Family-Friendly Workplace Policies*

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Abstract

This paper examines firms' incentives to provide workplace amenities, focusing on employer-provided childcare, and the implications for gender inequality. Using rich matched employer–employee data linked to a comprehensive firm survey in Germany, we document substantial and persistent effects of employer-provided childcare on mothers' labor market trajectories. Firms that offer childcare experience higher retention rates and notably shorter career interruptions among first-time mothers, especially those with high pre-birth wages, resulting in meaningful reductions in child penalties of 4.7 percentage points for high-wage mothers. The adoption of firm-provided childcare is also associated with stronger employment growth — particularly among mothers and female talent in high-wage occupations — without systematic adverse wage effects for women or mothers. Our findings align with models of imperfect competition, indicating that firms with greater monopsony power have stronger incentives to provide valuable workplace amenities. While firm-provided childcare plays a critical role in reducing gender gaps within firms, our findings also show that access

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to these benefits is uneven, widening disparities among women and mothers across firms.

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1 Introduction

Despite decades of progress and rising female educational attainment, gender convergence has stalled in many high-income countries (Kuziemko et al., 2020; Kleven et al., 2025). A central driver of persistent gender inequality is the arrival of children, which generates large and enduring child penalties in women's employment and earnings (Angelov et al., 2016; Kleven et al., 2019b; Adda et al., 2017).

Almost all OECD countries have implemented policies — most notably parental leave and subsidized child care — aimed at mitigating the negative impacts of childbearing on women's careers. Yet, a growing body of evidence suggests that these policies have had only limited success in improving mothers' long-run labor force attachment and earnings (see Olivetti and Petrongolo, 2017; Albanesi et al., 2023). As Goldin (2014) argues, further progress towards gender equality may require changes in workplace organization and employment practices within firms. Yet, we know surprisingly little about what drives firms to adopt such practices or how effective they are.

In this paper, we examine firms' incentives to adopt family-friendly workplace practices, focusing on the provision of childcare — a critical workplace amenity that directly alleviates the constraints faced by many working parents. We study how firm-provided childcare affects mothers' retention and career trajectories within firms, and how its adoption shapes firms' employment growth, workforce composition, and wages. A central finding is that firms can have sufficient incentives to voluntarily provide childcare even in the absence of government mandates — effectively acting as private providers of family policy — with important consequences for mothers' careers and gender disparities within and across firms.

Although much of the existing literature emphasizes the career costs to mothers of having children, it has largely overlooked that childbirth can also impose substantial costs on firms, particularly in frictional labor markets. Childbirth can pose significant challenges for firms when qualified employees do not return to their pre-birth employer or only do so after prolonged interruptions.[1] More broadly, workers are often not easily replaceable in frictional labor markets (Jäger et al., 2025; Kline et al., 2019; Becker, 1964), resulting in high replacement and vacancy costs (Bilal et al., 2022; Mortensen and Pissarides, 1999). These costs are likely particularly pronounced for firms facing labor shortages or operating in environments with high childcare costs or limited public childcare options. Consistent with this view, nearly two-thirds of German firms report that inadequate local childcare supply significantly constrains their business operations (Deutscher Industrie- und Handelskammertag, 2014).

[1] A small literature has examined the effects of childbirth and parental leave policies on firms, with mixed evidence across settings (see, for example, Gallen, 2019; Ginja et al., 2023; Huebener et al., 2025; Brenøe et al., 2024; Corekcioglu et al., 2025).

Given the substantial costs associated with childbirth, establishing family-friendly workplaces may help firms retain mothers after childbirth. Beyond retention, a growing literature shows that workers place substantial value on non-wage job amenities, including family-friendly workplace practices (see, e.g., Mas and Pallais, 2017; Wiswall and Zafar, 2018; Le Barbanchon et al., 2020). Providing such amenities can therefore serve as a strategic tool for firms to attract talent without necessarily increasing wages. However, empirical evidence on their effectiveness in shaping employment and retention outcomes remains limited.

We provide new evidence on these questions by drawing on a comprehensive survey dataset of more than 10,000 German firms spanning 14 years, which provides repeated observations of firms' childcare provision. By linking this survey to workers' social security records, we can observe the complete employment histories of the universe of workers ever employed by these firms.

Complementary evidence from additional data sources and targeted interviews indicates that childcare provision imposes substantial costs on firms, ranging from 400 to 1,500 EUR per month, depending on the type of childcare offered. Despite these costs, our data show that firm-provided childcare is prevalent and has expanded substantially over time. In 2002, approximately 8 percent of employees worked in a firm that offered childcare, compared to 25 percent in 2016 (see Figure 1). When comparing firms operating within the same industry and local labor market, we observe that firms providing childcare are larger, more productive, pay higher salaries, and have a more stable workforce. Additionally, workers in these firms — including mothers — are positively selected in terms of their education and earnings potential, suggesting that access to firm-provided childcare is uneven across workers. We also find that firms are more likely to introduce childcare when they face staff shortages, particularly for skilled workers. Conversely, firms are less likely to introduce childcare after expansions in local public childcare, suggesting a crowd-out effect in which firm-provided solutions substitute for public investments.

Firm-provided childcare substantially raises mothers' probability of returning to their pre-birth employer by around five percentage points, or eleven percent relative to the mean three years after childbirth. Retention effects arise primarily during the first three years after birth when alternative public provision is scarce, and are particularly pronounced and longer-lasting for high-wage mothers. Moreover, high-wage mothers employed by firms that provide childcare at birth exhibit higher overall postnatal employment probabilities, resulting in a large reduction in their "child penalty" of approximately 4.7 percentage points over the first years after birth. These effects persist when comparing mothers in childcare-providing firms to mothers employed at firms that will introduce childcare in the future ("will-be providers"), alleviating concerns that the gaps we uncover are driven by systematic differences between providers and non-providers rather than by childcare provision.

Firm-provided childcare also shapes firms' ability to attract talent. We find that firms that introduce childcare experience faster employment growth than otherwise similar firms operating in the same industry and local labor market that introduce childcare only later. This employment growth is disproportionately driven by women — particularly those of childbearing age and mothers — and by workers in high-wage occupations. As a result, firms' workforce composition shifts towards greater representation of mothers and women in high-wage roles following the introduction of childcare.

Although childcare provision improves mothers' retention rates and increases female employment within the firm, a natural concern is that firms may offset the associated costs by lowering wages for women and mothers, widening gender wage gaps within the firm. However, our evidence suggests otherwise: wage growth for incumbent workers — regardless of gender and parental status — is at least as strong in firms that introduce childcare as in comparable firms that introduce it only later. For new hires, wage growth at job entry is somewhat lower in firms that introduce childcare, but these differences are modest and do not disproportionately affect women. Consequently, the increase in women's and mothers' employment following the introduction of childcare does not come at the expense of wider gender wage gaps within firms.

Firm-provided childcare is also associated with higher fertility among incumbent female workers. Women employed at firms that introduce childcare are more likely to take maternity leave in subsequent years compared to women at firms that introduce childcare only later, with the increase in fertility driven entirely by a higher likelihood of taking maternity leave at the incumbent firm rather than at other employers. While this points to potential costs of childcare provision for firms — since childbirth is associated with elevated separation risks — it also highlights that the workplace environment shapes women's fertility choices, consistent with findings by Lee and Myong (2026).

We develop a theoretical framework based on models of imperfect competition in the labor market (Kline, 2025) to analyze firms' incentives to provide family-friendly amenities, focusing on childcare as an amenity of interest. In this framework, the labor supply elasticity to the firm and the firm's degree of monopsony power over particular worker groups play a key role. First, while firms and workers share the costs of childcare provision, firms bear a larger share when they have greater monopsony power over workers. This mechanism, combined with the potential productivity benefits of the amenity, may help explain why we do not detect large negative wage effects of childcare provision in the data. Second, a greater degree of monopsony power may increase firms' incentives to introduce childcare, as amenity provision becomes a more cost-effective way to attract and retain workers than increasing wages.

Finally, we introduce a model with two worker types — parents and non-parents — where parents exhibit lower labor-supply elasticities. In this framework, firms are required to pay both groups the same wage if they are equally productive. This setup creates an

additional incentive for firms to offer childcare: by providing childcare, firms disproportionately attract parents, thereby increasing their profits through greater monopsony power over this group. This model also provides an additional explanation for the limited wage effects of childcare provision: costs are shared across the entire workforce and the firm, rather than borne solely by childcare users and the firm.

Guided by the central role of the labor supply elasticity to the firm in the model, we directly estimate job separation elasticities for different groups of workers and firms. We find that women of childbearing age and mothers — two groups likely to value the amenity highly — exhibit markedly low labor supply elasticities to the firm. Labor supply elasticities are also particularly low for workers in high-wage occupations, a group that the firm disproportionately attracts when introducing childcare. While workers' job separation responses to wages tend to be weaker in firms offering childcare, there is little evidence that firms' monopsony power increases following the introduction of childcare.

Our paper connects three strands of the literature that have largely developed independently. We first contribute to a growing literature on workplace amenities. A large strand of this literature infers the value of amenities indirectly from worker mobility due to the lack of direct, longitudinal information on workplace practices at the firm level (e.g., Sorkin, 2018; Hotz et al., 2018; Lamadon et al., 2022). By contrast, our data allow us to directly observe a specific salient workplace amenity — firm-provided childcare — at scale across firms and repeatedly over time.

More recent work directly measures workplace amenities and documents substantial between-firm variation in employer-provided benefits in the US (Ouimet and Tate, 2023), as well as a positive correlation between amenities and wages (e.g. Sockin, 2022). However, little is known about the determinants of firms' decisions to provide such amenities, which is a central focus of our paper.

Exceptions include Goldin et al. (2020), Liu et al. (2022), and Adams et al. (2023).[2] Goldin et al. (2020) document systematic patterns in the adoption of paid parental leave across U.S. firms and propose a model with competitive labor markets in which amenities are provided when workers value them and have accumulated firm-specific human capital. Liu et al. (2022) document that firms offer more generous maternity leave benefits in labor markets where female talent is scarce. Adams et al. (2023) show that greater labor market concentration, which lowers workers' outside options and increases firms' monopsony power, increases the probability that firms implement job attributes that are productive for the firm but disliked by workers ("risky flexibility" in their context).

[2]Recent work by Scott (2025) focuses on firms' decisions to provide flexible work arrangements and emphasizes production technologies as important determinants of firms' scheduling decisions. In the model of Dube et al. (2022), firms also choose the design of jobs, including the wage-amenity mix. In their framework, the effects of market power and wage floors on amenity provision depend on workers' preferences and on the degree of substitutability between wages and the non-wage amenity.

Our work provides a richer understanding of the costs and benefits firms incur when offering a workplace amenity valued by workers — childcare — by leveraging survey panel data that allows us to observe firm and worker outcomes before and after its introduction. Our theoretical framework emphasizes a mechanism that is distinct from that studied by Adams et al. (2023). While they highlight that firms are more likely to adopt job attributes workers dislike when workers have limited outside options and firms' monopsony power is high, we argue that increased monopsony power can also encourage firms to introduce amenities that workers value. This is because amenities can be a more cost-effective way to attract and retain workers than wage increases when labor supply elasticities to the firm are low.

Second, we contribute to the literature on the effects of public childcare provision on female labor force participation and fertility (see Olivetti and Petrongolo (2017); Albanesi et al. (2023) for overviews). The existing evidence is mixed; some studies find small or no effects of public childcare on female labor supply (e.g. Havnes and Mogstad, 2011; Kleven et al., 2024), while research for Germany reports positive impacts on maternal employment (Bauernschuster and Schlotter, 2015; Duletzki and Lim, 2026) as well as increases in fertility (Bauernschuster et al., 2016). Our findings indicate that public and firm-provided childcare are substitutes: firms are less likely to introduce childcare in areas where public childcare expands. Additionally, we show that firms' childcare provision not only strengthens mothers' attachment to their pre-birth employers but also raises overall employment among high-wage mothers, reducing their child penalties. Firm-provided childcare also increases fertility. Taken together, these findings suggest that firms' provision of childcare has implications that extend beyond individual firms, shaping maternal employment outcomes and fertility more broadly.

Third, our paper contributes to the literature on mandated benefits, which has shown that government-imposed benefits — such as parental leave mandates — can reduce the hiring and wages of affected groups (Summers, 1989; Gruber, 1994; Ruhm, 1998; Fang et al., 2025). In contrast, our findings indicate that firms' voluntary adoption of a family-friendly workplace amenity — childcare — can increase the employment of women and mothers without adversely affecting their wages. These findings for voluntarily provided amenities are consistent with evidence on female-friendly amenities mandated through collective bargaining, as documented by Corradini et al. (2025), who find little evidence that such amenities reduce female wages or employment.

More generally, our results highlight that firms can have sufficient incentives to voluntarily provide family-friendly workplace amenities even in the absence of government or trade union mandates, especially in labor markets characterized by greater monopsony power — though competitive pressures resulting from workers' improved outside options also play a role. Yet, our findings also point to unequal access to such amenities, with high-skilled and high-wage mothers disproportionately benefiting from firm-provided

childcare. Consequently, while firm-provided childcare enhances women's and mothers' positions within firms without increasing gender wage gaps, it may also contribute to widening disparities among women and mothers employed at different firms.

The article is structured as follows. In Section 2, we provide background information on the German institutional environment. Sections 3 and 4 describe our data and present descriptive evidence of firm-provided childcare. In Section 5, we examine the potential costs and benefits for firms of introducing childcare, including the retention of mothers, the attraction of talent, and the effects on wages and fertility. Section 6 introduces a stylized model with a monopsonistic labor market that rationalizes our findings, and presents empirical evidence on firms' monopsony power for different demographic groups.

2 Institutional Background

2.1 Parental Leave Legislation and Maternal Labor Force Participation

In Germany, government-provided paid leave has a long-standing tradition and has been expanded multiple times since its initial introduction in the 1950s. Since 1992, mothers have been entitled to three years of job protection after childbirth, in addition to means-tested paid parental leave benefits for a maximum duration of two years.[3] A parental leave reform in 2007 entitled mothers to up to 12 months of much more generous parental leave benefits tied to their pre-birth wages while leaving the job protection period unchanged (see for instance, Raute (2019) for details). The long period of job protection reflects Germany's more traditional gender norms. Compared to other Western European countries, maternal participation in the labor force, particularly when children are very young, has been persistently low (see Kleven et al. (2019a) for evidence of Germany's relatively large child penalties). In line with many continental European countries (Blau and Kahn, 2013; Olivetti and Petrongolo, 2017), employees have had a legal right to part-time work since 2001. Part-time work is prevalent among women, in particular mothers. In 2010, around 34 percent of mothers with a child under the age of three were working (Statistisches Bundesamt, 2023b), of whom nearly 70 percent did so part-time (Statistisches Bundesamt, 2023a).

2.2 Public Childcare

Public childcare in Germany is heavily subsidized: parental fees cover only around 10 percent of total childcare costs on average, with the remainder shared between municipalities and state governments. Provision is largely organized through municipalities and

[3]Mothers had the choice to receive maternity benefits of 300 euros paid over 24 months or 450 euros paid over 12 months. In 2006, approximately 15 percent of eligible mothers—mainly from East Germany—chose the shorter, 12-month benefit period. While fathers have been eligible for parental leave since 1986, take-up remained low, with only 3.5 percent of fathers taking parental leave in 2006.

non-profit providers, with private for-profit centers playing only a limited role, reflecting the highly regulated and predominantly publicly financed nature of the childcare sector.

During our study period, public childcare attendance of children aged three to six was high — around 92 percent in 2010 — with approximately one-third attending full-time (defined as more than 7 hours a day). In contrast, provision for children under the age of three remained substantially more limited. Although attendance increased markedly throughout our study period — from 13.6 percent in 2006 to 32.3 percent in 2014 (BMFSFJ, 2023) — supply continued to fall short of parental demand, particularly in West Germany. In 2022, 47 percent of parents in West Germany expressed a demand for a slot; however, only 31.8 percent of under-3-year-olds attended childcare (BMFSFJ, 2023). While childcare provision and maternal labor supply has traditionally been higher in East Germany (Boelmann et al., 2025), capacity constraints persist there as well. Moreover, limited operating hours further restrict effective access, particularly in West Germany, where only 58 percent of childcare providers stay open after 4 p.m., and just 7 percent remain open after 5 p.m. (BMFSFJ, 2023).

2.3 Firm-Provided Childcare

According to a 2014 survey by the German Chamber of Commerce (Deutscher Industrie- und Handelskammertag, 2014), nearly 65 percent of firms reported operational constraints due to insufficient local childcare supply, with 35 percent indicating significant restrictions. Specifically, a large majority of firms emphasized a lack of flexibility when additional work is needed (71 percent) and reductions in working time due to short childcare hours (68 percent). More than half of the firms also highlighted problems such as difficulties in appointing mothers to leadership positions and skill losses due to long parental leave periods. An overwhelming majority of surveyed firms expressed a desire for public policy to improve afternoon childcare hours (90 percent) and to expand childcare availability for children under age three (80 percent).

In response to limited public childcare availability and rigid opening hours, firms have increasingly recognized that workers may value a family-friendly work environment and have begun implementing such policies, including firm-provided childcare. In a recent survey by the German Economic Institute (Hammermann and Stettes, 2023), 86 percent of firms state that family-friendly measures are important to them, in particular in times of skill shortages, and mention "retaining qualified workers", "sending a signal to employees that employee needs are important", "ensuring that employees with care responsibilities can keep up or increase their working hours" and "attracting qualified workers to the firm" as primary motivating factors. In Appendix C, we provide examples of firms that offer childcare and their stated motives for doing so, based on searches of company websites and industry bodies, and on targeted interviews we conducted with selected firms and with non-profit or for-profit firms that provide childcare to firms.

Firms have varying options for offering childcare, depending on their size and needs. There are four predominant forms of on-site or firm-supported ("hard") childcare provision. Smaller firms may reserve slots for a fixed fee in an existing childcare center for children aged 0-3 or 0-6 (*Belegplatz*, Option 1). These arrangements may also allow firms to influence operating hours to better match workplace schedules (see Deutscher Industrie- und Handelskammertag (2014)). A second popular option (Option 2), commonly used by small and medium-sized firms, is to set up an internal family day care center (*Kindertagespflege*), where 2-3 childminders care for 9-15 children under the age of 3 (maximum occupancy varies by state). Large firms with greater childcare needs may establish their own childcare facilities for children aged 0-6 in the firm's vicinity (*Betriebskindertagesstätte*, Option 3). Such facilities can vary substantially in size, ranging from 30 to nearly 200 children. Alternatively, smaller firms may cooperate with other local firms to establish a joint childcare facility (*Verbundkindertagesstätte*, Option 4). Both Options 3 and 4 require an operating license, and the planning process takes several years. Facilities are typically operated by independent (often charitable) accredited organizations (*freie Träger der Jugendhilfe*). These options differ primarily in fixed costs and organizational commitment, allowing firms to tailor childcare provision to workforce size and local childcare constraints. Beyond these "hard" provision models, firms may also offer "softer" measures, such as financial support, after-school care, activities during school holidays, or access to backup or emergency childcare arrangements (e.g., in the event of a childminder's illness at family day care).

Firm-provided childcare is often of higher quality than the public option in terms of, for example, the staff-to-child ratios, staff training and pay, and the size and condition of (outdoor) space. In addition, these facilities tend to have shorter closure periods and generally operate longer hours. In 2022, public childcare facilities for children under six years of age operated on average about 8.4 hours per day, and about half (52%) closed before 4:30 p.m. In contrast, firm-provided childcare facilities were open an average of 10 hours per day, and 83% of facilities remained open after 4:30 p.m. (own calculations based on aggregate data reported in Statistisches Bundesamt (2022)).

Parental fees for firm-provided childcare generally mirror those of public childcare centers, which are typically set by municipalities and depend on family income. Users pay these fees out of their post-tax wages. Providing childcare entails substantial operating costs for firms that vary across the different options. In 2024, the monthly fee for reserving a full-time nursery slot in an existing facility (Option 1) amounted to 400-600 EUR. Although the other three options are subsidized by the municipality and the state government, firms still incur substantial costs. The monthly running costs of small-scale family day care centers (Option 2) are, net of subsidies and parents' fees, around 500 EUR per slot. The net monthly running costs of in-house or jointly operated childcare centers (Options 3-4) can be substantially higher, up to 1,500 EUR.

3 Data

We draw on linked employer-employee data from the Institute for Employment Research (IAB) in Nuremberg, which combines survey information from the IAB Establishment Panel with administrative registry data on firms and workers covered by the German social security system. Specifically, we use the Longitudinal Model (1993 – 2014) of the Linked Employer-Employee Data (LIAB LM 9314), which defines a stable panel of establishments based on repeated participation in earlier survey waves (Heining et al., 2016).[4] Survey information on establishments is available through 2016. The data set includes integrated employment biographies (IEBs) for all workers employed at the surveyed establishments between 2002 and 2012. Importantly, we observe employees' complete employment histories from 1993 to 2014, including periods of leave due to childbirth, even when employees are employed in establishments that were not surveyed. Detailed descriptions of the samples used in the different analyses are provided in Appendix D.

3.1 IAB Establishment Panel

A unique feature of the IAB Establishment Panel (IABEP) is that from 2002 onwards, firms are repeatedly asked about measures aimed at improving the compatibility of family and work and promoting equal opportunities for women and men. Questions were included in 2002 and 2004, followed by 4-year intervals (i.e., 2008, 2012, and 2016). Our sample comprises all firms that participated in the IABEP in any year for which such data are available. Although our sample of firms is unbalanced, we observe nearly 6,000 establishments for which information on firm-provided childcare is available in at least two consecutive survey waves.

Our main policy of interest is whether firms provide childcare support to their workers. This support includes all four "hard" options outlined in Section 2: reserving childcare slots for employees' children at existing childcare centers or providing childcare or family day care on-site, either independently or in cooperation with other firms. It also comprises "softer" measures such as financial support or after-school childcare. In our context, *firm-provided childcare* therefore refers to a combination of direct ("hard") provision and complementary ("soft") measures.

Unfortunately, the IAB Establishment Panel does not allow us to fully differentiate between different types of childcare provision. The 2002 wave of the IAB Establishment Panel includes some information that allows us to distinguish between "hard" and "soft" childcare support offered by firms at the start of our study period. Among the 8 percent of workers employed in firms with childcare support, around 42 percent work in firms that offer a "hard" option.

[4] In this paper, we use the terms "firms", "establishments", "workplaces", and "employers" interchangeably.

Additional information comes from the 2012 survey conducted by the German Chamber of Commerce on "Childcare Provision in Firms", which heavily over-samples larger firms (Deutscher Industrie- und Handelskammertag, 2012).[5] Among the approximately 2,000 firms surveyed, 33 percent offered some type of childcare support in 2012, and 15 percent offered on-site or firm-supported childcare — either through reserved slots, employing in-house childminders, operating their own childcare centers, or collaborating with other firms to establish joint childcare facilities (i.e., a "hard option"). This suggests that roughly 45 percent of firms providing childcare support offer a "hard" option, while the remaining firms offer only "soft" measures such as financial support, activities during school holidays, or access to backup or emergency care. Beyond current provision, firms also report plans to expand childcare support in the near future: 18 percent indicate intentions to increase childcare support overall, and 13 percent plan to introduce or expand on-site or firm-supported childcare provision (Options 1–4).

Drawing on data from the IAB Establishment Panel (IABEP), Figure 1 shows that the prevalence of employer-provided childcare has increased substantially over time. Although in 2002, only about 8 percent of workers were employed in firms that provided childcare, more than a quarter of workers worked in firms that provided childcare by 2016.[6] This pattern is consistent with survey evidence suggesting increased employer engagement in childcare provision during this period.

3.2 Integrated Employment Biographies

The IAB Establishment Panel can be linked to complete administrative employment biographies (IEBs) of all employees working in the surveyed firms. This allows us to accurately observe the firm's workforce composition and to follow workers before they join or after they leave a firm participating in the survey.

The IEBs contain detailed information on, for example, the exact start and end dates of workers' jobs, their occupation, and employment status (marginal employment relationships with very short working hours paying less than 400 EUR per month, part-time work, and full-time work), and daily wages.[7] Another advantage of the data is the precise measurement of mothers' employment status before and after childbirth, allowing us to pinpoint the exact month at which mothers go on maternity leave and return to work after childbirth.

[5] All statistics reported in the following discussion are based on information provided in the survey report, including Figure 1 and the accompanying text.

[6] The share of firms providing childcare increased from 2 percent to 8 percent between 2002 and 2016.

[7] Daily wages are defined as labor earnings within a job spell divided by the number of days worked during that spell. As such, they partially reflect differences in hours worked due to, for example, part-time or full-time employment. Daily wages are censored at the social security contribution ceiling. We therefore impute censored earnings following the standard procedure used for the IAB employment sample (see, e.g., Gartner, 2005; Dustmann et al., 2009). Throughout the paper, we refer to daily wages as wages.

We proxy childbirth by maternity leave spells, following the approach in Schönberg (2009) and Müller et al. (2017).[8] Nearly all women who are employed before giving birth take maternity leave and will, therefore, be captured by our imputation.

In our empirical analysis of the impact of firm-provided childcare on mothers' retention behavior, we focus on first-time mothers with at least one year of pre-birth tenure who gave birth between 2002 and 2010. This sample restriction allows us to observe mothers' labor market outcomes for at least four years after birth; see Appendix D.2 for further details on sample construction. Our sample consists of 12,691 first-time mothers working in 1,861 firms.[9]

When analyzing the impact of firm-provided childcare on firm employment and wages, we measure outcomes on June 30 of each calendar year, the official reference date commonly used in German administrative employment statistics. Employment is measured in headcounts and includes all workers (including apprentices and part-time employees) aged 16 to 65 years who are subject to social security contributions.

To provide a first descriptive overview of mothers' post-birth labor market outcomes, Figure 2 depicts the share of mothers who are working at each month since birth, including part-time and marginal employment (employment relationships with very low working hours and monthly earnings below 400 EUR, or below 450 EUR from April 2013 onwards).[10] Less than 20 percent of mothers work when the child is younger than six months. Notably, around the child's first birthday, the share of mothers working increases sharply, reaching about 30 percent, coinciding with the end of maternity benefits for many mothers in our sample. The share of mothers working increases again around the child's third birthday, when the job protection period ends and universal childcare becomes more widely available. Three years post-birth, about two-thirds of first-time mothers are working, and about 50 percent are working at their pre-birth employer.

3.3 Administrative Data on Public Childcare

To study the interplay between firm-provided and public care, we complement our data with district-level administrative records on childcare facilities for children under age three. To obtain a refined measure of public childcare provision at the local level, we obtained

[8]The social security records do not explicitly distinguish between maternity leave and other leaves of absence, such as long-term sickness. Schönberg (2009) shows, however, that after imposing appropriate restrictions, at least 90 percent of authorized absences in the data are for maternity reasons (see also Müller et al. (2017)).

[9]Our data do not allow us to identify fathers as paternity leave is voluntary and take-up is low.

[10]In Appendix Figure A1, we further divide the sample based on whether the mother gave birth before or after the 2007 parental leave reform. Post-2007, a slightly lower proportion of mothers is working at their pre-birth employer during the first 12 months after birth, followed by a faster increase in the share of working during the second year. Despite those initial differences, only about half of mothers are working at their pre-birth employer at the end of the three-year job protection period under both regimes.

novel tailored data through a special data request to the statistical office (Statistisches Bundesamt, 2024), providing us with information on childcare provision net of "childcare targeted at company employees". These data are available on a yearly basis from 2007 onwards.[11] The statistic measures the number of children aged below 3 (and 3 up until school entry) in childcare, reported to the authorities in the first half of March every year. We combine these data with detailed administrative records on the districts' age structure to compute public childcare coverage rates.[12]

4 Descriptive Evidence on Childcare Provision by Firms

We begin our empirical analysis with a descriptive overview of the firms that provide or introduce childcare services.

4.1 Firm-Provided Childcare Across Industries and Firm Size

Figure 3 shows that childcare provision varies substantially across 18 aggregate industry groups. It is more prominent in industries with a high share of university graduates, such as education, business services and research (which includes accounting and consulting), information & communication, and non-profit and public administration (see Panel A of Figure 3). While some heavily male-dominated and lower-educated industries, such as construction and agriculture, exhibit very low rates of childcare provision, the correlation between childcare provision and the share of women in an industry is less pronounced (Panel B, Figure 3). It should also be noted that firms in more traditional manufacturing industries, such as investment and durable goods (including vehicle manufacturing) and production goods (including the chemical and pharmaceutical industry), offer above-average childcare.

Figure 4 further illustrates that larger firms are more likely to offer childcare (Figure 4), in line with evidence by Oyer (2008) on firm-provided benefits and by Goldin et al. (2020) on paid parental leave provision by U.S. firms. While approximately 40 percent of workers in very large firms (with 1,000 or more employees) are employed in firms that offer childcare, only about 8 percent of workers in small (11–49 employees) and medium-sized firms (50–250 employees) work in firms that provide such services.

[11] For the earlier reporting year 2002, we could only obtain aggregate information on the federal and state level.

[12] These are calculated as children in public child care slots (measured in March of year t) over the population of children less than three years old (measured in December of year t-1).

4.2 Which Firms Provide Childcare?

Panel A of Table 1 sheds light on which firms provide childcare, conditional on their size (5 size categories) and the industry and local labor markets they operate in.[13]

Firms that offer childcare employ a larger proportion of employees in childbearing age (age 25-39), consistent with the findings by Goldin et al. (2020) for the U.S. and paid parental leave policies. Providers also employ a larger share of mothers with children under age 10 and women on maternity leave. However, these firms do not differ significantly from non-providers in the overall share of women they employ or in the representation of women in top management positions (such as management, proprietors, directors, branch managers, or work managers).

Additionally, providing firms employ a larger proportion of college-educated workers, have a more stable workforce (measured by average firm tenure of employees), are more productive (measured as the (log) revenue per worker), and pay higher wages than non-providing firms. These findings complement and extend recent evidence of a positive correlation between firm productivity, wages, and amenities (e.g. Lamadon et al., 2022; Dube et al., 2022; Sockin, 2022; Ouimet and Tate, 2023).

4.3 Is access to firm-provided childcare equitable?

Panel B of Table 1 documents the differences between first-time mothers in childcare-providing and non-providing firms. Mothers who are employed at childcare-providing firms when they give birth are positively selected: they earn 23 percent higher wages, are 11 percentage points more likely to be college educated, are working in higher-paying occupations, and have 9 percent higher tenure at their firm before childbirth.[14]

Overall, these findings highlight that access to firm-provided childcare is unequal, with more advantaged women enjoying preferential access at the onset of motherhood.

4.4 Do Firms Substitute for a Lack of Public Childcare?

Parents' valuation of firm-provided childcare — and consequently, firms' incentives to offer it — likely depend on the availability of public childcare. When public childcare provision is limited, the benefits to firms of providing childcare are presumably higher. To investigate the link between public childcare provision and firm-provided childcare,

[13] In the table, we report the coefficient on childcare provision by the firm from a series of regressions that control for firm size (five bins as defined in Figure 4), local labor market effects interacted with year fixed effects (141 local labor markets), and two-digit industry fixed effects interacted with year fixed effects (43 industries in total). Regressions are estimated at the firm level and weighted by employment size.

[14] Panel B presents the coefficients of childcare provision derived from a series of regressions on our sample of first-time mothers. These regressions include only local labor market-by-year fixed effects. We intentionally do not control for other firm characteristics, such as size and industry, in order to provide a comprehensive descriptive overview of disparities in access among new mothers.

we analyze how firms' decisions to introduce childcare respond to changes in local public childcare coverage at the district level. We focus on the years 2008 to 2012, when public childcare for children under the age of three was rapidly expanded, with coverage rates increasing by an average of 8.5 percentage points across districts. We estimate the following regression on a sample of firms (indexed by j) that did not provide childcare in 2008:

$$Introduction_j = \beta \Delta PublicChildcare_{d(j)} + Z_{j2008}\alpha^\top + \theta_{k(j)} + \rho_{s(j)} + \epsilon_j, \quad (1)$$

Here, $Introduction_j$ indicates whether a firm j introduced childcare between 2008 and 2012, while $\Delta PublicChildcare_{d(j)}$ measures the change in childcare coverage rates for under-3-year-olds in district d between 2008 and 2012. We condition on state (*Bundesland*) and industry fixed effects ($\theta_{k(j)}$ and $\rho_{s(j)}$) as well as establishment characteristics (Z_{j2008}; size, mean wage, mean tenure and experience, a quadratic in the share of female workers, and the establishment's educational composition – "control set I", see Appendix D.3 for definitions).

The results in Table 2 suggest a crowding out of firms' childcare provision.[15] We find that a 10 percentage point increase in local public childcare coverage is associated with a reduction in a firm's probability of introducing firm-provided childcare by about 13 percentage points, regardless of whether or not we condition on a detailed set of establishment characteristics (compare columns (1) and (2)).

4.5 Childcare Introduction and Firms' Labor Shortages

Next, we investigate whether firms strategically introduce childcare when faced with labor constraints. We regress an indicator variable denoting child care introduction between $t-\tau$ and t ($Introduction_{jt}$) on measures of firms' self-reported "labor shortages", controlling for firm characteristics in $t-\tau$ ($Z_{jt-\tau}$, control set I) and local labor market-by-year and industry-by-year fixed effects ($\theta_{l(j)t}$ and $\rho_{s(j)t}$):

$$Introduction_{jt} = \beta Shortage_{jt-\tau} + Z_{jt-\tau}\alpha^\top + \theta_{l(j)t} + \rho_{s(j)t} + \epsilon_{jt} \quad (2)$$

The findings in columns (1) and (2) in Table 3 show that firms with more vacancies, measured either as the absolute number (column (1)) or as a share of employment (column (2)), are more likely to introduce childcare. When firms foresee "difficulties in finding the required specialized personnel on the labor market" — a measure of skill shortages — they are 3.7 percentage points more likely to introduce childcare over the next four years (column (4)). These findings are consistent with the idea that firms use childcare provision as a human resource tool to retain and attract workers when facing staff shortages and

[15] This is consistent with evidence for universal preschool programs in the U.S. (Bassok et al. (2014); Cascio and Schanzenbach (2013)).

when workers' outside options might be high (Goldin et al., 2020; Liu et al., 2022; Adams et al., 2023). We provide more evidence on the link between the introduction of childcare and employment growth in Section 5.2.

5 Benefits and Costs of Firm-Provided Childcare

In this section, we examine the benefits and costs associated with childcare provision for firms. We begin by evaluating the effectiveness of firm-provided childcare in retaining new mothers and reducing their long career breaks (Section 5.1). We then turn to the role of firm-provided childcare in helping firms grow (Section 5.2). We investigate the effects of childcare provision on firm wages in Section 5.3 and on fertility in Section 5.4.

5.1 Retention of Mothers

5.1.1 Empirical Specification

To assess whether firm-provided childcare improves the retention of mothers, we estimate a series of regressions separately by month since childbirth of the following type on a sample of first-time mothers who give birth between 2002 and 2010:[16]

$$y_{ijt}^{m} = \beta^{m} Childcare_{jt} + X_{it}^{m=0}\alpha^{m\top} + Z_{jt}\gamma^{m\top} + \theta_{l(j)t}^{m} + \rho_{s(j)t}^{m} + \epsilon_{ijt}^{m} \tag{3}$$

Here, y_{ijt}^{m} denotes the labor market outcomes of mother i, who gives birth in year t and firm j, in month m after childbirth. $Childcare_{jt}$ is an indicator equal to one if the mother gives birth in a firm that offers childcare both at birth and for the next four years. $\theta_{l(j)t}^{m}$ and $\rho_{s(j)t}^{m}$ are year of childbirth-local labor market fixed effects and year of childbirth-industry fixed effects, while $X_{it}^{m=0}$ denote mothers' characteristics at birth (mother's age, nationality, education, experience, tenure, occupation, wages, commuter status, and full-time status — "control set II"; see Appendix D.3 for definitions) and Z_{jt} denote characteristics of the firm where the mother gave birth ("control set I") measured at birth. We estimate separate regressions for each month m after birth and cluster standard errors at the level of the establishment at birth.

We use two "control groups": first, firms that do not provide childcare at any point ("never-providers"), and second, firms that provide childcare in the future, but only at least 4 years after the mother gives birth ("will-be-providers"). We thus contrast post-birth labor market outcomes of mothers who give birth in the same year and local labor market, and who had similar career trajectories before birth, across three types of firms —

[16] Splitting the sample into a pre-2007 and post-2007 parental leave reform yields similar qualitative results; see Appendix Figure A2.

providers, never-providers, and will-be-providers — while also controlling for a detailed set of characteristics of their pre-birth employers.

5.1.2 Results

Figure 5 plots regression estimates for β_m for our main outcome — the probability of working (including part-time and marginal employment) for the pre-birth employer — up to 48 months after birth, using never-providers as our control firms in Panel A and will-be providers as our control group in Panel B.[17]

Retention rates of providers and never-providers start to diverge in the second year after birth. 18 months after childbirth, mothers in providing firms are 5 percentage points more likely to work for their pre-birth employer than mothers in non-providing firms (a 11 percent gap compared to the overall mean). Gaps continue to widen, reaching a peak of up to 7 percentage points (or 14 percent compared to the mean) 30 months post birth. The gap then declines around the child's third birthday, coinciding with the end of the job-protection period and the widespread availability of public childcare for older children.

Gaps in retention behavior are remarkably similar when we use "will-be providers" as a control group in Panel B, suggesting that unobserved differences between providers and non-providers do not solely drive these gaps. "Placebo" estimates in Panel C that contrast retention rates between never-providers and will-be providers are small in magnitude and typically not statistically significant from zero. Point estimates are consistently negative, suggesting that providers exhibited slightly worse retention rates before they introduced childcare compared to firms that never do so. This pattern goes against the concern that firms that introduced childcare were already more family-friendly prior to adoption.

Overall, the patterns in Figure 5 imply that firm-provided childcare improves the retention rates of mothers during the first three years after childbirth, when alternative public care provision is limited.

Figure 6 compares various alternative career outcomes of mothers in firms that provide childcare and those that will provide childcare in the future. Panel A considers working for the pre-birth employer and in the pre-birth occupation (i.e., the same "job") as the outcome variable. Estimates are similar to those for overall retention (compare Panel B of Figure 5), suggesting that firm-provided childcare enables mothers to remain in their pre-birth careers. The findings in Panel B indicate that retention gaps between providers and non-providers are primarily attributable to regular employment (full-time or part-time), rather than marginal employment with very low working hours. In contrast, full-time employment rates (at least 35 working hours per week) with the pre-birth employer are

[17] We exclude the immediate three months following the imputed birth date, where mothers are covered by maternity benefits and are in principle prohibited from working (*Mutterschutz*).

barely affected by the firm's childcare provision (Panel D). The overall retention effect is therefore mainly driven by an increase in regular part-time work (see also Panel C).[18]

In sum, the findings in Figures 5 and 6 highlight that firm-provided childcare accelerates mothers' return to their pre-birth employer and pre-birth job, thereby likely limiting the loss of firm- or occupation-specific skills and the depreciation of general human capital after birth. As we outline in Section 6, firms may capture some of these benefits, providing them with incentives to introduce childcare.

In Panel E of Figure 6, we contrast the overall employment rates — including employment in firms other than the pre-birth employer — of mothers in providing firms with those in firms that will provide childcare in the future. Estimates for overall employment follow a similar pattern to those for employment with the pre-birth employer, becoming positive shortly after the child's first birthday and remaining positive up to the third year after birth. However, these effects are somewhat smaller in magnitude (e.g., 4 vs. 9 percentage points 30 months after childbirth). Hence, while firm-provided childcare provision attracts some mothers who otherwise would not be employed at all, it also enables firms to retain mothers who otherwise would have worked for a different employer. Although noisily estimated, the findings in Panel F further show that firm-provided childcare closes the gap between pre- and post-birth earnings ("child penalty") by about 3 percentage points in the second year after childbirth.

In Figure 7, we examine whether the effects of childcare provision differ across worker types, distinguishing between low-wage and high-wage mothers, defined as those with a pre-birth daily wage below or above the median. The estimates reveal that high-wage mothers tend to benefit more than low-wage mothers. Around 30 months after childbirth, they are nearly 13 percentage points more likely to work at their pre-birth employer if it offers childcare, compared to only 4 percentage points for low-wage mothers (Panels A and B). In contrast to low-wage workers, these positive effects persist beyond the child's third birthday.[19]

Table 4 provides summary estimates of the cumulative effects of firms' childcare provision on four key labor market indicators over the first four years post-birth, separately for low-wage and high-wage mothers. Childcare provision increases labor supply to the pre-birth employer by about two months overall, with larger effects among high-wage mothers (3.0 months, Panel A). Moreover, beyond improving retention, firm-provided childcare has sizable effects on the overall post-birth employment trajectory and total labor earnings of high-wage mothers (Panels B and C), increasing the total number of months worked in the first four years after childbirth by 2.5 months and total post-birth

[18] When evaluating the German expansion of childcare for children under age three, Müller and Wrohlich (2020) also find that the overall increase in employment is driven entirely by an increase in regular part-time employment.

[19] Again, retention probabilities are not statistically significantly different between future-providing and never-providing firms for either of these groups (Appendix Table A3).

earnings by 7309.6 EUR (9.7 percent relative to average post-birth earnings). Panel D shows that these improvements translate into a meaningful reduction in the child penalty. High-wage mothers face a baseline child penalty of nearly 60 percent, and firm-provided childcare reduces this penalty by 4.7 percentage points. In contrast, childcare provision has little impact on the overall months worked, post-birth earnings, or child penalties among low-wage mothers.

For comparison, exploiting district-level variation in the expansion of public childcare for children under age three in Germany, Duletzki and Lim (2026) find that a 10-percentage-point increase in public childcare coverage reduces mothers' earnings penalties by about 2.3 percentage points. These gains are concentrated among mid- and low-income mothers, as shown in earlier versions of the paper (Duletzki and Lim, 2025). Thus, the expansion of public childcare appears to primarily relax childcare constraints for mid- and lower-income families, whereas employer-provided childcare is particularly relevant for high-wage mothers.

What explains the greater benefits from firm-provided childcare for high-wage mothers? One plausible explanation is differential access. When demand for slots is high, firms may prioritize high-wage over low-wage mothers, especially if replacement costs are higher for high-wage workers. Alternatively, high-wage mothers may benefit more from childcare conditional on access. For example, they may work in more specialized jobs with a stronger firm-specific component, as reflected in their longer tenure at the pre-birth employer (7.198 years before birth compared with 5.991 years for low-wage mothers). By facilitating a return to the pre-birth employer, firm-provided childcare can help high-wage mothers retain firm-specific skills, positively affecting their longer-run employment and earnings.

5.2 Employment Growth

Firm-provided childcare may not only enhance mothers' retention rates but also enable firms to grow, particularly among groups that strongly value this amenity. This section presents empirical evidence supporting this mechanism.

To evaluate whether the introduction of firm-provided childcare leads to employment growth across different demographic groups (indexed by the superscript g), we estimate regressions of the following form, estimated separately for different groups, on a sample of firms that introduce childcare at some point:

$$\underbrace{\frac{L^g_{jt} - L^g_{jt-\tau}}{\sum_g L^g_{jt-\tau}}}_{\substack{\text{Employment contribution} \\ \text{from demographic } g}} = \beta^g Introduction_{jt} + Z_{jt-\tau}\alpha^{g\top} + \theta^g_{l(j)t} + \rho^g_{s(j)t} + \epsilon^g_{jt} \tag{4}$$

Here, $Introduction_{jt}$ is an indicator variable equal to one if the firm introduced firm-provided childcare between $t-\tau$ and t, and zero if it will introduce childcare sometime after t.[20] $\theta^{g}_{l(j)t}$ and $\rho^{g}_{s(j)t}$ denote local labor market-by-year fixed effects and industry-by-year fixed effects, respectively, while $Z_{jt-\tau}$ represents establishment characteristics at baseline (control set I). The dependent variable captures the change in employment for group g between $t-\tau$ and t, scaled by total employment (across all groups) in $t-\tau$. Since we scale by total baseline employment, the coefficients on the introduction of childcare across groups sum to the overall employment growth associated with the introduction.

This specification, therefore, compares a group's contribution to the firm's total employment growth in observationally similar firms that have just introduced childcare and those that will introduce childcare in the future. We weight firm-level observations by baseline employment and cluster standard errors at the firm level.

We report findings in Table 5. Firms that introduce childcare indeed experience excess employment growth, of 4.56 percent on average (Panel A). Although estimates are somewhat noisy, employment growth is tilted toward female workers: women account for roughly 59 percent of employment expansion while representing only 41 percent of the firm's baseline workforce. The employment of women of childbearing age (column (2), Panel B) and mothers (Panel C) — two groups likely to highly value the amenity — grows particularly strongly. For example, even though mothers comprise only 4 percent of the firm's baseline workforce, they account for 18 percent of total employment growth.

The findings in Panel D of Table 5 further reveal that employment gains in the top-10% occupations are an essential driver of total employment growth associated with the introduction of childcare. Overall, these occupations account for close to 56 percent of employment growth, despite making up less than 8 percent of baseline employment.[21] Splitting up the employment growth in top-10% occupations into that for men and women, we find that women are disproportionally affected: they account for 18 percent of the excess employment growth of introducers relative to future introducers, despite constituting just over 1 percent of baseline employment. This pattern suggests that newly created high-ranking positions are filled disproportionately by women, indicating that childcare provision enables firms to expand precisely in segments of the workforce that were previously difficult to attract or retain.

These differential gains in employment across groups lead to meaningful changes in the firm's workforce composition following the introduction of childcare. The findings in Table 6 show that the firm's share of women in top-10% occupations increases by 0.74 percentage points, representing a 52 percent increase relative to the low baseline share

[20] Firms that always or never provide childcare are not included in the sample. The period τ is typically four years, except at the start of the sample period (2004 vs. 2002).

[21] The share of top-10% occupation workers in baseline employment is below 10% because occupations are ranked using the full worker dataset rather than the estimation sample.

of 1.43 percent (column (1), Panel A). The firm's share of men in top-10% occupations also increases by 1.50 percentage points. Taken together, these changes imply that childcare provision disproportionately improves the representation of women in top occupations, from roughly 18 percent before the introduction to 22 percent after the introduction of childcare.[22]

The share of mothers, particularly those with children under three years old, also rises by 0.38 percentage points, or 34 percent after the introduction of childcare (column (2), Panel B). Moreover, introducing firms experience a substantial increase in the share of new hires who were previously employed elsewhere — 1.72 percentage points (16 percent), consistent with childcare provision increasing firms' ability to poach workers from other firms.

5.3 Wages

Childcare provision incurs substantial costs for firms — for example, the monthly fee for reserving a full-time nursery slot in an existing facility ranges from 400 to 600 EUR. Do firms pass these costs onto workers, particularly mothers and women of childbearing age, who are the most likely users of the amenity?

To provide evidence on this question, we estimate a series of regressions similar to those in equation 4, but estimated at the worker level:

$$\underbrace{w^g_{jit} - w^g_{jit-\tau}}_{\substack{\text{Change in log-wage} \\ \text{for incumbents of demographic } g}} = \beta^g Intro_{jt} + X_{it}\alpha^{g\top} + Z_{jt-\tau}\gamma^{g\top} + EmpStatus_{it-\tau} \cdot EmpStatus_{it}\delta^{g\top}_t + \theta^g_{l(j)t} + \rho^g_{s(j)t} + \epsilon^g_{ijt} \tag{5}$$

In this specification, we contrast the wage growth of incumbents (i.e., workers who are employed in the firm in both periods t and $t-\tau$) within demographic group g in firms that introduce childcare between t and $t-\tau$ and in firms that will introduce childcare in the future, after period t. By restricting the sample to incumbents, we rule out that any changes in firm wages reflect compositional changes in the workforce induced by the introduction of childcare. We control for worker characteristics X_{it} (including a quadratic in age, broad occupation, and education), firms' baseline characteristics $Z_{jt-\tau}$ (control set I), local labor market-by-year fixed effects and sector-by-year fixed effects ($\theta^g_{l(j)t}$ and $\rho^g_{s(j)t}$) in all regressions. To flexibly capture wage changes associated with changes in employment status (e.g., from full-time to part-time or marginal employment), we additionally include the full set of possible switches between $t-\tau$ and t (9 in total), and allow their effects to

[22]We compute this from estimates in Panel A of Table 6. The baseline female share is computed as the average reported in Panel A, column (1), divided by the sum of the averages for females and males in Panel A, columns (1) and (2). The post-introduction share is computed analogously, by adding the estimated effects to the corresponding baseline averages.

vary over time ($EmpStatus_{it-\tau} \cdot EmpStatus_{it}\delta_t^{g\top}$).[23] Standard errors are clustered at the firm level.

Table 7 reports results. There is no evidence that the introduction of childcare results in significantly lower wages for incumbents across demographic groups. If anything, wages among incumbent female workers increase by about 1.3 percent following the introduction of childcare (column (4), Panel A of Table 7), and the wage gap between men and women within the firm narrows somewhat.

In Panel B of the table, we focus on new hires rather than incumbent workers, using their wage growth — defined as their (log) wage at the new job minus the (log) wage in their previous job — as the dependent variable in equation 5.[24] While the introduction of childcare is associated with lower wage gains of about 2 to 3% – effects that are statistically significant when considering all workers or men–, these effects are small when evaluated against the large wage gains of about 15% that workers typically experience when switching firms. Importantly, we find no evidence that wage effects are more negative for women than for men, and the gender wage gap among new hires does not increase in firms that introduce childcare.

In summary, the evidence in Table 7 suggests that the increased employment of women and mothers associated with childcare does not come at the expense of wider gender wage gaps within firms.

These findings are broadly consistent with the evidence of Corradini et al. (2025), who document no negative wage effects associated with female-friendly amenities introduced by firms in response to a strategic change at one of Brazil's largest trade unions. More generally, our results align with recent evidence showing that wages often do not fully adjust to non-wage job amenities (see Mas (2025) for a comprehensive review). However, they differ from the seminal evidence on government-mandated maternity benefits, which finds that such policies often lead to lower wages for the workers who use them (e.g., Gruber (1994)).

In Section 6, we develop a model of monopsonistic competition to shed light on why the voluntary introduction of childcare, despite the direct costs of provision, does not lead to wage cuts for incumbent workers and may involve only modest wage adjustments for new hires, whereas government-mandated benefits may result in lower wages.

[23] The definition of part-time and full-time employment in the administrative data changes in 2011. By interacting employment status transitions with year effects, we allow the associated wage differences to vary flexibly over time, thereby accounting for such changes in classification. Our findings are robust to excluding marginally employed workers, whose wages are subject to regulatory thresholds; see Appendix Table B1.

[24] New hires without a recorded previous employment spell are excluded from the analysis. We do not impose a maximum time gap between the previous and the new employment spell; thus, the sample includes all hires with an observable prior wage, regardless of the length of any intervening non-employment period.

5.4 Fertility

Our findings so far point to important potential benefits of firm-provided childcare: it allows firms to retain qualified mothers and attract new talent, while leading to at most modest wage adjustments for new hires or incumbents. Next, we examine whether the introduction of childcare affects fertility among incumbent female workers in the firm.

Table 8 reports estimates from regressions similar to those in equation 5. Specifically, we compare the probability that a woman between 25 and 40 years of age takes maternity leave (including leave spells for higher-order births) between $t-4$ and t (in any firm) across firms that introduce childcare during this period and firms that introduce childcare only after t. As in equation 5, we control for a detailed set of firm and worker characteristics (control sets I, with controls for workers' education, age, wage, and occupation added in Panel B) as well as local labor market-by-year and industry-by-year fixed effects.

The probability of going on maternity leave within the next four years is 1.4 percentage points higher for women who, in $t-4$, were employed in firms that introduced childcare, relative to women in firms that will introduce child care in the future (column (1)). This presents a non-negligible effect of 10 percent relative to the baseline. The increase in fertility is entirely driven by a higher likelihood of taking maternity leave in the incumbent firm — that is, the firm that has introduced childcare — rather than in another firm (columns (2) and (3)). This pattern helps rule out that the positive fertility effects are driven by differences in fertility preferences between women in introducing and future-providing firms. Controlling for detailed individual characteristics in Panel B has little impact on our estimates.

For comparison, Bauernschuster et al. (2016) find that a 10 percentage point increase in public childcare coverage is associated with an average increase of about 0.04 children per woman, suggesting that both public and firm-provided childcare can have meaningful effects on fertility.

6 A Model of Family-Friendly Workplace Policies

In this section, we develop a stylized model of monopsonistic competition (e.g., Kline, 2025; Card et al., 2018; Azar and Marinescu, 2024) to formalize firms' incentives to introduce childcare and to shed light on how childcare provision affects firm wages. In the model, the labor supply elasticity to the firm plays a key role. We argue that if this elasticity is lower, firms may have a stronger incentive to offer the amenity.

We first lay out a model with a single worker type. We then sketch a two-worker-type model in which one type values the amenity more; yet, firms must pay both groups the same wage. We delegate all formal derivations and additional details to the appendix.

6.1 One Worker Type

Worker utility. Consider a parent P who values family-friendly amenities at work. Suppose that this worker can take up employment at a firm that offers the market wage W_M. Their utility from this outside option is:

$$U_M = b^P \log W_M + u_M.$$

Now consider a firm j that may or may not offer childcare. The worker's utility from working for this firm is:

$$U_j = \begin{cases} b^P \log w_j + u_j & \text{if the firm does not offer childcare,} \\ b^P \log w_j + a + u_j & \text{if the firm offers childcare.} \end{cases}$$

Here, W_M and w_j denote the market wage and the wage offered by firm j, while a denotes the utility the parent derives from firm-provided childcare relative to alternative (publicly) provided options. The parameters u_M and u_j denote random idiosyncratic utility components that are observed by workers but not by firms.[25]

In this setup, we assume that the firm is small so that its actions do not influence the worker's outside option. We therefore abstract from general equilibrium effects of firms' amenity provision.

A worker chooses the firm's offer j over the outside option if it yields higher utility. Let $G(\cdot)$ denote the cumulative distribution function (cdf) of $u_M - u_j$. We assume that u_j and u_M are independently drawn from a Type I extreme value distribution (McFadden, 1974). The probability that a worker will accept a wage offer from firm j then equals:

$$\Pr(\text{accept offer j}) = G\left(b^P(\log w_j - \log W_M) + a\right) = \frac{\exp\left(b^P \log(w_j) + a\right)}{\exp\left(b^P \log(w_j) + a\right) + \exp(b^P \log W_M)}.$$

In this setting, the random idiosyncratic utility components, u_j and u_M, give rise to an upward-sloping labor supply curve to the firm. In this model, the labor supply elasticity to the firm, $\epsilon_j = \frac{dG\left(b^P(\log w_j - \log W_M) + a\right)}{G\left(b^P(\log w_j - \log W_M) + a\right)} \cdot \frac{w_j}{dw_j}$, is endogenous and non-linear in w_j. In Appendix E, we show that the elasticity is increasing in the market wage $\log W_M$ and decreasing in the utility from the amenity a. It is also decreasing in the wage w_j that firm j offers.

[25] As outlined in Section 2, firms typically charge childcare fees similar to those in public childcare facilities. Since parents face essentially the same childcare costs regardless of whether care is provided publicly or by the firm, we abstract from modelling childcare payments explicitly. Accordingly, the wages W_M and w_j should be interpreted as net of childcare costs.

Productivity effects and costs of childcare provision. Motivated by our empirical finding that childcare provision facilitates an earlier return to work and enables mothers to resume employment with their pre-birth employer, we model childcare as a productive amenity. The worker's productivity in firm j therefore depends on whether the firm provides childcare:

$$Y_j = \begin{cases} y_j & \text{if the firm does not offer childcare,} \\ sy_j & \text{if the firm offers childcare,} \quad s \geq 1. \end{cases}$$

In line with the empirical evidence outlined in Section 2, we further assume that childcare provision is costly. We denote these costs by c. These costs should be interpreted as the net costs to the firm after accounting for any fees charged to parents.

Wage effects of childcare provision. Firm j chooses wages to maximize profits, leading to the well-known markdown expressions (see Appendix E):

$$\begin{aligned} w_j^{P0*} &= y_j \cdot \frac{\varepsilon_j^{P0*}}{1+\varepsilon_j^{P0*}} && \text{if the firm does not offer childcare,} \\ w_j^{P1*} &= (sy_j - c) \cdot \frac{\varepsilon_j^{P1*}}{1+\varepsilon_j^{P1*}} && \text{if the firm offers childcare.} \end{aligned} \tag{6}$$

Here, ε_j^{P0*} and ε_j^{P1*} denote the equilibrium elasticities of the labor supply to the firm with and without childcare provision, respectively. Consequently, firms pass through part of the costs of childcare provision onto workers in the form of lower wages. However, this pass-through is incomplete and varies with the labor supply elasticity: the lower the elasticity, that is, the greater the firm's monopsony power, the greater the share of costs borne by the firm. In a perfectly competitive labor market where $\varepsilon_j^{P1*} \to \infty$, workers bear the full costs of childcare provision. This finding is similar to key insights from the literature on firm-provided training, which show that firms bear a greater proportion of training costs when they can capture a larger share of the returns generated by training (Becker, 1962; Acemoglu and Pischke, 1999b,a).

Equation (6) offers two explanations for our empirical finding that childcare provision leads to at most modest reductions in mothers' wages. First, the provision of childcare itself may increase mothers' productivity (i.e., $s > 1$). Second, the firm may have substantial monopsony power over childcare users, so that it bears a large share of the costs of childcare provision (i.e., ε_j^{P1*} is low).

A firm's incentives to provide childcare. A firm will implement childcare if, evaluated at optimal wage offers, profits with childcare provision (π_j^{P1*}) exceed profits without child-

care provision (π_j^{P0*}). This profit difference can be decomposed into three economically meaningful terms (see Appendix E):

$$\pi_j^{P1*} - \pi_j^{P0*} = \underbrace{(G_j^{1*} - G_j^{0*})\frac{sy_j - c}{1+\varepsilon_j^{P1*}}}_{\text{firm growth}} + \underbrace{G_j^{0*}\frac{1}{1+\varepsilon_j^{P0*}}\left(y_j(s-1)-c\right)}_{\text{change in effective productivity}} + \underbrace{G_j^{0*}\left(\frac{1}{1+\varepsilon_j^{P1*}} - \frac{1}{1+\varepsilon_j^{P0*}}\right)(sy_j - c)}_{\text{change in markdowns}}, \quad (7)$$

where $G_j^{1*/0*}$ denote the probabilities that a worker accepts the firm's offer under childcare provision/no provision, evaluated at optimal wages.

First, childcare provision can enhance a firm's attractiveness to potential employees, leading to increased employment (i.e., $G_j^{1*} > G_j^{0*}$) and consequently higher profits. It is important to note that from a theoretical perspective, the impact of childcare provision on employment is ambiguous, as it could lead to lower wages. However, our empirical findings show that the wage effects of childcare provision are small and that such provision enables firms to retain and attract workers, particularly mothers.

Second, childcare provision may increase the worker's productivity net of costs; that is, if $y_j(s-1) - c > 0$.

Third, childcare provision may enhance the firm's monopsony power if $\varepsilon_j^{P1*} < \varepsilon_j^{P0*}$. This mechanism represents a "lock-in effect".[26] Consider, for example, a mother whose young child attends the firm's childcare center. Switching employers would then require not only finding a new job, but also securing alternative childcare, thereby increasing her moving costs. The firm may exploit this by offering less favorable wages, resulting in larger markdowns when it provides childcare.

The labor supply elasticity to the firm plays a key role in a firm's decision to introduce childcare for three interrelated reasons. First, a lower labor supply elasticity amplifies the potential benefits of childcare provision from firm growth (effect 1) and increased productivity (effect 2), as firms can capture a larger share of the job surplus.[27]

Second, a lower elasticity means that the probability of workers accepting the firm's offer increases less in response to a wage increase. As a result, it may be more cost-effective for firms to attract workers by offering amenities, such as childcare, rather than by raising wages. This in turn implies that a lower elasticity tends to amplify the difference $G_j^{1*} - G_j^{0*}$.

[26] Theoretically, childcare provision could either increase or decrease the labor supply elasticity to the firm. On the one hand, childcare provision may reduce the elasticity, holding wages constant. On the other hand, childcare provision may lower wages, which would result in a higher elasticity; see Appendix E.

[27] Here, we have assumed that $G_j^{1*} > G_j^{0*}$ and $y_j(s-1) - c > 0$.

And third, childcare provision itself may lower the elasticity due to the lock-in effect (effect 3). These arguments imply that firms facing a less elastic labor supply may have a stronger incentive to adopt family-friendly workplace amenities.

These mechanisms are related to, but distinct from, those emphasized in Adams et al. (2023), who argue that limited outside options for workers (and hence increased monopsony power for firms) enable firms not only to pay lower wages but also to adopt job attributes that boost firm productivity but are disliked by workers (e.g., irregular work schedules determined by the firm). In our setup, improved outside options for workers can similarly incentivize firms to introduce amenities that are costly for the firm but valued by workers; however, the overall effect is theoretically ambiguous. On one hand, higher outside options force firms to offer workers a higher utility, either through increased wages or amenity provision. On the other hand, higher outside options increase the labor supply elasticity to the firm, making wage increases more effective at attracting workers and thus reducing firms' relative incentive to provide amenities.

The model is, therefore, consistent with our findings in Table 3 that firms facing skill shortages—an indication of high outside options of workers—are more likely to introduce childcare.

In Appendix E, we further show that for sufficiently high productivity gains s and small wage differences with and without childcare provision (i.e., w_j^{P0*} close to w_j^{P1*}), the difference in profits between providing and not providing childcare increases with firm productivity (y_j). This prediction aligns with our empirical finding that more productive firms — which, according to both the model and the data, are also larger and pay higher wages — are more likely to provide childcare (see Table 1).

Moreover, it is straightforward to show that the profit gains from childcare provision increase with workers' valuation of this amenity (a). Workers are likely to value firm-provided childcare more when public childcare provision is scarce. The model can therefore explain our finding that an increase in public childcare provision crowds out firms' childcare provision (see Table 2).

The model also helps explain why government-mandated amenities may lead to larger wage declines compared to amenities voluntarily provided by firms. Mandates force smaller and less productive firms to introduce the amenity. In our model, these firms derive fewer productivity benefits from the amenity (due to complementarity) and face higher labor supply elasticities, as lower wages imply a more elastic labor supply to the firm. Consequently, they capture a smaller share of the returns generated by the amenity provision and pass a larger portion of the costs onto workers (see equation 6).

6.2 Two Worker Types

We now outline an extended model with two distinct types of workers: *parents* (P) and *non-parents* (N). Our discussion focuses on intuitions and key insights, and we delegate

formal derivations to Appendix E. In this setup, parents and non-parents are assumed to be equally productive (in the absence of childcare provision). However, parents value the amenity more than non-parents. We also allow for the possibility that non-parents derive greater utility from wages (i.e., in the utility function, $b^P < b^N$). As a result, firms will typically enjoy greater monopsony power over parents than over non-parents. However, we do not allow firms to wage discriminate: they must pay the same wage (conditional on productivity) to parents and non-parents. Put differently, firms cannot post different (binding) wages for parents and non-parents in the job advertisement.

In Appendix E, we first show that, in this extended model, the firm's optimal wage offer corresponds to a weighted average of the wages it would set if it could pay the two groups different wages — a scenario we refer to as wage discrimination — with weights determined by the share of parents in the firm. Because parents have a lower labor supply elasticity, the wage the firm would offer to parents under wage discrimination is lower than the wage it would offer to non-parents. When wage discrimination is not feasible, and the firm must pay a common wage, profits therefore increase with the share of parents in the firm's workforce.

We then highlight two additional insights. First, this setup offers an additional explanation for our empirical finding that childcare provision does not lead to substantial reductions in mothers' wages. The costs of childcare provision are now shared among three parties: firms, parents (who value and utilize the amenity), and non-parents (who do not value and do not use it). Since the firm must pay parents and non-parents the same wage, it effectively shifts part of the costs of childcare provision onto non-parents. The modestly negative wage effects among new hires across all demographic groups documented in Panel B of Table 7 are potentially consistent with this indirect cost-sharing mechanism.

Second, this two-worker-type model introduces a potential fourth incentive for firms to provide childcare, in addition to the three motives outlined above. In this model, offering childcare shifts the workforce composition towards a higher share of parents, consistent with our empirical findings in Table 6. If firms have more monopsony power over parents than non-parents, childcare provision enables firms to capture higher rents due to an increased share of parents in the workforce.

More generally, these arguments highlight that firms have a stronger incentive to provide the amenity when those workers who value it the most also exhibit a low labor supply elasticity to the firm.

6.3 Labor Supply Elasticity Estimates across Firms and Workers

Given the key role of the labor supply elasticity to the firm in our model, we next present empirical estimates of this elasticity for different groups of workers and firms. We do so using the separation elasticity approach, where we regress an indicator variable for

whether a worker separates from the firm between year t and $t-1$ on the residualized firm (log) wage, while controlling for a detailed set of individual characteristics, childcare provision, and local labor market-by-year fixed effects, thereby isolating the effect of wages on separations independently of childcare provision.[28] As Manning (2003) shows, this separation elasticity is closely linked to the overall labor supply elasticity.[29] To assess heterogeneity in the separation elasticity across demographic groups, we estimate this regression separately for different groups.

Panel A of Table 9 reports these estimates together with the implied separation elasticities, computed as the estimated wage coefficient divided by the group-specific average separation rate reported in the table. The first column presents estimates for all workers, followed by results for three different demographic groups: men and women of child-bearing age, and mothers. For mothers, separations are defined based on return to the pre-birth employer; specifically, we classify mothers as separating if they do not return to their pre-maternity employer within 48 months following childbirth (see table notes for details). We find meaningful differences in separation elasticities across these groups. Women exhibit lower separation elasticities in absolute value than men, in line with prior evidence (e.g., Hirsch et al., 2010; Sharma, 2023). The separation elasticity is particularly low among mothers — less than half that of men aged 25 to 40 years.

Taken together, separation elasticities appear to be lowest for the groups most likely to value childcare provision — women in child-bearing age and, especially, mothers. Accordingly, childcare provision may be an effective way of attracting and retaining these workers, consistent with the mechanism highlighted in our model. Our estimates provide a useful benchmark for how much mothers value childcare. Their estimated separation wage elasticity implies that a 10 percent increase in wages reduces their separation probability by 2.5 percentage points. Offering childcare reduces separations by 4 percentage points, consistent with the evidence in Section 5.1.2. Hence, a wage increase of approximately 16% would be required to achieve the same improvement in retention as childcare.

Panel B of Table 9 focuses on two additional groups: workers in top-10% occupations, who disproportionately drive firm-level employment growth after the introduction of childcare (see Table 5), and high-wage mothers, whose post-birth retention rates are particularly affected by firms' childcare provision (see Figure 7). Separation elasticities for workers in top-10% occupations (column (2)) are considerably smaller in absolute value than those for workers in bottom-10% occupations (column (1)) and all workers (column

[28] To compute the firm residualized wage, we first estimate worker-level log wage regressions that include controls for age, demographic groups (male, female, mother), occupation, education, labor force status (full-time, part-time, marginal employment, trainee), and calendar year. The residualized firm wage is then computed as the average residual within the firm. We control for the same set of individual characteristics at $t-1$ in the separation regression.

[29] The labor supply elasticity to the firm is twice the separation elasticity if the firm is in a steady state and the recruitment elasticity equals the separation elasticity. Hirsch et al. (2022) provide empirical support for this assumption.

(1) in Panel A). Hence, firms appear to have particularly strong monopsony power over workers in the top 10% of occupations. This group also appears to place a particularly high value on the amenity, as evidenced by the more negative effect of childcare provision on separations.

While wages have a stronger negative effect on job separations among high-wage than low-wage mothers, the implied separation elasticities are similar across the two groups (columns (3) and (4)), due to lower separation rates among high-wage mothers. Therefore, the larger retention effects of childcare provision for high-wage mothers are unlikely to be driven by firms having greater monopsony power over this group (a lower ϵ_j in Equation 7). Instead, they might stem from high-wage mothers possessing more firm-specific skills (a higher s in Equation 7).

In Panel C of Table 9, we examine whether firms that provide childcare exhibit lower separation elasticities than firms that do not. To do so, we allow the effect of the firm's residualized wage to vary by the firm's childcare provision status.[30] The findings indicate that wage coefficients are less negative for childcare-providing firms across all worker groups. For example, among women of childbearing age, a one percent increase in the firm's residualized wage reduces the separation probability by 0.293 percentage points in firms without childcare, compared to 0.208 percentage points in firms with childcare. However, since childcare-providing firms exhibit lower separation rates, the implied separation elasticities are broadly similar across childcare-providing and non-providing firms.

Finally, in Panel D, we investigate whether the introduction of childcare increases firms' monopsony power and thereby reduces the separation elasticity (the "lock-in" effect in our model). To assess this, we include an interaction term between the firm's residualized wage and childcare provision while controlling for firm fixed effects. The coefficient of this interaction term captures how the separation elasticity changes within firms after the introduction of childcare; a more positive coefficient implies that separations become less responsive to wages, corresponding to a lower elasticity. While the estimates are noisy, we find little evidence of a sizable "lock-in" effect, suggesting that this channel is unlikely to be the primary driver of firms' childcare provision. The absence of a lock-in effect aligns with our finding that the introduction of childcare does not lead to meaningful wage reductions, indicating limited scope for firms to recoup costs through increased monopsony power.

[30] Here, we restrict the sample to years in which the firm's childcare status is observed with certainty. For example, if a firm introduces childcare between 2004 and 2008, we exclude the years $t = 2005 - 2007$ for that firm.

7 Conclusion

Firms play a crucial role in shaping gender equality in the labor market. Achieving further progress toward gender equality critically depends on the workplace practices that firms adopt. To date, research on the incentives driving firms to implement family-friendly practices and their impact on workers has been limited. Moreover, recent findings from the Women in the Workplace 2025 report (Lean In and McKinsey & Company, 2025) reveal that many firms are reducing flexible work arrangements and other initiatives that support women's advancement, underscoring the fragile nature of workplace progress toward gender equality.

Against this backdrop, we analyze the trade-offs firms face when implementing family-friendly practices, focusing on employer-provided childcare. Leveraging a firm survey that includes repeated measures of childcare provision linked to workers' social security records, we demonstrate that offering workplace childcare significantly enhances retention and reduces career interruptions among first-time mothers, especially those with higher pre-birth wages. Consequently, our findings document reductions in the child penalty, with large and statistically significant effects for high-wage mothers. These findings contrast with mixed cross-country evidence from public childcare expansions (Kleven et al., 2024; Olivetti and Petrongolo, 2017).

Firms that adopt firm-provided childcare also disproportionately increase employment among mothers and women of childbearing age — groups that are likely to place particularly high value on the amenity — as well as men and women in high-wage occupations. These employment gains do not come at the expense of wider gender gaps within firms. In a stylized model of monopsonistic labor markets with endogenous childcare adoption, we show that firms generally have stronger incentives to offer childcare when the groups that value the amenity most exhibit particularly low labor-supply elasticities with respect to the firm. Empirically, we find that labor supply elasticities are indeed low for women of childbearing age, workers in high-wage occupations, and, most notably, mothers themselves.

Our findings demonstrate that firms' decisions to adopt family-friendly practices can significantly influence gender gaps in the labor market. By documenting both the incentives that motivate firms to provide childcare and the resulting impacts on workers, we emphasize the importance of considering firms — not only households and governments — as key actors in shaping gender inequality in the labor market and as de facto providers of family-friendly amenities that typically fall under the domain of public policy.

Our findings also raise several important policy questions. Notably, they suggest that firm-provided childcare can generate broader societal benefits that firms are unlikely to fully internalize, for three main reasons. First, childcare provision increases fertility rates among female employees in the firm. Although this may impose costs from the firm's perspective, it could benefit society as a whole, especially given the declining fertility rates

observed in many developed countries and ongoing government efforts to address these trends. Second, shorter career breaks and higher long-term employment among high-wage mothers not only reduce mothers' child penalties but may also increase tax revenues, generating a fiscal externality (Hendren and Sprung-Keyser, 2020; Koll et al., 2024). These employment gains may also benefit other firms by expanding their talent pools. Third, childcare attendance may confer developmental benefits on children, which are likely to be higher among children from more disadvantaged families (Cornelissen et al., 2018; Cascio, 2023). Yet, access to these benefits is not equally distributed: we find that more advantaged mothers — such as those who are more educated, work in high-paying occupations, or earn higher wages pre-birth — are more likely to be employed in firms that offer childcare. This unequal access can exacerbate disparities among mothers and women across firms, even if firm-provided childcare helps reduce gender gaps within individual firms.

Overall, our results highlight that private firms may have sufficient incentives to voluntarily provide childcare, particularly when public childcare options are limited. However, they also underscore the important role of public childcare provision in ensuring broad access and promoting equitable outcomes for children and families.

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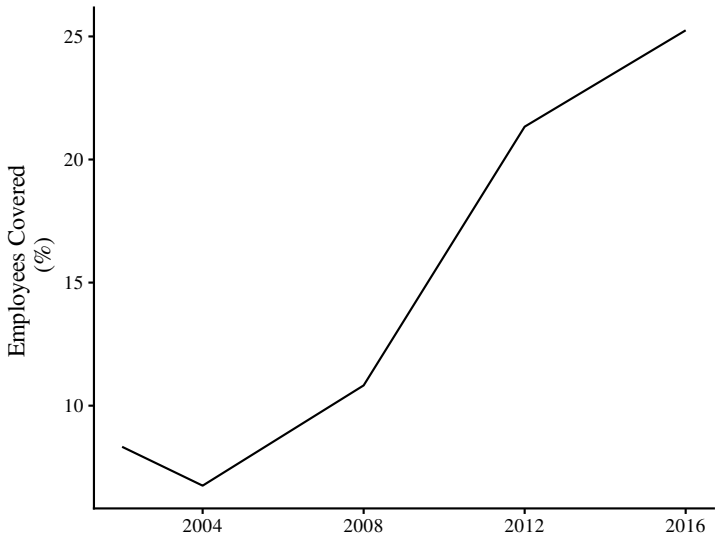
Figures

FIGURE 1. Evolution of Firm-Provided Childcare Over Time

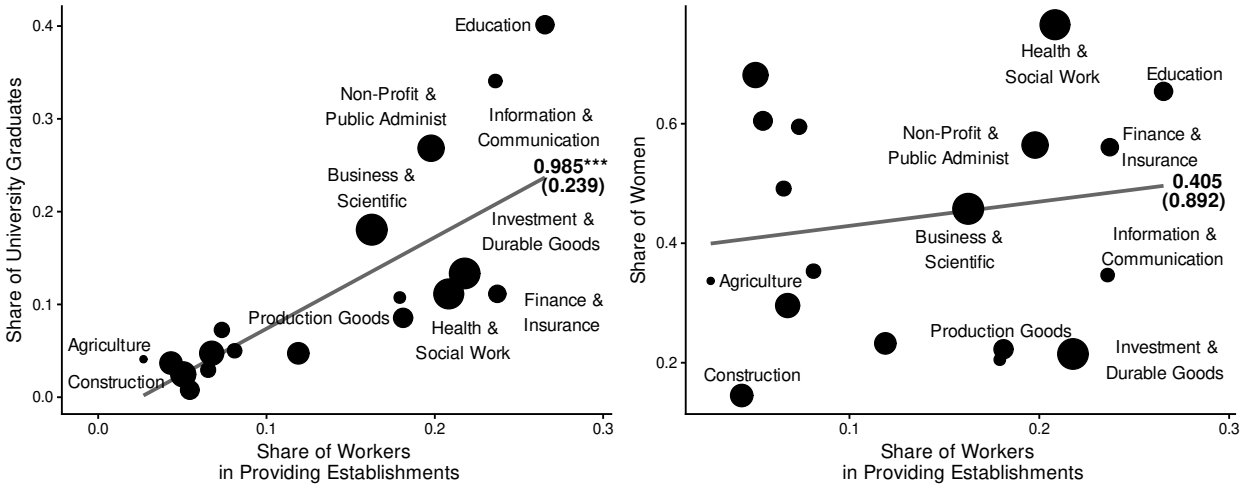


Notes: The figure shows the evolution of firm-provided childcare coverage across survey years 2002, 2004, 2008, 2012, and 2016, for a sample of establishments with available data on workplace policies during any of those survey years. We report coverage weighted by establishment employment to ensure worker-representative estimates.
Source: Information from IAB Establishment Panel for survey years 2002, 2004, 2008, 2012 and 2016, contained in Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

FIGURE 2. Employment After Childbirth

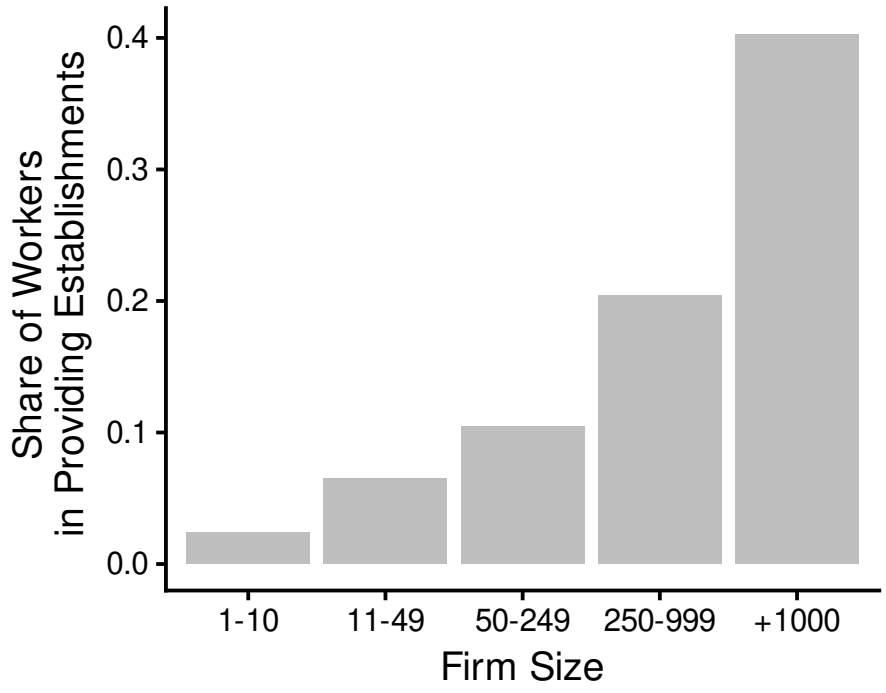
Notes: This figure displays the share of first-time mothers who are employed (including part-time and marginal employment) anywhere (the solid line) or at the pre-birth establishment (the dashed line) each month after childbirth, up to the child's fourth birthday. The sample includes 12,691 first-time mothers who took maternity leave between 2002 and 2010.
Source: Integrated Employment Biographies (IEB) records, contained in Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

FIGURE 3. Firm-Provided Childcare Across Industries



Notes: The figure shows scatter plots of childcare coverage rates in the industry, measured as the share of workers employed in firms that offer childcare, and the employment share of university graduates (Panel A) and women (Panel B) in the industry. The size of each circle reflects the industry's relative size. The figure also shows the fitted linear regression line along with regression coefficients and standard errors.
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

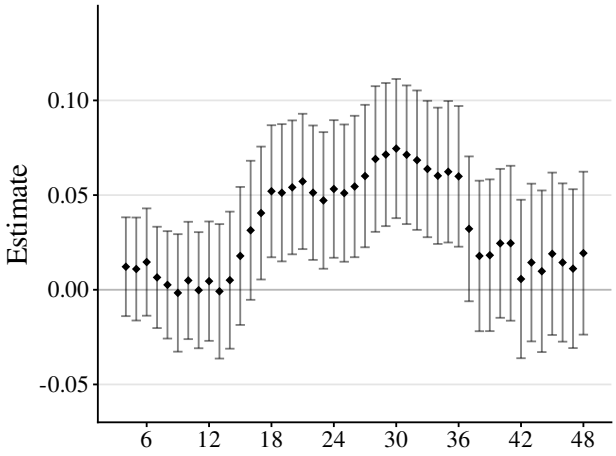
FIGURE 4. Firm Size and Childcare Provision



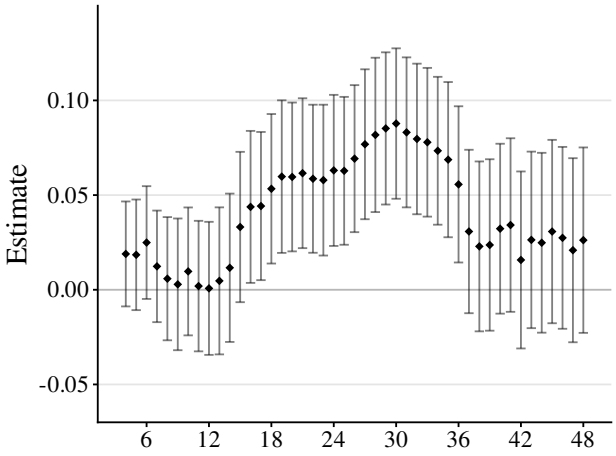
Notes: The figure shows the share of workers employed in establishments that offer childcare across five establishment size bins.
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

FIGURE 5. Childcare Provision and Mothers' Retention

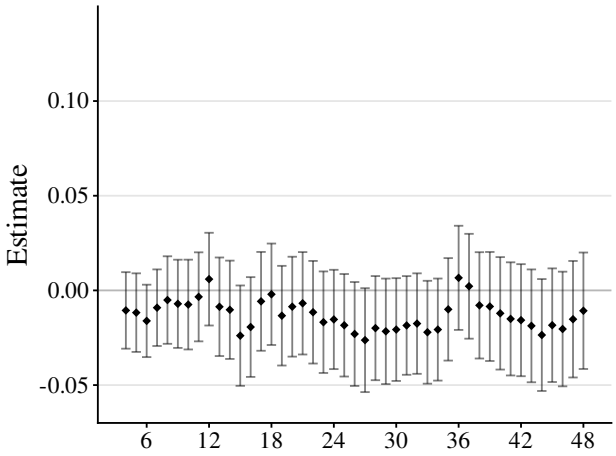
(A) Providers vs Non-Providers



(B) Providers vs Will-be Providers



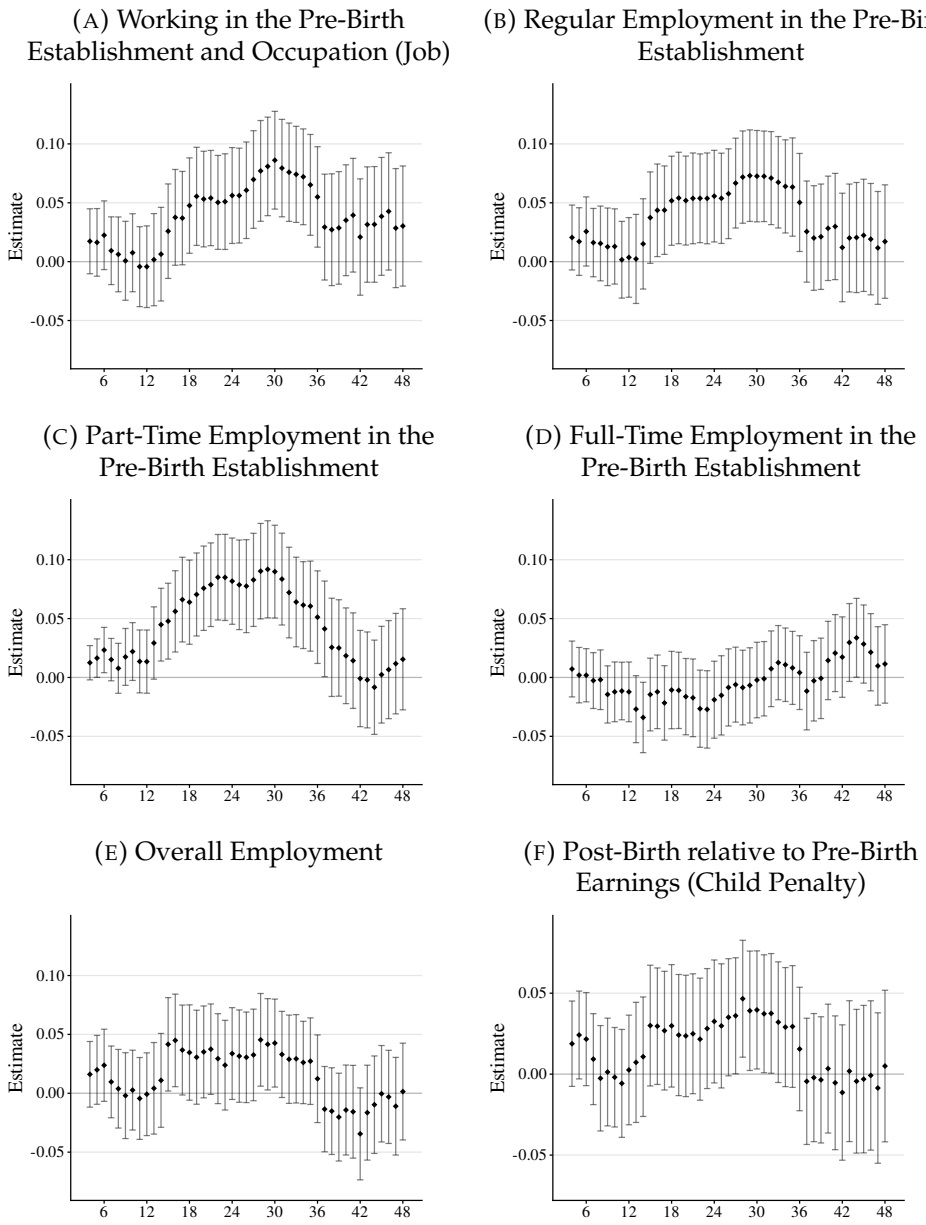
(C) Placebo: Will-be Providers vs. Never-Providers



Notes: The figure reports coefficient estimates of the indicator variable for childcare provision, β_m in equation (3). Regressions are estimated separately for each month since childbirth (3 to 48 months). The dependent variable equals 1 if the mother is employed (including part-time and marginal employment) at the pre-birth establishment in month m after childbirth, and 0 otherwise. Regressions control for mother's pre-birth characteristics (control set II: mother's age, education, German nationality, experience, tenure, occupation (3-digit), earnings, their commuting and employment status at birth), characteristics of the pre-birth establishment (control set I: indicator variables for workplace size, mean wage, mean tenure and mean experience, a quadratic in the share of female workers, and the educational composition of the workforce), as well as local labor market by year-of-birth fixed effects and (2-digit) industry by year-of-birth fixed effects. Panel 5a compares mothers who, at the onset of maternity leave, work in establishments that provide or do not provide childcare ("providers" vs "non-providers"). Panel 5b compares mothers in providing establishments with mothers who, at the onset of maternity leave, are employed in establishments that do not yet provide but will do so in the future (later than 48 months after that mother gave birth; "will-be providers"). Panel 5c presents placebo estimates, contrasting the retention rates of mothers in establishments that will introduce childcare in the future with those in establishments that never provide it ("never providers"). The estimation sample in Panel 5b includes mothers in never-providing establishments, while the estimation sample in Panel 5c includes mothers in providing establishments, to aid in identifying the various fixed effects and control variables. We report 90% confidence intervals from standard errors clustered at the establishment level as lines.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers who entered maternity leave between 2002 and 2010.

FIGURE 6. Childcare Provision and Mothers' Post-Birth Labor Market Outcomes (Providers vs Will-be Providers)

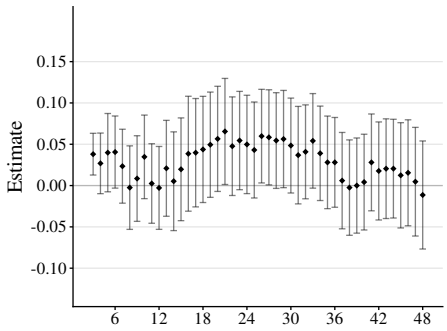


Notes: The figure reports coefficient estimates of the indicator variable for childcare provision, β_m, in equation (3), contrasting mothers in establishments that provide childcare at the onset of maternity leave and in establishments that will do so in the future ("providers" vs "will-be providers"). Regressions are estimated separately for each month since childbirth (months 3 to 48). We report estimates for the following outcomes related to the pre-birth establishment: working in the pre-birth occupation and the pre-birth establishment (pre-birth "job", Panel A), regular employment (excluding marginal employment, Panel B), part-time employment (Panel C), and full-time employment (Panel D). Panel E displays findings for overall employment (including employment in establishments other than the pre-birth establishments), while Panel F considers the "child penalty", defined as the difference between the mother's earnings in a given month after childbirth (set to 0 if the mother is not working) and her pre-birth earnings, divided by her pre-birth earnings. Regressions include control variables for mothers' pre-birth characteristics (control set II), characteristics of the pre-birth establishment (control set I), as well as local labor market-by-year of birth fixed effects and industry-by-year of birth fixed effects (see Figure 5 for details). The estimation sample includes mothers in never-providing establishments to aid in identifying the various fixed effects and control variables. 90% confidence intervals, based on standard errors clustered at the establishment level, are shown as lines.

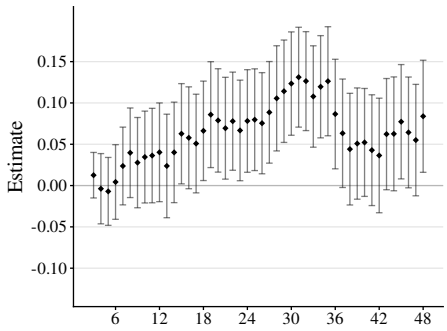
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB establishment panel firms who entered maternity leave between 2002 and 2010.

FIGURE 7. Heterogeneity by Mothers' Pre-birth Wage (Providers vs Will-be Providers)

(A) Low Wage Mothers: Working for the Pre-Birth Firm



(B) High Wage Mothers: Working for the Pre-Birth Firm



Notes: The figure reports coefficient estimates of the indicator variable for childcare provision, β_m, in equation (3), separately for low-wage (Panel 7a) and high-wage (Panel 7b) mothers, contrasting mothers employed in establishments that provide childcare at the onset of maternity leave and in establishments that do so in the future ("providers" vs "will-be providers"). Regressions are estimated separately for each month since childbirth (months 3 to 48). The dependent variable equals 1 if the mother is employed at the pre-birth establishment (including part-time and marginal employment) in month m after childbirth, and 0 otherwise. Mothers are classified as high-wage (low-wage) mothers if their pre-birth daily wages are above (below) the median. Regressions include control variables for mothers' pre-birth characteristics (control set II), characteristics of the pre-birth establishment (control set I), as well as local labor market-by-year of birth fixed effects and industry-by-year of birth fixed effects (see Figure 5 for details). The estimation sample includes mothers in never-providing establishments to aid in identifying the various fixed effects and control variables. We report 90% confidence intervals based on standard errors clustered at the establishment level. *Source:* Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB establishment panel firms who entered maternity leave between 2002 and 2010.

Tables

TABLE 1. Differences Between Childcare Providers and Non-Providers

	(1)		(2)
Panel A. Establishment Characteristics (N = 21,842)			
Share 25-39	0.031***	Share Vocational Training	-0.017
	(0.008)		(0.012)
Share +39	-0.030***	Share Tertiary Educated	0.027**
	(0.011)		(0.012)
Share of Women	0.014	Average Tenure	0.078***
	(0.011)		(0.029)
Sh.Women in Top Executive Pos.	0.008	Productivity	0.137**
	(0.014)		(0.066)
Share of Mothers	0.010***	Average Wage	0.040**
	(0.003)		(0.018)
Share Maternity Leave Taken	0.002***		
	(0.001)		
Panel B. Mothers' Characteristics (N = 12,691; Establishments = 1,861)			
Age 25-39	0.025*	Vocational Training	-0.091***
	(0.014)		(0.023)
Age +40	-0.004	Tertiary Educated	0.111***
	(0.006)		(0.024)
Wage	0.229***	High Pay Occupation	0.094***
	(0.030)		(0.013)
Tenure	0.091**		
	(0.036)		

Notes: The table compares establishments with and without childcare provision. Panel A focuses on the establishment as a whole, while Panel B focuses on mothers in these establishments. Establishment-level regressions in Panel A are weighted by establishment size and include controls for local labor market-by-year fixed effects and (2-digit) industry-by-year fixed effects as well as flexible controls for establishment size (five bins as in Figure 4). Mother-level regressions in Panel B control for local labor market-by-year fixed effects only. High-paying occupations for mothers in Panel B are defined as the top 10% occupations in terms of average pay among all men and women in the Integrated Employment Biographies (IEB) sample. Information on the workforce composition, the average (log) wage and (log) tenure of workers (Panel A) and the corresponding characteristics of mothers in Panel B are based on IEB, while the share of women in top executive positions and productivity - measured as revenue per worker (in logs) - are based on the IAB establishment survey. Standard errors clustered at the establishment level are reported in parentheses. * Statistically significant at the .10 level. ** Statistically significant at the .05 level. *** Statistically significant at the .01 level.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

TABLE 2. Public Childcare Expansions and Firms' Childcare Introduction

ΔPublic Childcare	-1.312**	-1.172**
	(0.563)	(0.535)
Sector × Year FE	✓	✓
Establishment Size FE	✓	✓
State FE	✓	✓
Establishment Characteristics		✓
Observations	4,081	
Average Public Childcare Change	0.085	

Notes: The table reports coefficients from establishment-level regressions of an indicator variable that equals 1 if the establishment introduced childcare between 2008 and 2012 (and 0 otherwise) on the change in public childcare coverage rates for under-3-year-olds in the district. The sample is restricted to establishments that did not provide childcare in 2008. In column (1), we condition only for industry fixed effects, state (*Bundesland*) fixed effects, and flexible controls for establishment size. In column (2), we additionally include baseline establishment characteristics (control set I: indicator variables for workplace size, mean wage, mean tenure, mean experience, a quadratic in the share of female workers, and the educational composition of the workforce). Standard errors clustered at the district level are reported in parentheses. * Statistically significant at the .10 level. ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.
Source: Information from IAB Establishment Panel for survey years 2008 and 2012, contained in Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314). The change in the public childcare coverage rate: Own calculations based on data on childcare slots for under-3-year-olds in non-firm childcare (special data extraction) and the number of children aged 0-3 by year and district (Kreis) provided by the German Statistical Office.

TABLE 3. Labor Shortages and Firms' Childcare Introduction

	(1) # Vacancies	(2) Vacancy Share	(3) Staffing Problems	(4) Skilled Worker Shortages
	0.001***	0.239*	0.037	0.037*
	(0.000)	(0.134)	(0.027)	(0.020)
Obs	12,296	12,296	10,780	10,780
Average	0.148	0.148	0.132	0.132

Notes: The table reports coefficient estimates from regressions of an indicator variable that equals one if the establishment introduces childcare between $t - \tau$ and t on various measures of labor shortages reported by the establishment in $t - \tau$, see equation 2. The sample is restricted to establishments that do not provide childcare at $t - \tau$. We use the following measures of labor shortages: the number of vacancies in the establishment (column (1); the number of vacancies per employee (column (2)); an indicator variable for expected staff shortages (column (3); and a dummy for expecting difficulties in finding required specialized personnel (column (4)). We control for establishment characteristics in $t - \tau$ (control set I; see Table 2 for details), as well as local labor market–by–base year and industry–by–base year fixed effects. Standard errors clustered at the establishment level are reported in parentheses. * Statistically significant at the .10 level. ** Statistically significant at the .05 level. *** Statistically significant at the .01 level. The binary indicators on staffing shortages are part of the additional IABEP survey module on staffing problems, available biannually in survey years 2000-2016.
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314).

TABLE 4. Childcare Provision and Mothers' Post-Birth Labor Market Outcomes

	All	Low Wage	High Wage
Panel A. Months Worked for the Pre-birth Employer			
Childcare	1.898**	1.350	2.995**
	(0.822)	(1.165)	(1.296)
Average	20.537	19.360	21.805
Panel B. Overall Months Worked			
Childcare	0.692	-0.391	2.495**
	(0.753)	(1.074)	(1.109)
Average	24.406	23.951	24.893
Panel C. Total Earnings			
Childcare	2859.723	-1847.500	7309.585*
	(2321.891)	(2532.024)	(4107.922)
Average	58595.807	42329.503	75086.276
Panel D. Child Penalty			
Childcare	0.016	-0.009	0.047**
	(0.018)	(0.030)	(0.022)
Average	-0.560	-0.525	-0.593
Observations	12,691	6,134	6,220

Notes: The table reports coefficient estimates of the indicator variable for childcare provision from an aggregate version of regression equation 3, contrasting mothers in establishments that provide childcare at the onset of maternity leave and in establishments that do so in the future ("providers" vs "will-be providers"). The estimation sample includes mothers in never-providing establishments to aid in identifying the various fixed effects and control variables. We consider cumulative post-birth employment outcomes over 3 to 48 months after childbirth: the number of months worked at the pre-birth establishment (Panel A), the number of months worked for any establishment (Panel B), and cumulative daily earnings (Panel C). In Panel D, the dependent variable is the average child penalty over months 3 to 48 after childbirth, where the child penalty for each month since childbirth is defined as the difference between the mother's earnings in that month (set to 0 if the mother is not working) and her pre-birth earnings, divided by her pre-birth earnings. Regressions include control variables for mothers' pre-birth characteristics (control set II), characteristics of the pre-birth establishment (control set I), as well as local labor market-by-year of birth fixed effects and industry-by-year of birth fixed effects (see Figure 5 for details). The row "Average" reports the sample mean of the corresponding outcome variable for each group. Mothers are classified as high-wage (low-wage) mothers if their pre-birth daily wages are above (below) the median.
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB establishment panel firms who entered maternity leave between 2002 and 2010.

TABLE 5. Employment Growth Following Childcare Introduction

	(1)	(2)	(3)
Panel A: Total and Gender Decomposition			
	Total	Female	Male
Introduction	4.561*	2.713	1.848
	(2.568)	(1.698)	(1.213)
Average	100.000	40.785	59.215
% of Total Effect	100.000	59.483	40.517
Panel B: Women by Age			
	16-24	25-39	+40
Introduction	0.345	1.348**	1.019
	(0.473)	(0.637)	(1.015)
Average	3.654	12.469	24.662
% of Total Effect	7.569	29.565	22.349
Panel C: Mothers by Child Age			
	Below 10	Below 3	3-10
Introduction	0.832***	0.473***	0.359**
	(0.257)	(0.148)	(0.167)
Average	4.475	1.106	3.369
% of Total Effect	18.239	10.370	7.869
Panel D: Top 10% Occupations by Gender			
	All	Female	Male
Introduction	2.550***	0.824***	1.725***
	(0.744)	(0.261)	(0.547)
Average	7.727	1.425	6.301
% of Total Effect	55.906	18.073	37.833

Notes: The table reports coefficient estimates, scaled by 100, of the effect of childcare introduction on employment growth, β^g in equation (4). The comparison group comprises establishments that introduce childcare in the future ("introducers" vs "will-be providers"). The estimation sample also includes "providers" and "never-providers" to aid in identifying the various fixed effects and control variables. Panel A shows the overall employment effect and decomposes it into an effect for men and women. Panel B decomposes women's employment contribution into effects across three age groups, while Panel C focuses on mothers with children under age 3 and children aged 3 to 10 years. Panel D considers employment growth in top 10% occupations by gender, where 3-digit occupations are classified based on the wage distribution of all men and women in our sample. The row "Average" shows the average employment share of the corresponding demographic group in the establishment at baseline, while the row "% Total Effect" reports the share of the overall employment growth induced by the introduction of childcare that can be attributed to the corresponding demographic group. For example, mothers with a child under the age of three make up 1.106% of the establishment's workforce at baseline, but account for 10.370% of the overall employment growth induced by the introduction of childcare. Establishment-level regressions include controls for establishment characteristics at baseline (control set I), as well as local labor market–by–year and industry–by–year fixed effects. Regressions are weighted by establishment size at baseline. The sample consists of a total of 12,307 observations for 5,914 establishments. Standard errors, clustered at the establishment level, are reported in parentheses.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), establishments that introduce childcare between $t - \tau$ and t and establishments that will introduce childcare after t.

TABLE 6. Changes in Workforce Composition Following Childcare Introduction

	(1)	(2)
Panel A. Top 10% Occupations by Gender:		
	Females	Males
Introduction	0.738***	1.500***
	(0.225)	(0.429)
Average	1.425	6.301
Panel B. Share of Mothers;		
	Below 10	Below 3
Introduction	0.571***	0.377***
	(0.166)	(0.107)
Average	4.475	1.106
Panel C. Share of New Hires:		
	From Employment	From Non-Employment
Introduction	1.721**	-0.903
	(0.816)	(0.591)
Average	10.852	13.368

Notes: The table reports coefficient estimates, scaled by 100, of the effect of childcare introduction on changes in employment shares of specific demographic groups. The comparison group comprises establishments that introduce childcare in the future ("introducers" vs "will-be providers"). The estimation sample also includes "providers" and "never-providers" to aid in identifying the various fixed effects and control variables. Panel A shows changes in the employment share of workers in top 10% occupations, separately for women and men. Panel reports changes in the employment share of mothers, distinguishing between those with children under age 3 and under age 10. Panel C reports changes in the employment share of new hires, distinguishing between those hired from employment and from non-employment. The row "Average" shows the average employment share of the corresponding group in the establishment at baseline. Establishment-level regressions include controls for establishment characteristics at baseline (control set I), as well as local labor market-by-year fixed effects and industry-by-year fixed effects. Regressions are weighted by establishment size at baseline. Standard errors, clustered at the establishment level, are reported in parentheses.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), establishments that introduce childcare between $t - \tau$ and t and establishments that will introduce childcare after t.

TABLE 7. Changes in Wages Following Childcare Introduction

	(1) All	(2) Mothers	(3) Male	(4) Female	(5) Gender Gap
Panel A. Incumbent Workers					
Introduction	0.005	0.017	-0.001	0.013***	-0.014**
	(0.005)	(0.010)	(0.006)	(0.005)	(0.006)
Average	0.034	0.038	0.034	0.033	-0.007
Observations	855,747	28,880	541,297	314,443	855,740
Panel B. New Hires					
Introduction	-0.023**	-0.010	-0.027**	-0.014	-0.013
	(0.009)	(0.021)	(0.011)	(0.011)	(0.012)
Average	0.148	0.150	0.157	0.131	-0.023
Observations	227,524	12,640	131,183	96,329	227,512

Notes: The table reports coefficient estimates of the effect of childcare introduction on changes in (log) wages from worker-level regressions (β^g in equation (5)). The control group comprises workers in establishments that introduce childcare in the future ("introducers" vs "will-be providers"). The estimation sample also includes workers in providing establishments and never-providing establishments to aid in identifying the various fixed effects and control variables. Panel A reports estimates for incumbent workers employed at the establishment at both $t - \tau$ and t, and Panel B reports estimates for new hires. For new hires, wage changes are computed as the difference between their (log) wage in period t and the (log) wage in their previous job. We report estimates for all workers (column (1)), mothers (column (2)), men and women (columns (3)–(4)), and for the gender wage gap (column (5), computed as the difference in coefficients for men and women in columns (3) and (4)). Regressions include controls for establishment characteristics at baseline (control set I), workers' age (quadratic), broad occupation (measured in $t - \tau$), and education, local labor market-by-year fixed effects, industry-by-year fixed effects, as well as interactions between indicators for workers' employment status (full-time, part-time, or marginal) in $t - \tau$ and t, to account for differences in daily wages arising from changes in employment status. We further allow these effects to vary across time. The row "Average" reports the average change in log wages for workers whose employment status (full-time, part-time, or marginal) remains unchanged between $t - \tau$ and t. Standard errors, clustered at the establishment level, are reported in parentheses.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993–2014 (LIAB LM 9314).

TABLE 8. Fertility Following Childcare Introduction

	(1) Overall	(2) In Incumbent Firm	(3) In Other Firm
Panel A. Without Individual Controls			
Introduction	1.444***	1.453***	-0.009
	(0.523)	(0.510)	(0.160)
Average	14.441	13.125	1.315
Observations	146,649	146,649	146,649
Panel B. With Individual Controls			
Introduction	1.350***	1.361***	-0.011
	(0.477)	(0.476)	(0.154)
Average	14.620	13.353	1.267
Observations	141,539	141,539	141,539

Notes: The table reports coefficient estimates of the effect of childcare introduction on the probability that a woman in childbearing age goes on maternity leave between $t-4$ and t. The control group comprises women in establishments that introduce childcare in the future ("introducers" vs "will-be providers"). The estimation sample also includes women in providing establishments and never-providing establishments to aid in identifying the various fixed effects and control variables. Regressions are estimated on a sample of female employees aged 25-40 at baseline. Column (1) reports the overall effect, while columns (2) and (3) distinguish between maternity leave taken in the incumbent establishment that introduces childcare and in a different establishment. Regressions in Panel A include controls for establishment characteristics at baseline (control set I), as well as local labor market-by-year fixed effects and industry-by-year fixed effects. Regressions in Panel B additionally control for workers' education and baseline age (quadratic), (log) wage, and occupation. Standard errors, clustered at the establishment level, are reported in parentheses.
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993–2014 (LIAB LM 9314).

TABLE 9. Separation Elasticities Across Worker and Firm Groups

	(1)	(2)	(3)	(4)
Panel A. Elasticities by Demographic Group				
	All	Males [25-40)	Females [25-40)	Mothers†
Firm Wage Premium	-0.253***	-0.318***	-0.285***	-0.246***
	(0.019)	(0.021)	(0.022)	(0.029)
Childcare	-0.004	-0.015*	-0.009	-0.040***
	(0.007)	(0.009)	(0.007)	(0.014)
Elasticity	-2.139	-3.127	-2.052	-1.356
Average	0.118	0.102	0.139	0.181
Observations	4,683,225	945,511	484,478	12,681
Panel B. Elasticities among Top Talent				
	Occupations		Mothers†	
	Bottom 10%	Top 10%	Low Wage	High Wage
Firm Wage Premium	-0.594***	-0.119***	-0.230***	-0.144**
	(0.045)	(0.019)	(0.037)	(0.056)
Childcare	0.012	-0.017**	-0.037*	-0.057***
	(0.024)	(0.008)	(0.021)	(0.019)
Elasticity	-2.690	-1.267	-1.104	-0.939
Average	0.221	0.094	0.208	0.153
Observations	392,111	535,577	6,164	6,262
Panel C. Elasticities by Childcare Provision				
	All		Female $[25, 40)$	
	Non-Providers	Providers	Non-Providers	Providers
Firm Wage Premium	-0.260***	-0.169***	-0.293***	-0.208***
	(0.020)	(0.035)	(0.023)	(0.037)
Elasticity	-1.964	-1.965	-1.992	-1.753
Average	0.132	0.086	0.147	0.119
Observations	3,264,709	1,418,516	341,109	143,369
Panel D. Lock-in Effect: Changes in Responsiveness after Childcare Introduction				
	All	Males [25-40)	Female [25-40)	
Firm Wage Premium × Childcare	-0.027	0.065	0.040	
	(0.048)	(0.045)	(0.057)	
Implied Change in Elasticity	-0.277	0.886	0.355	
Observations	4,682,902	945,094	483,975	

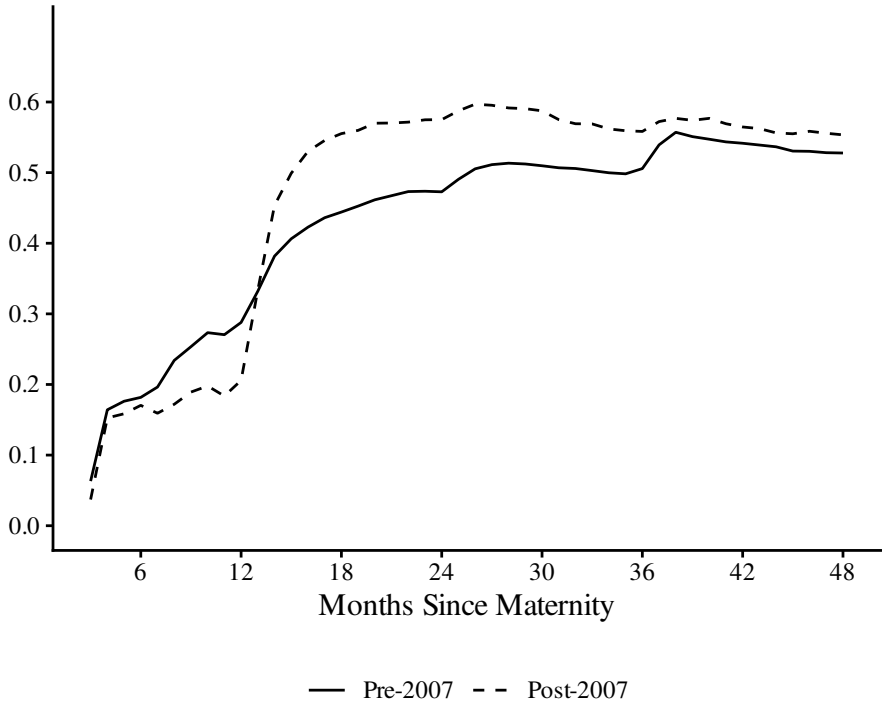
Notes: The table reports coefficient estimates from regressions of an indicator variable that equals one if the worker separates from the establishment on the establishment's wage premium (i.e., the establishment's residualized (log) wage; see footnote 28 in Section 6.3). All regressions include controls for detailed worker characteristics (see main text for details) and childcare provision status, as well as local labor market-by-year fixed effects. We also report implied job separation elasticities ("Elasticity"), computed as the estimated wage coefficients divided by the group-specific average separation rates ("Average"). In Panel A, regressions are estimated separately for all workers, men and women aged 25-40, and mothers. In Panel B, regressions are estimated separately for workers in the bottom and top 10% occupations, and for low-wage and high-wage mothers. In Panel C, regressions are estimated separately for all workers and for women aged 25-40, and the effect of the establishment's wage premium on the separation probability is allowed to vary by the establishment's childcare provision status. In Panel D, the separation indicator is regressed on the establishment's wage premium, childcare provision, and their interaction. Regressions include establishment fixed effects and are estimated separately for all workers, men aged 25-40, and women aged 25-40. Coefficients for the interaction term are reported, capturing the "lock-in" effect. The "Implied Change in Elasticity" is computed as this coefficient divided by the pre-introduction separation rate. †For all worker groups except mothers, separations are defined as leaving the firm between $t-1$ and t. For mothers, separations are defined as not returning to the pre-birth establishment within 48 months after childbirth. Standard errors, clustered at the establishment level, are reported in parentheses.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), restricted to firms for which childcare provision status is observed.

APPENDIX

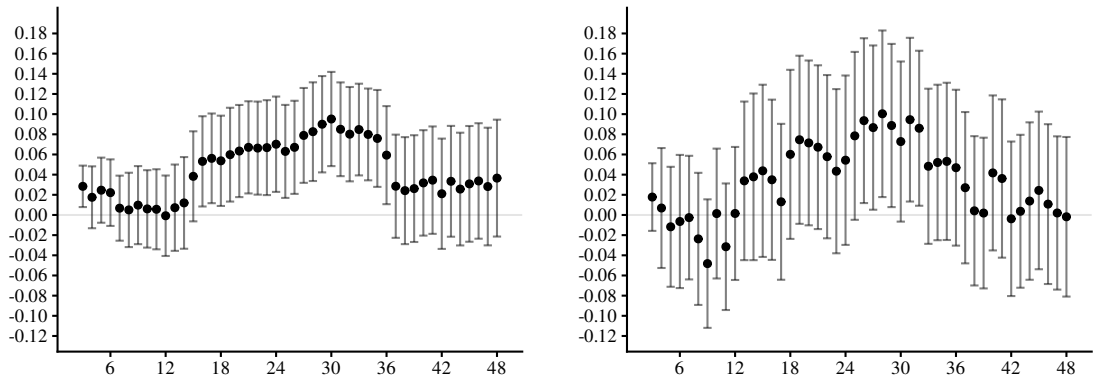
A Appendix Figures

FIGURE A1. Employment at the Pre-Birth Employer After Childbirth: Before and After the 2007 Reform



Notes: The figure displays the share of first-time mothers who are employed (including part-time and marginal employment) at their pre-birth establishment each month after childbirth, separately for mothers who gave birth between 2002 and 2006 (solid line) and mothers who gave birth between 2007 and 2010 (dashed line).
Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB establishment panel firms who entered maternity leave between 2002 and 2010 (N=12,691).

FIGURE A2. Childcare Provision and Mothers' Retention: Before and After the 2007 Reform

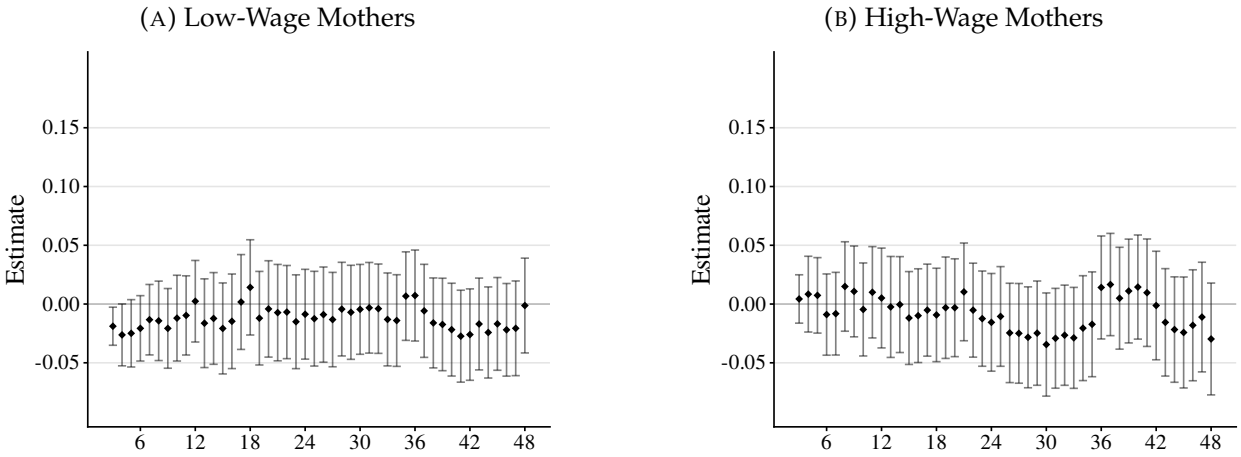


(A) Pre-2007 (B) Post-2007

Notes: The figure reports coefficient estimates of the indicator variable for childcare provision, β_m in equation (3), contrasting mothers in establishments that provide childcare at the onset of maternity leave and in establishments that do so in the future ("providers" vs "will-be providers"). The estimation sample also includes mothers in never-providing establishments to aid in identifying the various fixed effects and control variables. Regressions are estimated separately for each month since childbirth (3 to 48 months), and for mothers who gave birth between 2002 and 2006 (before the maternity leave reform) and between 2007 and 2010 (after the reform). The dependent variable equals one if the mother is employed in the pre-birth establishment in month m after childbirth, and 0 otherwise. The regressions control for mother's pre-birth characteristics (control set II), characteristics of the pre-birth establishment (control set I), as well as local labor market by year-of-birth fixed effects and (2-digit) industry by year-of-birth fixed effects (see Figure 5 for details). We report 90% confidence intervals from standard errors clustered at the establishment level as lines.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB estblishment panel firms who entered maternity leave between 2002 and 2010.

FIGURE A3. Heterogeneity by Mothers' Pre-Birth Wage: Placebo Estimates



Notes: The figure reports placebo coefficient estimates of the indicator variable for childcare provision, β_m in equation (3) separately for low-wage (Panel A) and high-wage (Panel B) mothers, contrasting mothers in establishments that provide childcare in the future and in establishments that never do so ("will-be providers" vs "never providers"). The estimation sample also includes mothers in providing establishments to aid in identifying the various fixed effects and control variables. Regressions are estimated separately for each month since childbirth (3 to 48 months). The dependent variable equals 1 if the mother is employed at the pre-birth establishment in month m after childbirth, and 0 otherwise. Mothers are classified as high-wage (low-wage) mothers if their pre-birth daily wages are above (below) the median. Regressions include control variables for mothers' pre-birth characteristics (control set II), characteristics of the pre-birth establishment (control set I), as well as local labor market-by-year of birth fixed effects and industry-by-year of birth fixed effects (see Figure 5 for details). We report 90% confidence intervals from standard errors clustered at the establishment level as lines.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993-2014 (LIAB LM 9314), first-time mothers in IAB establishment panel firms who entered maternity leave between 2002 and 2010.

B Appendix Tables

TABLE B1. Changes in Wages Following Childcare Introduction: Full-Time and Part-Time Only

	(1) All	(2) Mothers	(3) Male	(4) Female	(5) Gender Gap
Panel A. Incumbent Workers					
Introduction	0.005	0.019*	-0.001	0.012**	-0.013**
	(0.005)	(0.011)	(0.006)	(0.005)	(0.006)
Average	0.033	0.036	0.034	0.031	-0.007
Observations	838,549	27,409	536,841	301,700	838,541
Panel B. New Hires					
Introduction	-0.025**	-0.022	-0.029**	-0.020	-0.009
	(0.011)	(0.024)	(0.013)	(0.012)	(0.014)
Average	0.163	0.171	0.166	0.155	-0.033
Observations	191,699	10,683	115,854	75,834	191,688

Notes: The table reports coefficient estimates of the effect of childcare introduction on changes in (log) wages from worker-level regressions (β^g in equation (5)). The control group comprises workers in establishments that introduce childcare in the future ("introducers" vs "will-be providers"). The estimation sample also includes workers in providing establishments and never-providing establishments to aid in identifying the various fixed effects and control variables. Panel A reports estimates for incumbent workers employed at the establishment at both $t - \tau$ and t, and Panel B reports estimates for new hires. For new hires, wage changes are computed as the difference between their (log) wage in period t and the (log) wage in their previous job. We report estimates for all workers (column (1)), mothers (column (2)), men and women (columns (3)–(4)), and for the gender wage gap (column (5), computed as the difference in coefficients for men and women in columns (3) and (4)). Regressions include controls for establishment characteristics at baseline (control set I), workers' age (quadratic), broad occupation (measured in $t - \tau$), and education, local labor market-by-year fixed effects, industry-by-year fixed effects, as well as interactions between indicators for workers' employment status (full-time or part-time) in $t - \tau$ and t, to account for differences in daily wages arising from changes in employment status. We further allow these effects to vary across time. The row "Average" reports the average change in log wages for workers whose employment status (full-time or part-time) remains unchanged between $t - \tau$ and t. Standard errors, clustered at the establishment level, are reported in parentheses.

Source: Linked Employer-Employee Data from the IAB, Longitudinal Model 1993–2014 (LIAB LM 9314).

C Evidence from Web Searches and Targeted Interviews

To provide additional background, we conducted searches of websites of selected companies (e.g., Volkswagen, Thyssenkrupp, R&V Versicherungen) and industry bodies (e.g., the Chamber of Commerce (IHK)). Between October 2023 and December 2024, we also conducted some targeted interviews by email, phone, or video conference with six organizations covering three segments:

- Two private sector firms that have or are in the process of offering firm-provided childcare (a firm from the insurance industry (R&V Versicherungen) and a medium-sized provider of physiotherapy (Biele Krankengymnastik Beneplus);
- Zukunftswertstatt Düsseldorf, a non-profit organization of the city of Düsseldorf that aims to support the compatibility of career and family life and that offers support to both enterprises and working parent;
- Three accredited provider organizations of firm-provided childcare (E-Impuls, KITA | CONCEPT, Sira Tagesbetreuung). These organizations specialize in helping firms plan, design, and oversee or even run their childcare centers. They also operate their own branded childcare facilities, where firms can reserve slots.

We asked about the reasons and motives of why firms offer childcare support, and their perceived benefits and ex-post experiences. We also inquired about the institutional details of how firms planned childcare facilities, details on their offer (size, quality, opening hours, access), the timeline, costs (actual and perceived), as well as their interactions with the municipality. This information has greatly helped to better understand the institutional background of firm-provided childcare and the support that states and municipalities provide.

Firms report that by offering childcare, they hope to shorten parental leave, increase retention, reduce care-related absenteeism, and attract talent, especially in times or sectors of skill shortages and in industries with many women in childbearing age (such as physiotherapy or insurance). More broadly, firms hope to secure a competitive advantage in the market (*"Wettbewerbsvorteil"* or *"Standortvorteil"*) and to strengthen their employer brand.[31] The physiotherapy firm mentioned that they hope childcare will serve as a "unique selling point" (*"Alleinstellungsmerkmal"*) to prospective employees in a sector where pay is heavily regulated by health insurance, highlighting the "non-monetary amenity" motive to attract talent.

[31] For example, a press release by R&V Versicherungen (R+V Versicherungen, 2023), an insurance company, states : "[...]With the new childcare center, R&V primarily wants to make it easier for parents to return to work and consistently improve the compatibility of career and family. This relief for families contributes to an even stronger identification and strengthening of the R&V employer brand..."

Firms and providers stress the large advantage of guaranteeing parents access to firm-provided childcare—often offering start dates throughout the year rather than at school entry in September—over the uncertainty of whether and when a childcare placement can be obtained in the public system. Interview partners express that the lack of sufficient public childcare slots and the uncertainty around when a slot can be obtained pose difficulties to businesses, especially when substantial investment in firm-specific skills has been undertaken, when personal relationships with clients are crucial (as in the case of physiotherapists), and when mothers work in skill-intensive occupations where employees are harder to replace internally or where external recruitment is costly. The accredited organizations note that firm-provided childcare is particularly advantageous for parents who want to start throughout the year and return to work swiftly, either within the first year or after one year of maternity leave. They also report that providers experience a faster return after birth after offering firm-provided childcare, a finding that we have confirmed in our empirical analysis.

D Data Appendix

D.1 Firm Sample

The IAB Establishment Panel surveys establishments. Throughout the paper, we use the terms "firms", "establishments", "workplaces", and "employers" interchangeably.

To construct the sample of establishments, we first select all establishments that participated in the 2002, 2004, 2008, 2012, or 2016 waves of the IAB Establishment Panel (i.e., the years for which childcare information is available). Each year, we drop firms without any registered employee in the Integrated Employment Biographies (IEB) on June 30. Furthermore, we exclude establishments for which industry information is unavailable and for which key workforce characteristics, such as workers' education, average wage, and the share of female workers, cannot be constructed from the IEB. Establishments are assigned to local labor markets based on the modal residential district of their workers. After these restrictions, our final sample consists of 22,731 establishments.

In Tables 5 to 8, "introducers" are establishments that do not provide childcare in $t - \tau$ but do so in t. "Will-be providers" are establishments that do not provide childcare in $t - \tau$ and t but do so in $t + \tau$. "Never providers" are establishments that do not provide childcare in $t - \tau$, t, and $t + \tau$. "Providers" are establishments that provide childcare in both $t - \tau$ and t. Never-providers and providers are included in the estimation sample to aid the estimation of the effects of control variables, including local labor market-by-year and industry-by-year fixed effects.

D.2 Mother Sample

We follow Schönberg (2009) in identifying maternity leave spells from general leave spells by applying several restrictions. Specifically, we exclude leave spells in which the woman was older than 40 or younger than 16, spells lasting less than two months, spells preceded by unemployment or apprenticeship training, and spells starting on January 1, which often reflect administrative reporting conventions rather than the true start of maternity leave.

After identifying maternity leave spells, we impose additional restrictions. First, we limit the sample to women who take maternity leave for the first time (first observed births). We further restrict the sample to women entering maternity leave from non-marginal employment at an establishment included in the LIAB model, with at least one year of tenure with that employer. Finally, we restrict the sample to maternity leave spells that began between 2002 and 2010, for which daily wages, occupation, and the employment status (full-time, part-time, marginal) immediately prior to the leave are observed, and for which information on the highest educational attainment and nationality is available.

In Figures 5 to 6 and in Table 4, "providers" are establishments that provide childcare at the onset of maternity leave as well as four years later, in $t-4$ and t (91 firms). "Never-providers" are establishments that do not provide childcare in any year (1,528 firms). "Will-be providers" are firms that do not provide childcare at the onset of maternity leave and four years later, but do so some time later (290 firms).

D.3 Variable Definitions

Tables D1 and D2 provide definitions for the key control variables used in our analysis. Control set I comprises variables measured at the establishment level, while control set II includes variables measured at the individual (mother) level.

TABLE D1. Definitions of Key Control Variables

Variable	Definition
Control Set I: Establishment-Level Controls	
Size	Includes dummies for establishment size: 1-10, 11-49, 50-249, 250-999 and more than 999 employees
Mean Wage	Average log daily wage of workers employed at the establishment
Mean Tenure	Average log tenure of workers at the establishment (log days since joining the establishment)
Mean Experience	Average log labor market experience of workers at the establishment (log days since first entering the labor market)
Share of Female Workers	Includes the share of female workers and its square
Educational Composition	Includes the establishment-level share of workers with a university degree and vocational training
Control Set II: Individual-Level Controls	
Age	Includes a quadratic of age at maternity leave
Nationality	Includes a dummy for whether the mother has German nationality
Education	Includes dummies for whether a mother holds a university degree or has completed vocational training
Experience	Log labor market experience measured as log days since first entering the labor market, observed immediately before maternity leave
Tenure	Log tenure in the current establishment, measured as log days since joining the establishment and observed immediately before maternity leave
Occupation	Includes dummies for 3-digit occupations measured immediately before maternity leave
Wage	Includes log daily wage observed immediately before maternity leave
Commuter Status	Indicator equal to one if the woman's district of residence differs from the district of the workplace immediately prior to maternity leave
Full-Time Status	Indicator equal to one if the mother was employed full-time immediately prior to maternity leave

TABLE D2. Definitions of Key Control Variables (Continuation)

Variable	Definition
Additional Controls:	
Industry (43 industries)	Industry corresponds to 43 two-digit industry groups based on the official German industry classification (WZ), harmonized for the period 2000-2017: (1) agriculture/forestry, (2) mining, (3) energy, (4) food/luxury, (5) textiles/clothing, (6) paper/printing/wood sector, (7) chemical/pharmaceutical sector, (8) plastics sector, (9) glass/stones/ore extraction, (10) manufacture of basic metals, (11) manufacture of fabricated metal, (12) manufacture of electrical equipment and office machinery, (13) precision and optical equipment, (14) machinery and equipment, (15) other vehicle production, (16) furniture, jewellery/toys, (17) reparation/installation, (18) main building sector, (19) building/installation, (20) sales, maintenance, repair of motor vehicles, (21) wholesale trade, (22) retail trade, (23) transport and warehousing, (24) information, communication and publishing, (25) hotel business and gastronomy, (26) financial and insurance sector, (27) real estate activities, (28) accounting and advertising, (29) consulting, (30) architecture and technical/physical/chemical support, (31) research and development, (32) marketing, design, and translation, (33) veterinary sector, (34) rental services, (35) placement and temporary provision of labor, (36) itinerant trading, landscaping, (37) education, (38) human health, (39) culture/sports/entertaining, (40) repair of computers and consumer goods, (41) other services, (42) activities of membership, (43) civil service/social insurance

E Model Appendix

E.1 Optimal Wages

The acceptance probability is

$$\Pr(\text{accept } j) = G(.), \qquad g(\cdot) = G'(\cdot).$$

No childcare (type $P0$). The firm chooses w_j to maximize expected profits:

$$\max_{w_j} \; G\Big(b^P(\log w_j - \log W_M)\Big) \; (y_j - w_j).$$

The first-order condition is:

$$g\Big(b^P(\log w_j - \log W_M)\Big) \; \frac{b^P}{w_j} \, (y_j - w_j) \;=\; G\Big(b^P(\log w_j - \log W_M)\Big) \, .$$

Rearranging,

$$w_j = y_j - \frac{G\big(b^P(\log w_j - \log W_M)\big)}{g\big(b^P(\log w_j - \log W_M)\big)} \cdot \frac{w_j}{b^P}.$$

Define the firm-specific labor supply elasticity (for parents without childcare) as

$$\varepsilon_j^{P0} \;=\; \frac{\partial G\big(b^P(\log w_j - \log W_M)\big)}{\partial w_j} \cdot \frac{w_j}{G\big(b^P(\log w_j - \log W_M)\big)} \;=\; \frac{g\big(b^P(\log w_j - \log W_M)\big) \; b^P}{G\big(b^P(\log w_j - \log W_M)\big)}.$$

Hence,

$$\frac{1}{\varepsilon_j^{P0}} = \frac{G\big(b^P(\log w_j - \log W_M)\big)}{b^P \, g\big(b^P(\log w_j - \log W_M)\big)}.$$

Using this, the FOC can be written in the familiar markdown form

$$\frac{y_j - w_j}{w_j} = \frac{1}{\varepsilon_j^{P0}} \qquad \Longleftrightarrow \qquad w_j^{P0*} = y_j \cdot \frac{\varepsilon_j^{P0*}}{1 + \varepsilon_j^{P0*}}.$$

With childcare (type $P1$). If the firm provides childcare, expected profits are

$$\max_{w_j} \; G\Big(b^P(\log w_j - \log W_M) + a\Big) \; (s\, y_j - w_j - c).$$

The first-order condition is

$$g\Big(b^P(\log w_j - \log W_M) + a\Big) \; \frac{b^P}{w_j} \, (s\, y_j - w_j - c) \;=\; G\Big(b^P(\log w_j - \log W_M) + a\Big) \, ,$$

or equivalently

$$w_j = s\,y_j - c - \frac{G\big(b^P(\log w_j - \log W_M) + a\big)}{g\big(b^P(\log w_j - \log W_M) + a\big)} \cdot \frac{w_j}{b^P}.$$

Define the elasticity (with respect to the wage level) as follows:

$$x \equiv b^P(\log w_j - \log W_M) + a, \qquad \varepsilon_j^{P1} = \frac{\partial G(x)}{\partial w_j} \cdot \frac{w_j}{G(x)} = b^P\,\frac{g(x)}{G(x)}.$$

The optimal wage can thus be written as:

$$\frac{s\,y_j - c - w_j}{w_j} = \frac{1}{\varepsilon_j^{P1}} \qquad \Longleftrightarrow \qquad w_j^{P1*} = (s\,y_j - c) \cdot \frac{\varepsilon_j^{P1*}}{1 + \varepsilon_j^{P1*}}.$$

Heterogeneity in the elasticity. Under Type I extreme value errors, the acceptance probability is logistic:

$$G(x) = \frac{e^x}{1 + e^x}, \qquad g(x) = G(x)\big(1 - G(x)\big).$$

For convenience, define the acceptance index for firms without childcare as follows:

$$x_j^{P0} \equiv b^P(\log w_j^{P0*} - \log W_M)$$

Similarly, the acceptance index for firms with childcare equals:

$$x_j^{P1} \equiv b^P(\log w_j^{P1*} - \log W_M) + a$$

Then, for either regime $\ell \in \{0, 1\}$,

$$\varepsilon_j^{P\ell} = b^P\,\frac{g(x_j^{P\ell})}{G(x_j^{P\ell})} = b^P\big(1 - G(x_j^{P\ell})\big).$$

This expression highlights that the labor supply elasticity to the firm is heterogeneous across firms, as it depends on the acceptance index $x_j^{P\ell}$. Holding wages constant, $\varepsilon_j^{P1} < \varepsilon_j^{P0}$. Childcare makes the firm more attractive at a given wage and, therefore, weakens workers' wage responsiveness.

Similarly, with or without childcare provision $\ell \in \{0, 1\}$, the effect of the wage on the elasticity is

$$\frac{\partial \varepsilon_j^{P\ell}}{\partial w_j} = -b^P g(x_j^{P\ell}) \cdot \frac{b^P}{w_j} = -\frac{(b^P)^2}{w_j} g(x_j^{P\ell}) < 0.$$

Thus, the labor supply elasticity is decreasing in the wage. Intuitively, once a firm already offers a relatively high wage, further wage increases have a smaller effect on acceptance probabilities.

E.2 Comparison of Profits with and without childcare

Let G_j^{0*} and G_j^{1*} denote the equilibrium acceptance probabilities (without/with childcare) evaluated at the optimal wages; that is:

$$G_j^{0*} = G\Big(b^P(\log w_j^{P0*} - \log W_M)\Big), \qquad G_j^{1*} = G\Big(b^P(\log w_j^{P1*} - \log W_M) + a\Big).$$

Using the optimal markdown conditions,

$$w_j^{P0*} = y_j \frac{\varepsilon_j^{P0*}}{1+\varepsilon_j^{P0*}}, \qquad w_j^{P1*} = (sy_j - c)\frac{\varepsilon_j^{P1*}}{1+\varepsilon_j^{P1*}},$$

optimal profits can be written compactly as

$$\pi_j^{P0*} = G_j^{0*}\,\frac{y_j}{1+\varepsilon_j^{P0*}}, \qquad \pi_j^{P1*} = G_j^{1*}\,\frac{sy_j - c}{1+\varepsilon_j^{P1*}}.$$

Add and subtract $G_j^{0*}\frac{sy_j-c}{1+\varepsilon_j^{P1*}}$ and $G_j^{0*}\frac{sy_j-c}{1+\varepsilon_j^{P0*}}$ to obtain

$$\Delta\pi_j^* = \pi_j^{P1*} - \pi_j^{P0*} = \underbrace{(G_j^{1*} - G_j^{0*})\frac{sy_j - c}{1+\varepsilon_j^{P1*}}}_{\text{firm growth}} + \underbrace{G_j^{0*}\frac{1}{1+\varepsilon_j^{P0*}}\Big(y_j(s-1) - c\Big)}_{\text{change in effective productivity}}$$
$$+ \underbrace{G_j^{0*}\left(\frac{1}{1+\varepsilon_j^{P1*}} - \frac{1}{1+\varepsilon_j^{P0*}}\right)(sy_j - c)}_{\text{change in markdowns}}. \tag{8}$$

Differences in Profits and Firm Productivity (Intuition) Suppose wage differences across regimes are small; that is, $w_j^{P1*} \approx w_j^{P0*}$. Then childcare makes the firm strictly more attractive to parents, so $G_j^{1*} > G_j^{0*}$, and the *firm growth* term in (8) is positive. Under logit, the labor supply elasticity to the firm satisfies $\varepsilon = b^P g(x)/G(x) = b^P(1 - G(x))$, implying $G_j^{1*} > G_j^{0*}$ entails $\varepsilon_j^{P1*} < \varepsilon_j^{P0*}$ and therefore $\frac{1}{1+\varepsilon_j^{P1*}} > \frac{1}{1+\varepsilon_j^{P0*}}$; hence the *change in markdowns* term is positive as well. Finally, if childcare is productive ($s > 1$), then $y_j(s-1) - c$ increases in y_j, so the *change in effective productivity* term increases in y_j. Thus, for sufficiently large s and small wage differences, each component in (8) is (weakly) increasing in y_j. Hence, differences in profits with and without childcare, $\Delta\pi_j^*$, are increasing in firm productivity y_j.

Amenity valuation a. With childcare, optimal profits can be written as

$$\pi_j^{P1*} = G_j^{1*}(sy_j - c - w_j^{P1*}), \qquad G_j^{1*} = G\left(x_j^{1*}\right), \;\; x_j^{1*} = b^P(\log w_j^{P1*} - \log W_M) + a.$$

Since a enters only directly through the labor supply function, the envelope theorem implies

$$\frac{d\pi_j^{P1*}}{da} = g\left(x_j^{1*}\right)\left(sy_j - c - w_j^{P1*}\right)$$

which is positive at an interior optimum where the firm earns nonnegative rents per worker. Hence, firms have a stronger incentive to adopt childcare when workers value the amenity more.

E.3 Two-Type Model (Parents and Non-Parents)

We extend the baseline model to two worker types: parents (P) and non-parents (N). A share $p \in (0,1)$ of potential applicants are parents. Non-parents put relatively more weight on wages, $b^N > b^P$, and do not value childcare directly. Parents value firm-provided childcare by $a > 0$. Firms cannot wage-discriminate by type and therefore post a single wage w_j.

Define the following indices:

$$x_j^{P0} = b^P(\log w_j - \log W_M), \qquad x_j^{N0} = b^N(\log w_j - \log W_M),$$

and, under childcare provision,

$$x_j^{P1} = b^P(\log w_j - \log W_M) + a, \qquad x_j^{N1} = b^N(\log w_j - \log W_M).$$

Acceptance probabilities are $G_j^{t\ell} = G(x_j^{t\ell})$ for $t \in \{P, N\}$ and $\ell \in \{0,1\}$.

Define the (type- and regime-specific) labor supply elasticity to the firm (w.r.t. the wage level) as:

$$\varepsilon_j^{t\ell} = \frac{\partial G_j^{t\ell}}{\partial w_j} \cdot \frac{w_j}{G_j^{t\ell}} = b^t \, \frac{g(x_j^{t\ell})}{G(x_j^{t\ell})}.$$

Wage setting. Without childcare, the firm solves:

$$\max_{w_j} \; p\, G_j^{P0}(y_j - w_j) + (1-p)\, G_j^{N0}(y_j - w_j).$$

With childcare, it solves:

$$\max_{w_j} \; p\, G_j^{P1}(sy_j - c - w_j) + (1-p)\, G_j^{N1}(y_j - w_j).$$

In both regimes, the optimal *uniform* wage is a weighted average of the (type-specific) markdown wages that would obtain under wage discrimination. In particular, with childcare,

$$w_j^{1*} = \tilde{p}_j^{1*} \underbrace{\left[(sy_j - c)\frac{\varepsilon_j^{P1*}}{1+\varepsilon_j^{P1*}}\right]}_{\text{parent "discriminatory" wage}} + (1-\tilde{p}_j^{1*}) \underbrace{\left[y_j \frac{\varepsilon_j^{N1*}}{1+\varepsilon_j^{N1*}}\right]}_{\text{non-parent "discriminatory" wage}},$$

where the parent share among hires conditional on the vacancy being filled ($\hat{p}_j^{1*}$)and the associated surplus weight ($\tilde{p}_j^{1*}$) are:

$$\hat{p}_j^{1*} = \frac{p\, G_j^{P1*}}{p\, G_j^{P1*} + (1-p)\, G_j^{N1*}}, \qquad \tilde{p}_j^{1*} = \frac{p\, G_j^{P1*}(1+\varepsilon_j^{P1*})}{p\, G_j^{P1*}(1+\varepsilon_j^{P1*}) + (1-p)\, G_j^{N1*}(1+\varepsilon_j^{N1*})}.$$

Analogous expressions hold without childcare (replace $P1, N1$ by $P0, N0$ and $(sy_j - c)$ by y_j). Because the firm must pay a single wage, childcare cost c is effectively shared by parents, non-parents, and the firm; in particular, when productivity gains s are modest, the uniform wage can fall for non-parents even though they do not directly value childcare.

Profits and decomposition. Let the probability that a vacancy is filled in regime ℓ be

$$\tilde{G}_j^{\ell*} = p\, G_j^{P\ell*} + (1-p)\, G_j^{N\ell*}, \qquad \ell \in \{0,1\}.$$

Define per-worker rent shares as

$$\phi_j^{P1*} = \frac{sy_j - c - w_j^{1*}}{sy_j - c}, \qquad \phi_j^{N1*} = \frac{y_j - w_j^{1*}}{y_j}, \qquad \phi_j^{0*} = \frac{y_j - w_j^{0*}}{y_j}.$$

Then

$$\pi_j^{0*} = \tilde{G}_j^{0*}\, y_j\, \phi_j^{0*}, \qquad \pi_j^{1*} = \tilde{G}_j^{1*}\left\{\hat{p}_j^{1*}(sy_j - c)\phi_j^{P1*} + (1-\hat{p}_j^{1*})y_j\phi_j^{N1*}\right\}.$$

Subtracting and adding/subtracting convenient terms yields

$$\pi_j^{1*} - \pi_j^{0*} = \underbrace{(\tilde{G}_j^{1*} - \tilde{G}_j^{0*})\left\{\hat{p}_j^{1*}(sy_j - c)\phi_j^{P1*} + (1 - \hat{p}_j^{1*})y_j\phi_j^{N1*}\right\}}_{\text{firm growth}}$$
$$+ \underbrace{\tilde{G}_j^{0*}\,\hat{p}_j^{1*}\,\phi_j^{P1*}\,\left(y_j(s-1) - c\right)}_{\text{change in effective productivity}}$$
$$+ \underbrace{\tilde{G}_j^{0*}\,y_j\left[\left(\hat{p}_j^{1*}\phi_j^{P1*} + (1 - \hat{p}_j^{1*})\phi_j^{N1*}\right) - \phi_j^{0*}\right]}_{\text{change in markdowns (incl. composition)}}. \tag{9}$$

Relative to the one-type model, the key additional force is the *composition channel*: childcare provision raises the parent share among hires ($\hat{p}_j^{1*}$). If parents exhibit lower labor supply elasticities to the firm than non-parents, childcare provision shifts the workforce toward the group from which the firm can extract larger rents, potentially strengthening incentives to provide childcare.