</sup> Based on data collected from monsterindia.com, India's second largest job portal, the positions to which we sent CVs are quite competitive and given the volume of applications it is unlikely that job advertisers would have noticed anything unusual. On May 16, 2021, we searched for the same types of jobs in both the BPO sector and the finance sector to which we had sent CVs. That is, jobs advertised in Delhi in the BPO and finance sector requiring zero to at most five years of experience and up to a BA degree. Based on 15 positions advertised in the BPO sector, the number of applicants per job advertisement varied between 32 to 398 with a median of 59 and a mean of 105. Based on 15 jobs advertised in the finance sector the number of applicants per job varied between 24 and 246 with a median of 88 and a mean of 101. For details, please see the Online Appendix.

## 2.2 Overview of the experiment

We collected several anonymous CVs of real job applicants from a human resource consultancy firm. Based on these CVs we composed fictitious profiles/CVs. To reduce the possibility that a potential employer may know the schools, colleges or firms where people in the fictitious CVs had studied or worked, all the applicants were from the East Indian city of Kolkata applying to jobs in the North Indian city of Delhi.<sup>13</sup> All applicants had the same number of years of education and received degrees from qualitatively similar colleges and high schools in similar academic streams – Political Science, Sociology and History.<sup>14</sup> All CVs had a residential address in Delhi and each applicant had a distinctive phone number and email contact to record callbacks. All the applicants signaled that they were legally married and reported an age between 26 and 27.<sup>15</sup> Two-thirds (300) of the applications indicated the presence of a young child (mother) while the remainder did not indicate the presence of young children (non-mothers). In all CVs, mothers or non-mothers, applicants had two years of work experience after earning their college degrees and approximately a four-year gap thereafter, before applying for jobs in 2019. To enhance comparability, time out of the labor market was the same for both mothers

<sup>13</sup> The migration pattern indicated in the CVs, that is Bengalis educated in Kolkata, but applying for jobs in Delhi is unlikely to raise suspicions. According to data from the Census of India, 2001, after Hindi, Bengali has the highest number of mother-tongue speakers in the country. Delhi itself, is a large cosmopolitan city which attracts migrants from across the country. There are 37 different mother tongues represented in the city. Setting aside Hindi (mother tongue of 85% of Delhi's population of 16,757,013), the most common mother tongues represented in Delhi are Punjabi (5.2%), Urdu (5.17%), Bengali (1.29%) and Maithili (0.73%). For details, see, [https://censusindia.gov.in/2011Census/C-16\\_25062018\\_NEW.pdf](https://censusindia.gov.in/2011Census/C-16_25062018_NEW.pdf) (Accessed on May 16, 2021). Inter-state migration is common and historically there have been several waves of migration from Bengal to Delhi. The first of these in 1912 when the capital of the country was shifted from Kolkata to Delhi, second, in 1947 due to displacement of Hindus from modern-day Bangladesh to Delhi and more recently due to the relative development of Delhi as a hub for BPO/service sector jobs as compared to Kolkata. According to an industry report, Delhi ranks 3<sup>rd</sup> as a hub for BPO services while Kolkata is ranked 8<sup>th</sup> (<https://www.backofficepro.com/white-paper/top-outsourcing-destinations-in-india.pdf>) (Accessed on May 16, 2021). Thus, due to historical and current patterns, a person educated in Kolkata and applying for a job in Delhi will not be considered unusual.

<sup>14</sup> We chose three comparable colleges on the basis of our own knowledge of the context and on the basis of discussions with an HR consultancy firm located in Kolkata. In terms of metrics – all three colleges are accredited by India's National Accreditation and Assessment Council (NAAC), all three are affiliated to the University of Calcutta, two of them are rated B++ and a third is rated as B+ by the NAAC. For details see, <http://www.naac.gov.in/2-uncategorised/32-accreditation-status> (Accessed on May 23, 2021).

<sup>15</sup> Based on data from the National Family Health Survey, 2015-16, the median age of mothers at first birth in urban India was 22, and for women with 12 or more years of education the median age at first birth was 25.31. Although a little more dated, based on the Indian Human Development Survey (IHDS) data, collected in 2011–12, the average age at first birth in India was 22.22, and for women with a college degree or higher, the average age at first birth was 25.31. In Delhi, the average age at first birth was 22.20, and for women with a college degree or higher, it was 25.40. In our case, the “applicants” are 26–27 years old with their first child born when they were 24–25 years of age. Thus, age at first birth for the “applicant” is as may be expected.

and non-mothers. While this aspect of the CVs is essential to identify differences in callback rates due to motherhood, it does raise some issues.<sup>16</sup>

We looked for and applied to jobs through the most popular Indian job website (*naukri.com*). We chose jobs in two broad sectors which feature dynamic job markets: (i) Business Process Outsourcing (BPO)/ Call Center, and (ii) Banking/Finance jobs. BPO/Call Center jobs demand greater flexibility compared to the finance sector; night shifts are often required in BPO/ Call Center jobs but not in the finance sector. We restricted ourselves to low- to medium skilled service sector jobs. That is, we sent applications to jobs where the educational requirement was a BA degree or less and which did not ask for prior experience. In the BPO sector these were mainly call center jobs pertaining to customer care, customer service for both domestic and international clients, tele-sales, on-line chat support executives. In the case of the finance sector the jobs were for cashiers, tellers, insurance sales, loan collection executives, data entry, bank back office operations. Please see the Online Appendix for additional details.

### 2.3 Childcare support treatment

We signaled the availability of childcare support at home by adding a section on skills and competencies in all CVs. In half (150) of the mother CVs, we mentioned ‘flexible (strong childcare support at home)’ as one of the skills and competencies. ‘Flexibility’ was differently framed in the three CV formats. For instance, in one CV we mentioned ‘willingness to work in different shifts’ to signal such flexibility. In the other two CVs we mentioned ‘flexible and ready to adapt to corporate needs’ and ‘flexible in working hours’. We allowed within profile/CV variation of motherhood/childcare status. To do so, we first composed three unique profiles/CVs. Subsequently, each of these three CVs had three versions: non-mother, mother *and* mother with childcare support. By doing so, we had nine CVs in total.<sup>17</sup> These nine CVs yielded six (profile-version) combinations for the three applicants. We randomly assigned one of these six combinations to each job opening. Thus, each job opening

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<sup>16</sup> In all CVs, mothers or non-mothers, there is, approximately, a four-year gap between the last job held by the applicant and the current application. While this feature enhances the ability to identify motherhood effects unconfounded by experience (since all CVs display the same experience and the same career-break duration), it is possible that as compared to the total pool of applicants, applicants with such a career break, may be treated differently by employers and may be less likely to receive call-backs as compared to the total pool of applicants. Furthermore, in our setting, we label the differences in callback rates between mothers and non-mothers as the motherhood penalty. However, it may be the case that employers evaluate CVs of mothers who have had a four-year career gap differently from the CVs of non-mothers who have had a four-year career gap. For instance, in the case of non-mothers the gap may be interpreted in terms of difficulties of finding another job and/or employers may consider that non-mothers with a four-year gap have a weaker attachment to the labor force as compared to mothers who have had a four-year gap. It is not possible to discern the effect of a shorter (post-birth) labor market break as compared to a longer (post-birth) labor market break in our setting and an additional experiment is needed. Indeed, there is an established literature documenting adverse impacts of career breaks (Staff & Mortimer, 2012; Aisenbrey et al., 2009; Arun et al., 2004). In both the situations discussed above, the magnitude of the motherhood penalty and the interpretation of the differences in callback rate does get confounded, but the internal validity of our design is not threatened.

<sup>17</sup> In the Online Appendix, we provide three sample CVs with treatment variation.



**Table 1** Sample size

	Non-mother	Mother	Mother + Childcare
Total job applications	150	150	150
<i>By sector</i>			
BPO/Call center	75	75	75
Banking/Finance	75	75	75

received three applications from three different applicants with different profile-version traits.

In sum, every job opening received three applications from three different applicants with different profile-version traits. Given this set-up, that is, random allocation of profile-version combination, it is unlikely that the motherhood status/childcare signal of an applicant is contaminated by the traits of the specific profiles/CVs (e.g., name, address, academic field). Nevertheless, in our empirical work we do control for profile fixed effects.

Similarly, there may be a concern that variation in the motherhood penalty and the childcare signaling effect across firms may be a function of firm size, equal opportunity policies, firm ownership status (public versus private) and other dimensions. While these are possibilities, given the research design, that is, random assignment of three profile-version CVs to each job opening, we are able to control for job opening/firm fixed effects. In other words, our estimates are based on within-firm variation or are a result of how CVs with different motherhood/child care status are evaluated within a firm and traits which vary across job openings/firms are unlikely to have a bearing on the estimates. We provide estimates with controls for both profile and job opening fixed effects.

In total, we sent 450 applications to 150 job openings.<sup>18</sup> These 450 applications were equally divided between two sectors. Table 1 reports sample sizes by treatments and sectors.

### 3 Results

We begin by presenting our results graphically, and thereafter provide impacts of reporting motherhood and signaling childcare based on estimating linear probability regression models specified as,

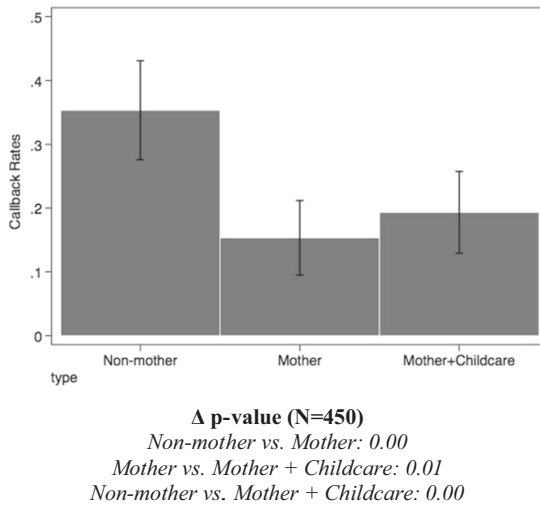
$$y_{ipj} = \alpha + \beta_1 Non\_mother_{ipj} + \beta_2 Childcare_{ipj} + \delta_p + \theta_j + \epsilon_{ipj} \quad (1)$$

where,  $y_{ipj}$  is a binary callback variable for applicant  $i$ , profile  $p$ , sent to job opening  $j$  and  $Non\_mother_{ipj}$  and  $Childcare_{ipj}$  are binary variables indicating whether an applicant is a mother or not and whether an applicant has access to child care or not, respectively. Some of the specifications include profile ( $\delta_p$ ) and job opening ( $\theta_j$ ) fixed effects for robustness checks, while  $\epsilon_{ipj}$  is an error term.

Overall, 23.3% of applications received a callback. Figure 1 breaks down callbacks by treatments. We document a sizeable motherhood penalty. The non-mother

<sup>18</sup> We targeted about 150 jobs over the fieldwork period. Given empirical patterns in a previous paper (Bedi et al., 2018), we are powered for a small to medium effect size.





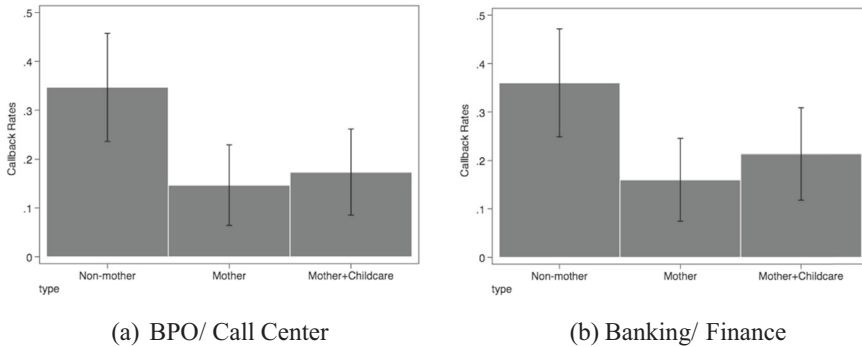
**Fig. 1** Callback rates. Note: *P* values stem from linear regression-based *t*-tests adjusted for clustering at the job opening level

callback rate was 35% as compared to a mother callback rate of 15%. This amounts to a decrease of more than a half or 20 percentage points ( $p$  value = 0.00). These figures are comparable to those in Bedi et al. (2018).<sup>19</sup> Consistent with the second hypothesis, mothers signaling childcare support experience a lower penalty – a callback rate of 19%. The treatment reduces the baseline motherhood penalty by 20% or 4 percentage points ( $p$  value = 0.01).

With regard to callback rates by sector (see Fig. 2), non-mother applicants recorded callback rates of 35 and 36% in BPO/Call Center and Banking/Finance (compare Panel A and B), respectively. The motherhood penalty was the same for both sectors – with mothers experiencing a 20 percentage point reduction in both sectors or a callback rate of 15 and 16%, respectively. While there are no differences in baseline callback rates or in the motherhood penalty across sectors, it seems that the childcare support signal is qualitatively more effective in the Banking/Finance sector. Childcare support eases the motherhood penalty by 5 percentage points in the Banking/Finance sector (callback rate is 21%), compared to a reduction of 2 percentage points in the BPO/Call Center sector (callback rate is 17%).

Next, we provide results from linear probability models (1) where the dependent variable indicates whether an individual received a callback (=1) or not (=0). Table 2 summarizes our estimates. Consistent with Fig. 1, we document a sharp motherhood penalty in Column 1. We find a statistically significant motherhood penalty of 20 percentage points. In addition, motherhood with childcare support yields a callback rate that is 4 percentage points ( $p$  value = 0.01) higher than that of mothers without such support, and accordingly 16 percentage points less than that of

<sup>19</sup> Bedi et al. (2018) find a 50% difference in callback rate or a 28% callback rate for mothers and 14% callback rate for non-mothers. Specifically, for Delhi, they find a callback rate of 34% for mothers and a callback rate of 14% for non-mothers or a reduction of 59%. In this paper we find a callback rate of 35% for mothers and a callback rate of 15% or non-mothers or a reduction of 57%.



**BPO/ Call Center**  
 **$\Delta$  p-value (N=225)**  
 Non-mother vs. Mother: 0.00  
 Mother vs. Mother + Childcare: 0.16  
 Non-mother vs. Mother + Childcare: 0.00

**Banking/ Finance**  
 **$\Delta$  p-value (N=225)**  
 Non-mother vs. Mother: 0.00  
 Mother vs. Mother + Childcare: 0.05  
 Non-mother vs. Mother + Childcare: 0.00

**Fig. 2** Callback rates by sector. Note:  $P$  values stem from linear regression-based t-tests adjusted for clustering at the job opening level

non-mothers. This implies that the childcare signal reduces the motherhood penalty by about a fifth. Considering the very low-cost signal, this may be regarded as a substantial effect, although moderate in size compared to the overall motherhood penalty. In Column 2, we add an indicator for the sector. Our estimates are robust to this inclusion. This is perhaps not surprising because of the random assignment of treatment arms. Our findings are equally robust to the inclusion of profile and job opening fixed effects, columns 3 and 4, respectively. To elaborate, we have three different profiles/CVs and estimates in Column 3 control for profile fixed effects.<sup>20</sup> Furthermore, each job opening received three applications. This allows us to control for job opening fixed effects. Finally, estimates in column 5 control for both profile and job opening fixed effects. The estimates are robust to the inclusion of the various fixed effects. This implies that both profile specific traits and job opening specific traits are not correlated with motherhood/childcare status and that our results are not

<sup>20</sup> Given the random allocation of profile-version CV combinations, it is not surprising that the estimates are robust to the inclusion of profile fixed effects. As shown in Table 2, compare columns 2 and 3, the inclusion of profile fixed effects does not lead to changes in the coefficients of interest. Although not reported here, there is evidence that profile 2 experiences a higher call-back rate as compared to profile 1 and 3. However, this does not contaminate our estimates. Given the randomized allocation of profile-version CV combinations to the various job openings there is no need to expect a correlation between an applicant's motherhood/access to childcare status and her other traits (name, address, academic field).

**Table 2** Linear probability model

Dep. var. Callback	(1)	(2)	(3)	(4)	(5)
<i>Mother is excl.</i>					
Non-mother	0.20*** (0.03)	0.20*** (0.03)	0.20*** (0.03)	0.20*** (0.04)	0.20*** (0.04)
Mother + Childcare	0.04** (0.02)	0.04** (0.02)	0.04*** (0.02)	0.04** (0.02)	0.04** (0.02)
<i>Sector (Finance is excl.)</i>					
BPO/Call center		-0.02 (0.06)	-0.02 (0.06)	-	-
Constant	0.15*** (0.03)	0.16*** (0.04)	0.13*** (0.04)	0.15*** (0.02)	0.12*** (0.03)
Profile fixed effects	No	No	Yes	No	Yes
Job opening fixed effects	No	No	No	Yes	Yes
<i>N</i>	450	450	450	450	450

Note: Every column reports a separate linear regression. Standard errors are reported in parentheses and are clustered at the job opening level

driven by variations in the profiles/CVs sent to different job openings or job opening specific traits but by variations within CVs sent to the same job opening.<sup>21</sup>

In Table 3, we split the sample by sectors. Column 1 shows a motherhood penalty of 20 percentage points in the BPO/Call Center sector. The motherhood penalty for mothers with childcare support is 3 percentage points lower than for those without childcare support, although the effect is not statistically significant. We find a similar motherhood penalty in the finance sector. In this sector, childcare support reduces the motherhood penalty by 5 percentage-points, and the effect is statistically significant. Although we provide sector specific-estimates, differences in the motherhood penalty and in the effect of access to child-care across sectors is statistically insignificant (see bottom panel of Table 3).

## 4 Discussion and conclusion

We investigated how employers value childcare support for job applicants who are mothers as compared to mothers without explicit mention of childcare support and compared to non-mothers who are otherwise similar. Using a CV audit study we examined the impact of reporting childcare support at home on the probability of receiving a phone call in response to a job application in an Indian city and two industry sectors. Our study has two main findings. First, similar to previous studies,

<sup>21</sup> While our estimates are robust to the inclusion of profile and job opening fixed effects, it is possible that the motherhood penalty and the childcare signaling effect varies across firms and may be a function of firm size, equal opportunity policies, firms ownership status (public versus private) and other dimensions. In future work it would be possible to examine variations in motherhood penalties across firm types. At the moment we are unable to examine these dimensions explicitly. However, this does not detract from the current attempt to provide robust estimates of the effect of the motherhood penalty and the childcare signal after controlling for job opening/firm fixed effects. In other words, our estimates are based on within-firm variation or are a result of how CVs with different motherhood/childcare status are evaluated within a firm and traits which vary across firms do not have a bearing on the estimates.

**Table 3** Heterogeneity by sector

Dep. var. Callback	(1)	(2)
<i>Mother is excl.</i>		
Non-mother	0.20*** (0.05)	0.20*** (0.05)
Mother + Childcare	0.03 (0.02)	0.05** (0.03)
Constant	0.15*** (0.04)	0.16*** (0.04)
Sector	BPO/Call center	Banking/Finance
N	225	225
<i>p</i> value differences in treatment effects between sectors		
Non-mother	1.00	
Mother + Childcare	0.41	
Constant	0.82	

Note: Every column reports a separate linear regression. Standard errors are reported in parentheses and are clustered at the job opening level

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

we document a large motherhood penalty, and second, while childcare support reduces the motherhood penalty, it does so only partially. Whilst the evidence clearly indicates that the lack of childcare support is one of the channels through which the motherhood penalty manifests itself, it has a modest effect.

Although, the aim of the paper is not to test theories of labor market discrimination per se, we comment on the link between our results and potential sources of discrimination. First, consistent with Benard and Correll's (2010) conception of 'normative discrimination,' we find that displaying access to childcare as a signal of a mother's labor market attachment does not eliminate the motherhood penalty, although there is a reduction. Second, while access to reliable childcare may be expected to reduce the motherhood penalty, it remains an imperfect substitute. It seems to be the case that employers are only partially convinced about the flexibility and commitment rendered by access to child care and the presence of both, statistical discrimination (Phelps, 1972) emanating from deep-rooted gender norms - other than childcare responsibilities, and taste-based discrimination (Becker, 1971) against mothers, may not be ruled out. This paper probed the effect of access to childcare in mitigating the motherhood penalty. It is possible that a stronger signal, which focuses not only on access to child care but which shows that a mother is willing to sacrifice family for work will be more successful at crowding out statistical discrimination (see Aranda & Glick, 2014). For instance, in their paper on the Spanish labor market, where business students were asked to pose as human resource managers and provide job recommendations, Aranda and Glick (2014) found that self-reported personal priorities statements which signaled a mother's strong commitment and devotion to work as opposed to family completely crowded out the motherhood penalty.

While our study is able to show the mitigating effects of access to childcare at the point of labor market entry, it provides insights for just one (large) city and two (albeit important) sectors. Furthermore, it was not possible to indicate the type of

childcare support in a CV or to have a discussion on the childcare provider at hand which would have been possible in an interview setting. It is possible that employers hiring decisions are sensitive to the type of child support on hand – that is, whether it is provided by a professional childcare worker/crèche with fixed timings as opposed to care provided by a grandparent or another family member. To investigate such differences, one possibility maybe to employ lab-based CV audit studies and inform subjects about the nature of childcare providers.

Finally, we interpret the reduction in the motherhood penalty for those mothers who signal access to childcare support as the effect of childcare support. This is clearly a direct interpretation of the flexibility which may be provided by access to childcare. However, there may be alternative interpretations. For instance, it could be that employers believe that those who signal childcare support are aware of potential discrimination against mothers and use the signal as a way to show their motivation for the job or their awareness and understanding of the needs of the job and the concerns of potential employers.<sup>22</sup> In other words, employers might value the signal itself and not necessarily the availability of childcare support, per se. Isolating the exact mechanism requires us to go beyond callback rates and calls for an investigation of employers' perceptions of the signal.

Despite its shortcomings, this paper shows that a low-cost signal – one line in a CV - is able to play a significant but perhaps modest role in influencing the decisions of employers in favor of mothers.

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### **Compliance with ethical standards**

**Conflict of interest** The authors declare no competing interests.

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