Preventing Child Maltreatment: Beneficial Side Effects of Public Childcare Provision[*]

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Abstract

We investigate the impact of childcare provision on cases of child maltreatment. For identification, we exploit a governmental reform introducing mandatory early childcare in Germany that generated large temporal and spatial variation in childcare coverage at the county-level. Using high-quality administrative data covering all reported child maltreatment cases in a county per year, our results show that maltreatment cases decline by 1.8% if a county increases childcare slots by one percentage point. Because child maltreatment leads to enormous societal costs, we provide evidence that the provision of universal public childcare can prevent some of these costs.

Keywords: Child Maltreatment; Child abuse and neglect; Early childcare; Prevention

JEL classification: J13; J12; I38

1. Introduction

Child maltreatment includes all forms of child abuse, including physical abuse, emotional mistreatment, sexual abuse, neglect, negligent treatment and exploitation of children, all of which result in actual or potential harm to the child's health, survival, development or dignity. Child maltreatment constitutes a severe problem in many developed countries. For example, the U.S. Department of Health and Human Services estimates approximately 683,000 victims in 2015 alone (U.S. Department of Health and Human Services 2017). As child development is often understood as a cumulative process (e.g., Cunha et al. 2006; Cunha and Heckman 2007), child maltreatment – particularly at the beginning of life – leads to lifelong suffering in terms of psychosocial and health problems for the affected children.[1]

Given the long-term nature of these problems, the associated costs are high. Beyond direct costs, such as those for childhood health care and child welfare, indirect costs of maltreatment may develop from lower employment rates, lower earnings and tax revenues, and increased crime rates.[2] For the U.S., Fang et al. (2012) and Wang and Holton (2007) estimate average lifetime costs of $210,012 (in 2010 dollars) per victim of nonfatal maltreatment and aggregated costs of more than 100 billion dollars per year. For the UK, Conti et al. (2017) suggest costs of approximately 90,000£ per case of child maltreatment case. These numbers illustrate that it is in society's best interest to reduce – and ideally eliminate – incidences of child maltreatment.

Research on preventing the maltreatment of young children indicates that certain targeted and intensive early childhood interventions can be successful. These interventions mostly include intensive at-home consulting for disadvantaged families, with the goal of reducing

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[1] Various studies show that child maltreatment has lifelong effects on physical and psychological development and health, as well as on social behavior and life satisfaction (e.g., Ammerman et al. 1986, Hildyard and Wolfe 2002, and Springer et al. 2007). The effects of adverse environments at the start of life are cumulative because of self-productivities, dynamic complementarities, and sensitive periods in skill development (see Heckman and Masso 2014, or Thiel and Thomsen 2013, for a literature review).

[2] E.g., Currie and Tekin (2012) have analyzed the increased probability of crime due to child maltreatment. For other economic outcomes, see Currie and Spatz-Widom (2010).

caregivers' abusive and neglectful parenting behaviors (see summaries of the results in Doyle & Aizer 2018, Levey et al. 2017, or Howard and Brooks-Gunn 2009). However, obtaining access to families at risk and maintaining their participation is challenging for these in-home programs because families may not only feel stigmatized but also have to invest time and effort in participating (Hernandez et al., 2019 for the U.S. and Sandner, 2019 for Germany).

In contrast to these targeted and intensive programs, universal public childcare supports a wide range of families and is therefore less stigmatizing. Although public childcare does not directly focus on reducing child maltreatment, it may influence the risk of child maltreatment because it may change care quality, parental employment, the time that children spend with inadequate caregivers and the behavior of inadequate caregivers. However, despite the strong relationship between childcare and several domains of families' lives – domains that may also affect adverse parenting – causal evidence of whether the provision of universal childcare can reduce child maltreatment is missing.

This study is the first to investigate the effects of childcare utilization on reported cases of child maltreatment. Our measure for child maltreatment comes from unique high-quality administrative data covering all cases of maltreatment in Germany leading to out-of-home placement. For identification, we use a childcare expansion resulted from a reform in West Germany that included a federal government commitment to provide childcare placements for all children below the age of three years.[3] While in 2002, childcare places were available for less than 3% of children, by 2015, the reform had initiated a 25% increase in childcare availability in West Germany. We use the exogenous variation in the speed and level of the expansion across counties and time, as well as differences in the starting points in 324 West German counties. Following Berlinski et al. (2009), Havnes and Mogstad (2011), and

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[3] This reform was part of the activities of the federal government to improve family policy in Germany. The main objectives were to achieve equal opportunity, reduce social disparities, and provide better educational prospects for all children.

Bauernschuster et al. (2016), we apply difference-in-differences approaches (DiD) regressing child maltreatment cases on childcare coverage rate in each county, controlling for year and county fixed effects, as well as a set of controls.

Our results show that a one-percentage-point increase in the availability of childcare reduces maltreatment cases for children below age six by approximately 1.8%. This figure suggests that the expansion avoided approximately 20,000 maltreatment cases in our observation period of 2002-2015 compared with a scenario of no childcare expansion. Due to potentially significant unreported cases of child maltreatment, we may interpret our results as lower-bound estimates. As the increase in childcare facilities may have increased the detection of child maltreatment cases, this higher detection would have led to more – rather than fewer – cases in the official reporting statistics.

Our robustness checks show that our results are maintained across various alternative specifications and for different subsamples. Most important, because the data include the age of the affected child, we can conduct placebo tests by estimating models on older children not affected by the childcare expansion. These placebo tests rule out the possibility that changes in the structure or organization of local child protective services (CPS) in response to the childcare expansion may have influenced the number of incidences of maltreatment. [4]

The rich administrative child maltreatment data give us the opportunity to investigate the mechanisms behind the maltreatment reduction. Three findings about the mechanisms are striking. First, we find that the strongest reduction occurs in households in which a male partner or husband is present. In contrast, childcare expansion has no effect in single-parent households. Second, our estimates show the strongest reductions for families who were already in contact

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[4] In Germany, the child protection service (CPS) is called the youth welfare office (*Jugendamt*). The youth welfare office has similar responsibilities and duties, such as supporting and monitoring families at risk, connecting to support services, and, as a final measure, removing maltreated children from the family, as CPS does in the U.S. or U.K.

with or under the observation of the CPS. Finally, we find that the reduction concentrates on child protection cases that are initiated because of abuse and neglect. Child protection cases that are initiated because of parental overburden are not affected. These findings suggest that the substitution of inadequate informal childcare by males in families at risk constitutes the main channel for the reduction in child maltreatment cases. This explanation is in line with Lindo et al. (2018), who demonstrate that cases of child maltreatment increase if males, as a main source of informal childcare, spend more time with children after an increase in maternal employment.

Our setting is particularly suitable for this analysis for the following three reasons. First, several studies investigating other outcomes of the German childcare expansion, such as child development or fertility, show that the variation in the expansion was independent of county characteristics (e.g., Bauernschuster et al. 2016; Felfe and Lalive 2018). Therefore, the daycare expansion for children below age three provides a natural experiment enabling us to identify causal effects. Second, childcare fees are means-tested and depend on available household income. Free childcare is provided for low-income and welfare-receiving families, who are at the highest risk of child maltreatment (e.g., McLoyd, 1990; Paxson and Waldfogel, 2002). Therefore, self-selection due to budgetary constraints is not very likely, particularly for families at risk. Indeed, in this respect, the German childcare provision is similar to the U.S. Head Start program, which is also free for low-income or welfare-receiving families (U.S. Department of Health and Human Services 2014). Third, in Germany, the federal government is responsible for child protection legislation. Therefore, no state or county can deviate from it by creating child protection legislation that correlates (intentionally or not) with childcare availability.

Because our paper is the first to analyze the effects of expanding public childcare for young children on child maltreatment, our results answer three major and previously unanswered questions. First, they indicate that not only targeted interventions (e.g., home visiting programs) but also general public policies that substantially change the mode of care can prevent severe

cases of maltreatment. In contrast to intensive programs, using universal childcare does not stigmatize families at risk and therefore leads to a much higher take-up rate among these families. The effect of a reduction in child maltreatment thus strengthens support for the policies of those countries that offer publicly funded universal childcare programs (e.g., France, Germany, the Nordic countries, and the UK). Moreover, the results of this study can influence the discussion in the U.S., where no nationwide universal preschool or early childcare programs are available but where the Obama administration's *Zero to Five* plan, which the Trump administration largely continued, aimed to create similar initiatives.

Second, because maltreatment has strong detrimental effects on children's cognitive and noncognitive development, our findings add to the more general discussion about the channels through which universal public childcare provision affects child development. The findings in the literature on the overall effects of universal public childcare on child development, particularly for children younger than three, are mixed. Baker et al. (2008) and Fort et al. (2019), among others, report negative average effects. In contrast, several recent studies show that public childcare is beneficial for children from families with lower socioeconomic status (e.g., Drange and Havnes 2019, Bitler et al. 2015, Peter et al. 2016, Kottelenberg and Lehrer 2017, Felfe and Lalive 2018).[5]

Because child maltreatment occurs more frequently in such families, our study presents a channel through which childcare positively affects child development therein. Our results indicate that childcare utilization has a positive impact on development, not only through the increased provision of stimulating nurseries or peers, as many scholars suggest (e.g., Cornelissen et al. 2018, Felfe and Lalive 2018), but also through a reduction in inadequate parenting or insufficient informal care arrangements.

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[5] Effects of daycare for children age 3 to 5 years are generally more positive; for older children as well, daycare is most beneficial for more disadvantaged children (e.g. Havnes and Mogstad, 2015, Cornelissen et al. 2018).

Third, our study contributes more broadly to the literature investigating how economic circumstances, public policies, and household composition affect child maltreatment. Starting with Paxson and Waldfogel's (2002) influential work, many studies reveal relationships among economic hardship, absent fathers, working mothers, and child maltreatment (Berger et al. 2017, Berger and Waldfogel 2011, Raissian and Bullinger 2017, Slack et al. 2003). These studies rely mostly on correlations or have weaknesses in their measures of child maltreatment. However, two recent studies have used small-area time variation and administrative data for identification. For the U.S., Brown and DeCao (2018) find that overall unemployment rates increase child neglect. Lindo et al. (2018), using data from California, show that male layoffs increase child maltreatment, while the opposite is true for female layoffs. Our results make an important contribution to these findings by showing that the provision of public childcare creates an opportunity to attenuate the consequences of economic hardship, unemployment and, in particular, inadequate care, which is often provided by males.

The remainder of the paper is organized as follows. Section 2 provides some theoretical considerations about the relationship between childcare expansion and child maltreatment. Section 3 explains the child welfare system in Germany and our child maltreatment measure. Section 4 describes the public childcare expansion reform in Germany. Section 5 presents the empirical analysis and the identification strategy. The main results are presented in section 6, followed by an analysis of potential mechanisms in section 7. Section 8 discusses the results, policy implications and conclusions.

2. Theoretical Considerations of Potential Mechanisms

The provision of public childcare aims primarily at improving equal opportunities for men and women in the labor market and at offering early childhood education. Although such care does not focus directly on increasing parental skills or reducing child maltreatment, it has the potential to reduce the number of child maltreatment incidences through various channels. To

illustrate these channels, we discuss the two most likely reactions of families when more childcare placements become available: switching from home care (where the mother is the main caregiver) to childcare or from informal care (e.g., where nannies, the father or partner of the mother, or other relatives are the main caregivers) to childcare.[6]

For those families who substitute informal with formal childcare, the quality of care is likely to increase as children will spend less time with inadequate caregivers. This is particularly true for Germany, as the law sets high quality standards for public childcare.[7] This higher quality may prevent child maltreatment. In line with this explanation, Lindo et al. (2018) demonstrate that cases of maltreatment increase if males, as a main source of informal childcare, spend more time with children because of the expansion of maternal employment. If high-quality formal childcare is available, mothers will be less dependent on potentially inadequate informal care provided by family members and other insufficient care arrangements. The risk of child maltreatment may therefore decrease.

Given the low childcare fees in Germany, an expansion of the labor supply with an accompanied switch from home care to formal care will likely increase the household income of those families. This possibly reduces parental stress and provides additional resources for the family, thus helping to avoid child maltreatment. Moreover, higher employment may foster certain consistent behaviors, such as a routine daily schedule, and may extend the family's social network. These improved factors may spill over to maternal parenting and have a preventive effect on child maltreatment. However, Paxon and Waldfogel (2002) also discuss the negative effects of maternal employment, such as possible job stress, more difficulty making

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[6] Informal care includes nannies, fathers, grandparents, partners, older siblings, friends and, in the worst case, the child being left alone. Leaving a small child alone is a direct form of neglect.

[7] The higher quality of formal childcare, compared with informal childcare, is also documented in Datta Gupta and Simonsen (2010), Herbst (2013), and Gathmann and Sass (2018).

ends meet due to work-related expenses, and less energy available for parenting at the day's end.

Some families switching from home care to childcare do not increase labor supply, as shown in studies on international labor supply elasticities concerning childcare availability (Baker et al. 2008 for the U.S.; Havnes and Mogstad 2015 for Norway; Bauernschuster and Schlotter 2015, Busse and Gathmann 2018, and Müller and Wrohlich 2019 for Germany). Therefore, the provision of universal public care may allow additional time for parents to relax and to recover. Research on the origins of child maltreatment shows broad consensus that domestic violence against children is rarely a conscious criminal decision by the parents; instead, parental stress and overburden are frequent starting points, particularly in families with low socioeconomic status, low economic resources, and multiple children.[8] Thus, more parental leisure time gives them a way to mitigate these burdens.

Finally, for both groups of parents (those who substitute informal childcare or home care by formal childcare), formal childcare can give parents-at-risk the opportunity to interact with nursery staff. This interaction may provide parenting guidance and constitute a substantial source of support. Therefore, it may reduce overburden and, in turn, prevent maltreatment. Additionally, in allocating places in childcare, CPS may focus particularly on families at risk, whether to relieve their stress, or whether to monitor them (which may change the behavior of a potential perpetrator), or to obtain access to the families to connect them with other intensive early childhood interventions. Overall, these measures may reduce the number of child maltreatment cases.

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[8] For example, McLoyd (1990) analyzes the effects of economic hardship on children and shows that "*poverty and economic loss diminish the capacity for supportive, consistent, and involved parenting and render parents more vulnerable to the debilitating effects of negative life events*" (p. 312). In addition, she notes, "*a major mediator of the link between economic hardship and parenting behavior is psychological distress deriving from an excess of negative life events, undesirable chronic conditions, and the absence and disruption of marital bonds*" (p. 312). For Germany, Deutsche Kinderhilfe (2014) comes to a similar conclusion.

In summary, childcare may improve the quality of care, may give better income prospects to the parents if labor supply increases, may reduce overburden if labor supply does not increase, and may give state authorities the possibility to monitor families at risk or to connect them with other support services.

3. Institutions and Data: Child Maltreatment

Measuring cases of child maltreatment is challenging because it usually occurs in the private domain. Therefore, the literature has relied on several proxies for child maltreatment. Some studies use self-reports from surveys (e.g., Berger et al. 2017), while more recent studies from the U.S. (e.g., Raissian und Bullinger 2017, Brown and DeCao 2018, Lindo et al. 2018) use administrative data from the CPS. Self-reported data may be subject to reliability problems. For Germany, Sierau et al. (2017), for example, show that parents who are part of a child protection case often do not report maltreatment in the context of psychological questions.

In our study, we use the number of child protection cases as a proxy for child maltreatment. Our data source is the German Child and Youth Welfare Statistics (*Deutsche Kinder- und Jugendhilfe Statistik),* which contains all individual cases of child protection at the county level in a particular year from 2002 to 2015. According to article 19 of the Convention on the Rights of the Child of the United Nations, "*states parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the case of parent(s), legal guardian(s) or any other person who has the care of the child.*" In line with the Convention, German law defines a child protection case as a temporary placement of a child with a suitable person or in an adequate location if the child's well-being is in danger.

In Germany, CPS is organized at the county level and is in charge of initiating child protection cases. The local CPS becomes active if the situation in a family – which is often

already under the observation of the local CPS – becomes more critical for the child. A CPS worker then decides whether a persistent danger to the child's well-being exists. If so, the CPS places the child outside the family.[9] Such cases can end with the child returning to the family either with no obligations or with some obligations, most likely a weekly social worker visit or, in an extreme case, a long-term foster care placement (see Petermann et al. 2014 for details on legal regulation).

For several reasons, our measure of child maltreatment – the number of child protection cases – is a very reliable proxy for overall incidences of child maltreatment. First, in each reported child protection case, an official authority decided that the well-being of the child was in danger. Therefore, if a child protection case is initiated, serious danger to the child – rather than a potential danger – exists. Second, although an unknown rate of unreported cases remains, for serious cases, this rate is likely to be lower than for less serious cases. For this reason, it is unlikely that the detection rate differs systematically by county. Third, the rules for a child protection case in Germany are defined at the federal level in the German Social Code Book (*Sozialgesetzbuch*). This law defines the precise situations in which the well-being of the child is in danger. Therefore – in contrast to the U.S. – changes in the number of cases between counties should reflect a relationship to the total number of child maltreatment cases and not to changes in definitions of child maltreatment.

For each child protection case, the data include the age – categorized into seven age groups – of the protected child.[10] In addition to the age of the maltreated child, the year, and the county of the incidence, the data provide the reason for the incidence, the household situation, and the person or institution who reported the case. Data availability is very good: Only one state (Schleswig-Holstein, a small northern state) does not provide data on child protection cases in

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[9] A family judge becomes involved only if parents disagree with the initiation of a child protection case.
[10] Age is separated in the following seven age groups: *below 3, 3 to below 6, 6 to below 9, 9 to below 12, 12 to below 14, 14 to below 16, 16 to below 18 years.*

2002. In subsequent years, very few counties have missing entries. Overall, our analysis focuses on a final sample of 4,420 county-year cells from 11 German federal states.

< Table 1 about here >

Table 1 gives an overview of the number and type of cases in our analysis sample. Overall, 48,757 child protection cases were initiated for children under age 6 from 2002 to 2015. The most frequent reasons were overburden of the parents (37%), child neglect (36%) and child abuse (12%). The most frequent household situation in which a maltreated child lived is a single parent household (41%), followed by a nuclear family (33%), a biological parent with a new partner (13%), and other household arrangements (12%). The local CPS reported most of the cases (67%). Parents who seek help by themselves (11%) and police (10%) are the second most frequent reporting sources. Nurseries account for only a small number of reports (1%).

< Figure 1 about here >

The maps in Figure 1 show the development of child protection cases per 1,000 children based on our data over time. The variation in reported incidence rates across counties is considerable. Moreover, we observe an increase in reported cases over time (see Appendix I for details). The overall increase in reporting may reflect a number of additional causes, including better overall awareness of child well-being[11] (Witt et al. 2017) and prominent cases of child abuse in Germany (and worldwide) in the mid-2000s that received major media attention.[12] The very low overall report rate from nurseries suggests (see Table 1) that increased reports by nurseries due to increased exposure to public childcare do not appear to be the main cause for the increase in child maltreatment cases.

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[11] Corporal punishment of children by parents became illegal in Germany in the year 2000.
[12] For example, in 2010, revelations of abuse scandals in the Roman Catholic Church and in educational institutions triggered a public debate about child maltreatment and generated a range of measures focused on prevention. This debate might have raised awareness about child maltreatment and increased the number of reported cases (e.g., Rassenhofer et al. 2015; Witt et al. 2017).

4. Institutions and Data: The German Childcare Expansion

To identify the effect of public childcare provision on child maltreatment, we use Germany's mandatory expansion of childcare places for children under the age of three. This expansion began in 2005, when the German federal government committed to creating 230,000 additional early childcare places in West Germany by 2010 *(Tagesbetreuungsausbaugesetz)*.[13] While Germany had introduced mandatory laws for the provision of universal public childcare for children between ages three and six in 1996, for children under age three, daycare opportunities in the Western federal states hardly existed until 2005.[14]

In 2007, a summit (*Krippengipfel*) of the federal government, the federal states, and the counties reinforced the aim of the 2005 mandate and set the target of a 35% coverage rate by 2013. Finally, the law on support for children (*Kinderförderungsgesetz*), enacted in December 2008, gave every parent with a child aged one to three years the right to a place in early childcare by August 2013 – and, if no place is available, the parent could enforce a legal claim for reimbursement. In essence, the reform included a federal government mandate that all counties in each state had to expand public childcare substantially to meet legal rights to guaranteed childcare places for all preschool children aged one to three years by August 2013.

We use administrative data from the Statistical Offices of the German Laender (*Statistische Landesämter*) to obtain information on public childcare coverage for children under age three on the county level. These data are available for 2002 and then annually for 2006 to 2015. No administrative data on public childcare provision on the county level are available for the years 2003, 2004 and 2005. Figure 2 shows the county-level coverage rates for all years from 2002

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[13] East Germany experienced a much smaller expansion of public childcare provision during the years under analysis because it already had high childcare levels as a legacy of the former German Democratic Republic. Additionally, numerous changes to the boundaries of East German counties over the years would hamper the empirical analysis. Therefore, our analysis only includes West German counties.

[14] Although mandatory laws requiring childcare places for children between three and six years of age were not introduced until 1996, the provision of daycare spaces was already far higher for this age group at that time. Schmitz et al. (2017) report a coverage rate of 78% in 1994, which increased to 93% in 2016.

and 2006 to 2015. While in 2002, the childcare coverage rate was consistently below 5% across virtually all West German counties, in 2015, almost all counties exceeded 20% coverage, with an average of 28.1%. Nonetheless, the maps further show considerable variation in the expansion across counties – even within the same state. Bauernschuster et al. (2016) note that two-thirds of the variation in childcare coverage is attributable to variation within states, while one-third is attributable to differences between them.

< Figure 2 about here >

A further implication of Figure 2 is that we observe a shift to the right of the entire distribution of childcare coverage. However, no convergence process between counties exists (see also Bauernschuster et al. (2016)). Instead, the standard deviation of coverage rates steadily increased from 2002 to 2015 (see Appendix II for details), likely due to different expansion patterns across counties (some have expanded very slowly, others very rapidly). Some counties have gradually increased childcare over time, some started off strongly but came to a halt, and still others were delayed by a few years but later drastically increased their coverage. Overall, we observe many different types of expansion patterns across counties, resulting in very strong regional variation.

Bauernschuster et al. (2016) and Felfe and Lalive (2018) explain in detail that this variation has resulted from the process of opening up new childcare centers, a process that involves many complex and intertwined decisions by municipality, county, and state authorities. On the one hand, municipality and county authorities were responsible for assessing local demand for childcare, with demographic and economic factors (e.g., current cohort sizes and labor market conditions) entering those projections. On the other hand, state authorities had to approve nonprofit organizations' proposals to set up new childcare centers.

This administrative process was susceptible to problems that varied substantially across counties (e.g., Hüsken 2011). These problems included varying routines and levels of

knowledge about the complex (co-)funding system (with subsidies from the federal government, the state, and the municipality), construction land shortages, various building regulations for childcare centers, shortages of qualified childcare workers, serious delays in approval, and rejections of noncompliant applications. As a result, the increase in childcare places differed at the county level due to both well-defined predictors of local childcare demand and shocks to the local supply of new childcare places – shocks resulting from lengthy and intricate administrative processes and rules (e.g., Felfe and Lalive 2018). These shocks, which are arguably orthogonal to expected changes in cases of child maltreatment, provide the basis for our identification strategy.

Childcare centers are subject to strict quality regulations, including for opening hours, group size, staff-child ratios, and staff qualifications. Centers are required to remain open for at least four hours, five days per week. Groups within these centers can have up to 10 children and must be supervised by at least one certified education specialist and one (or two) assistants. The educational degree required for group leaders in a care center requires two years of certified vocational training (in the German apprenticeship system) and at least two years of experience at a care center. During the period under study, the ratio of children to staff was approximately 3:1 (Felfe and Lalive, 2018).

Childcare for children under age three is highly subsidized in Germany. In 2006, public subsidies covered 79% of total operating costs, with another 7% of funding coming from private organizations. Parents had to bear only 14% of total costs. Parental fees are regressive according to family size and progressive according to family income (means-tested), and they range from 0 to 600 euros per month (Bauernschuster et al. 2016). In almost all communities, childcare is free for families who receive welfare benefits. In addition, these families are on a priority list for receiving a place in childcare. The waiving of fees for welfare-dependent families and the preferred placement allocation they receive are both independent of employment.

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5. Empirical Approach

To identify the effects of universal public childcare provision on child protection cases, we follow the empirical approach applied in studies examining the effects of childcare expansions on child development or fertility (e.g., Berlinski et al., 2009; Havnes and Mogstad, 2011; Bauernschuster et al., 2016). This approach estimates a generalized difference-in-differences (DiD) model that uses the local childcare coverage rate as a continuous treatment variable exploiting the large variation – generated by the expansion – in available childcare places across counties and within counties over time.

This generalized model can be specified as follows:

$$y_{ct} = \theta \ treat\_cr_{ct} + X'_{ct}\beta + \alpha_t + \delta_c + \varepsilon_{ct}, \tag{1}$$

where y_{ct} is the logarithm of the number of child protection cases per 1,000 children in county c at time t, and $treat\_cr_{ct}$ denotes the childcare coverage rate in county c at time t, i.e., a continuous variable. α_t and δ_c are year-fixed and county-fixed effects.[15] X'_{ct} comprises a set of time-variant county factors that may affect the child protection cases. We consider these factors and the county-fixed effects when controlling for the counties' different reasons for and the circumstances of their childcare expansion. Finally, ε_{ct} is the i.i.d. error term. We estimate the model by weighted fixed-effects panel regressions. Weights are calculated on the county-year population of the analyzed age group. All standard errors are clustered at the county level.

The focus of our analysis is on child protection cases in the age groups *below 3* (age group: 0-3) and *3 to below 6* (age group: 3-6). Although the childcare expansion focuses on children below three, we choose children under six years of age (age group 0-6) as our main group of interest because enrollment in childcare is often based on cut-off dates and not on birth dates. One popular cut-off date is September 1st. Children born before a cut-off date attend early childcare until the cut-off date, although they have already turned three years old. Therefore,

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[15] To accommodate for county year cells with zero observations, we add one case to each cell.

the expansion also affects children older than three, and we consider this by estimating the effects on children in the larger age bracket.

Due to consideration of county fixed effects, public childcare expansion need not be orthogonal to time constant county characteristics. Although several other studies have shown that German childcare expansion is exogenous to time-varying county characteristics (see Felfe and Lalive 2018 and Bauernschuster et al. 2016 for the expansion considered in this study; Cornelissen et al. 2018 for childcare expansion for children aged three to six years), we include time-varying county characteristics to check whether these characteristics influence both childcare expansion and child protection cases.

To include county's economic characteristics in each year, we consider the unemployment rate, the share of female and male employment subject to German social security contributions, and the share of foreign population.[16] In addition, we consider the annual percentage of school dropouts and the percentage of school graduates with a high school degree (*Abitur*) as proxies of low- and high-ability population rates. Finally, we include the annual share of the population below 6 years and the share of the population between 6 and 18 years in our estimations to control for changes in the population's composition due to the childcare expansion.

For the case at hand, conditional on county fixed effects and the set of time-varying county factors, we can assume that there are no further unobserved characteristics of a county that vary over time and are correlated with public childcare provision and changes in child maltreatment. We will run regressions both with and without the set of county-specific time-varying covariates to investigate the robustness of the identified and estimated effects.

One possible concern when investigating the effects of childcare expansion on child maltreatment is that childcare expansion changes the organizational structure or the available

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[16] Employment subject to social security contributions excludes marginal employment below an income threshold of a monthly salary of 450 Euro.

resources of a local CPS. Either could lead to a situation in which the number of child protection cases declines because the child protective service initiates fewer cases, even though the rate of parents who maltreat their children remains the same. To address this concern, we use a placebo group of older children who should also be affected by organizational or resource changes in the CPS, as these offices do not organizationally separate older or younger children. This group, however, should not directly respond to childcare expansion. We conduct these placebo estimations using the number of child protection cases for the group of children aged *12 to below 18* (age group: 12-18) as the dependent variable in equation 1. With this placebo estimation, we can test whether the CPS has changed its procedure in response to the childcare expansion or whether time variant characteristics change according to the expansion. As the CPS is responsible for all children below 18 years, if one of the aspects would be true, we should also see a reduction in this older age group. No reduction, on the contrary, can be interpreted as strong evidence for the validity of our approach.

Much less of an issue for the question at hand are the responses parents use to avoid detection, e.g., child perpetrators may move to counties with lower numbers of childcare facilities to avoid protection cases. This behavior is unreasonable because parents use childcare voluntary, and perpetrating parents have easier ways of avoiding detection than moving. In the same sense, we can exclude anticipation effects of childcare expansion with respect to child maltreatment behavior. Anticipation effects would imply a change in child maltreatment behavior before more public childcare places become available, e.g., a parental move made before more childcare spaces become available.

Finally, it is important to note that we interpret our estimation results as lower-bound estimates of the corresponding effects. Because the issue of child maltreatment is subject to a large number of unreported cases (even with a comprehensive administrative framework, such as the one we use), the expansion of childcare places may induce a higher probability of

detection in addition to its positive effects on parental behavior. A higher probability of detection in treated counties would therefore reduce the expected positive effect in terms of a lower number of child protection cases due to public childcare provision.

6. Empirical Results

Before turning to the estimation results for our main groups, we test whether the timing of childcare slots' creation can be assumed to be quasi-random (see Table 2). To do so, we regress the childcare coverage rates on sociodemographic characteristics in the specific year while conditioning on municipality and year dummies. In line with previous research and in line with our argumentation above, the estimates demonstrate that changes in the county sociodemographic characteristics are only marginally correlated with the childcare expansion. Moreover, the characteristics are jointly not significantly different from zero. Hence, the results of Table 2 support our identifying assumption that both the intensity and timing of new childcare slot creation are plausibly exogenous.

< Table 2 about here >

Table 3 presents our main estimation results for different age groups. Panel A shows the results for children from age group 0-to-below-6 years and for children from age group 12 to below 18 years. Panel B separates the results for children from age group 0 to below 6 years in a younger group 0 to below 3 years and an age group of 3 to below 6 years. The coefficient "*childcare coverage*" presents the effect of a one-percentage point increase in childcare coverage on the logarithm of child protection cases per 1,000 children. While Column 1 shows the results without time-variant county characteristics, Column 2 additionally includes socioeconomic characteristics and Column 3 additionally includes educational and population county characteristics.

< Table 3 about here >

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The estimation results in Panel A, Column 1 show that an increase in childcare slots by one percentage point significantly reduces cases of child maltreatment by 1.8%. The results in Columns 2 and 3 are very similar in size and significance, confirming that the childcare expansion was exogenous to time-varying county characteristics. Columns 4, 5, and 6 of Panel A present the corresponding estimation results for the older children. For this older age group, the coefficients are insignificant and close to zero. The pattern of the estimates are robust, independent of whether we consider time-varying county characteristics in the regression model. They therefore confirm that childcare expansion has no effect on children and families who are not in the age range of the expansion. The finding indicates that the local CPS did not change their behavior in response to the childcare expansion, as it was very unlikely that these changes would be limited to small children.

Panel B of Table 3 shows that the results are of similar size for children in the age group 0 to below 3 years and in the age group 3 to below 6 years. Again, the results are robust independently of whether we take time-varying county characteristics into consideration or not in the estimation for these groups. As the results for both age groups are similar in size, it appears that spillover effects between siblings are relevant and that a child below three years attending early childcare affects the whole family. Because the expansion affects all children below six years, we continue presenting the pooled results for children in the age group 0 to below 6 years.

To investigate the robustness of our main results presented in Table 3, we estimate a number of additional model specifications. First, we use the number of cases per 1,000 children as the dependent variable instead of its log to check whether our results are sensitive to approximately 15% of county years with zero cases. Second, to maintain the log nature of our outcome of interest but avoid the linearity assumption, we estimate equation 1 with a Poisson model. By

doing so, we take account of the count nature of our data and require the specification of the conditional mean only (Wooldridge 1999).

Third, although in Germany legislation for child protection comes from the federal level, we consider state-year fixed effects as an additional robustness test. We do so because legislation changes and institutions at the state level may affect child maltreatment cases and coincidence with childcare expansion or utilization of specific groups. For example, some German states introduced targeted programs to prevent child maltreatment in certain years. Fourth, in addition to the county and year fixed effects, we include linear and quadratic time-state trends. These fixed effect trend-interactions (specifications 3 and 4) allow states to follow specific trends and should support the validity that maltreatment trends would be the same in states in the absence of childcare expansion. Finally, specifications (5) and (6) consider the development of treatment effects over time. Specification 5 considers the effect of public childcare provision on the log of child protection cases in the following year (lag specification). Specification 6 checks for potential reverse causality; it shows the estimates of the effect of public childcare provision in the following period (lead specification) on the current period's log of child protection cases.

< Table 4 about here >

Table 4 presents the corresponding estimation results of the robustness analyses. Column 1 shows the effects of early childcare expansion on the absolute cases per 1,000 children instead of the logarithm of cases. The results show that a one-percentage-point increase in childcare significantly reduces 0.030 cases per 1,000 children, which corresponds to an effect size of 2.7%. Applying this approach, we can show that the results are not sensitive to counties with zero cases or the distributional form of the dependent variable. Columns 2, 3 and 4 show the results from the Poisson model, the results from state-year fixed effects and quadratic time trends. All estimates of the effect of public childcare provision on child maltreatment are of comparable size with the estimates obtained in the main specification (Table 3). Hence, these

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results further support the causal relationship of childcare provision and a lower number of child protection cases.

In addition, to check whether the effects are temporary only or persist for longer periods, Column 5 adds the results of an extended model with a one-period lag of the indicator of public childcare provision. The corresponding coefficient estimate shows a lasting effect, reducing the number of child protection cases in the following period. Hence, the effects do not fade out quickly. Finally, Column 6 provides a simple test on potentially reversed causality, i.e., that the number of child protection cases may have forced a stronger expansion of public childcare provision. Obviously, this rarely tends to be the case, as the small and insignificant coefficient estimate implies.

Overall, the main empirical results are robust to different specifications with the result that a one-percentage point increase in childcare places leading to a reduction of 1.8% cases per 1,000 children. As the following back on the envelope calculation shows, the effect sizes are meaningful: From 2002 to 2015, in West Germany childcare slots have increased by 25 percentage points; this expansion implies that in 2015, 45% fewer cases occurred in comparison to a situation in which the childcare supply had remained at the same level as 2002. In the years before 2015, the reduction in cases was lower than in 2015 as childcare supply was on a lower level. Summing up the avoided cases in each year between 2002 and 2015 (see Appendix I for the total number of cases for each year) implies that 20,625 more child maltreatment cases would have occurred if childcare supply had remained at the same level as 2002.

7. Mechanisms

In this section, we use rich administrative data to identify the core mechanisms by which childcare expansion reduces child maltreatment cases. As explained in section 2, childcare expansion may affect child maltreatment through various channels. First, childcare may improve the quality of care as it reduces time in inadequate care. Second, it may give better

income prospects to parents if labor supply increases. Third, it may reduce overburden if leisure time instead of labor supply increases, and finally, it may give state authorities the opportunity to monitor families at risk, which may change the behavior of potential perpetrators.

To identify which of the potential channels are most relevant, Panels A to D in Table 5 present the effects of childcare expansion separately for different characteristics (reporting source, family situation, type of maltreatment, and gender) of maltreatment cases. Panel A analyses which of the four main reporting sources (CPS, police, parents or nursery) reacts most strongly to the childcare expansion. If the CPS reports a maltreatment case that leads to out-of-home placement, the CPS had usually observed the family before this serious maltreatment case occurred. This observation takes place because the families possess risk factors for maltreatment, such as less serious incidences of maltreatment, adverse parenting, or a problematic household structure (e.g., teenage parenthood). Families under observation of the CPS often also show low labor market attachment; relatedly, 39% of these families received welfare benefits in 2018 (Destatis, 2019).[17]

The police report a case if officers can confirm an indication expressed by neighbors or other people. Parents report a case mostly if they feel that they can no longer cope with their situation. If parents or police report the case, it is unlikely that the CPS has observed these parents already, or they would have made the report. The last group of reports come from nurseries. Although nurseries do not often report cases, this reporting source may increase in counties where more children attend childcare.

< Table 5 about here >

The estimation results indicate that cases reported by the CPS decrease most strongly (2.6% by a one-percentage-point childcare increase), while we do not observe a significant reduction

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[17] Data on the characteristics and the numbers of families under observation of the CPS are only available for recent years.

in any other reporting source. This finding suggests that maltreatment in families at risk, which are already under observation of the CPS, reacts most to the childcare expansion. For these families, childcare appears to stabilize a critical situation, which might have ended in a serious maltreatment case without access to childcare. Finally, nurseries do not report more cases in regions with larger expansions, indicating that more childcare utilization does not increase the reporting of maltreatment.

Panel B will help to explain why families at risk – who are often welfare recipients – react most to the childcare expansion. We consider three main family situations (single parent, both parents and single with partner), in which maltreatment cases occur. "*Single*" describes a household with one parent (most likely the mother).[18] "*Both parents*" refers to a nuclear family and "*single with partner*" means a biological parent (most likely the mother) with a new partner. While the childcare expansion has no significant effect on single households, cases of maltreatment decrease significantly only in households where a male person is present, with the strongest decrease in households where the mother lives with a new partner.[19] This finding indicates that a present male plays an important role in why childcare reduces child maltreatment.

In an important work, Lindo et al. (2018) showed that males are most often the perpetrators in child maltreatment cases – e.g., the female-male ratio in abuse cases is 1:4 if the reduced time that males spend with children is considered – and that male unemployment increases the risk of child maltreatment. These findings lead to two potential explanations for why childcare plays a dominant role in reducing maltreatment cases if a male is present in the household. First, because we find the strongest reduction in families already under observation of the CPS, in

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[18] In Germany, the mother heads more than 90% of all single-parent households with children (BMFSFJ, 2017, p. 12).

[19] In their overview on family stability, Brown et al. (2016) show that cohabiting unions are much less stable than marriages, even when children are present. Related to that there is a growing literature showing that family instability has a causal effect on children's development, see, e.g., Lee and McLanahan (2015).

which the father will often be unemployed or irregularly employed, more available childcare strongly reduces the time a child spends under the supervision of a potential male perpetrator.

In addition to Lindo et al. (2018), the second explanation relates to the findings by Aizer (2010), Bobonis et al. (2013), or Anderberg et al. (2015): Increases in female wages relative to male wages, in public transfers, or in employment opportunities reduce domestic violence against females because of changes in household bargaining power. More available childcare places may also improve the economic situation of females in relation to males and may therefore strengthen the bargaining situation of the mother. This strengthening may lead to a separation from a potential male perpetrator or a change in the behavior of a potential male perpetrator. Both may not only reduce violence against women but also against children.

From this argumentation, also the answer follows why childcare expansion has only small effects on mostly female-headed single-parent households. In single-parent households, childcare mostly substitutes maternal care, while in two-parent households, it also substitutes inadequate male care. It appears that without this substitution, childcare expansion has only small effects on child maltreatment. An alternative explanation for the small effects for single parents might be lower childcare utilization by single parents than by nuclear families. However, an analysis conducted with the German Socio-Economic Panel Study (SOEP) demonstrates that single parents – with or without welfare receipt – are even more likely to use childcare for children below three than two parent families (see Table Appendix IV) and therefore disproving this explanation.

Panel C presents the estimation results on which reasons (neglect, abuse, and overburden) for a maltreatment case are most affected by the childcare expansion. "*Neglect*" indicates that parents are caring for their child insufficiently, whereas "*abuse*" indicates that parents are harming the child. In contrast, "*overburden*" indicates that severe problems of the parents, such as drug addiction or mental illness, which require that the child not remain with the parents, are

the main reason for the out-of-home placement. We find a strong decrease in cases initiated because of child abuse and neglect, while we find no significant decrease in cases initiated because of overburden. These findings indicate that the additional free time a family may get due to using childcare does not reduce the severe problems facing the parents. Therefore, the reduction in abuse and neglect as the main driver also points to the direction in which inadequate care is reduced. Finally, Panel D shows that the expansion affects maltreatment cases of females somewhat more than it affects males. Nevertheless, the effects are significant for both genders.

Overall, the analysis has shown that in families at risk, reduced time with a potential male perpetrator or improved female bargaining power constitute the main channels through which childcare reduces child maltreatment. Other explanations for the reduction, such as better income prospects for the parents, stronger monitoring by the CPS, or more leisure time appear to contribute to a smaller extent because in all these channels, the expansion should also affect mostly female-headed single families.

8. Conclusion

We have investigated the effects of childcare provision on child protection cases. For identification, we used an exogenous expansion in Germany of childcare places for children below age three. Our results suggest that the provision of childcare places reduced the number of child protection cases in a meaningful and significant way. Our results further show that a large-scale public policy, even one that does not directly aim at preventing child maltreatment, can have beneficial side effects. This finding is both new and important, given that some scholars and child welfare organizations argue that only very intensive and focused interventions can prevent tragic incidences of child maltreatment.

For example, the charity Prevent Child Abuse America argues that home visiting, early childhood education, and parent education are the most effective interventions to prevent child neglect. While also advocating for mental health services for parents, ensuring access for all

children to affordable, quality health care and increasing efforts to alleviate social problems such as poverty, Prevent Child Abuse America does not mention public childcare provision as an effective preventive policy.[20]

Our results further show that maltreatment reduction is strongest in families at risk of maltreatment in which a male person is present. This finding strengthens the argument for further expanding publicly provided childcare and giving subsidies to low-income groups, who are at the highest risk of child maltreatment. However, because we find no effects for single households, intensive programs appear to remain important in these households for preventing child maltreatment.[21]

Finally, our results provide further legitimation for public-provided childcare, as they show beneficial side effects of this policy. These side effects are fiscally relevant because child maltreatment not only causes extreme hardship for the victims but also leads to enormous long-run fiscal costs for societies due to increased need for special education, impaired health, and higher welfare payments. For a back-of-the-envelope cost-benefit analysis, we assume costs of 90,000 £ (111,600 US-$) per case for the society. Conti et al. (2019) estimate these costs for the UK, which are lower than the costs per case calculated by Fang et al. (2012) for the U.S. but probably more comparable to Germany. Because our results show that the childcare expansion prevented 20,625 cases of serious maltreatment, the expansion generated savings for German society of 2.3 billion US-$ over the observation period. These savings represent 63% of the total federal investments until 2015 in childcare expansion, which amounted to 3.64 billion US-$ (3.28 billion Euro).

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[20] See http://preventchildabuse.org/resource/preventing-child-neglect/ for details.
[21] Home visiting programs are the most prominent intensive early childhood intervention for preventing child abuse and neglect. These programs are expanding in both Europe and the U.S. (e.g., U.S. Department of Health and Human Services, 2015, Robling et al. 2016, Sandner et al. 2018).

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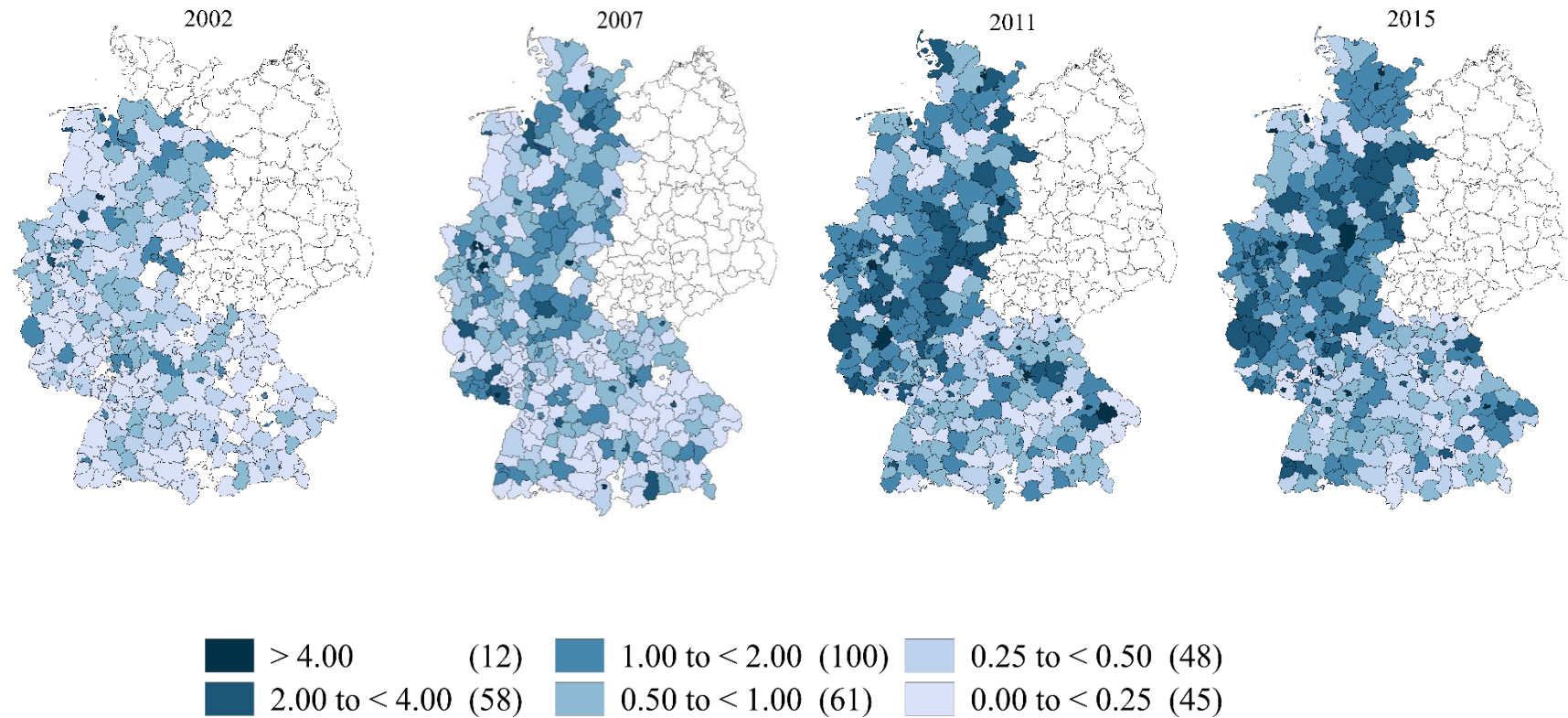
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Figure 1: Child protection cases per 1,000 children by county in West Germany between 2002 and 2015.

■ > 4.00 (12)	■ 1.00 to < 2.00 (100)	■ 0.25 to < 0.50 (48)
■ 2.00 to < 4.00 (58)	■ 0.50 to < 1.00 (61)	■ 0.00 to < 0.25 (45)

Avg. cases of child protection cases by child welfare authorities in Germany, cases per 1,000 children

Notes: Data provided by the German Child and Youth Welfare Statistic on individual cases of child protection in a particular year on the county level of children under six years of age (per 1,000 children). Numbers in brackets refer to number of counties in each class in 2015. Calculations by the authors.

Figure 2: Childcare expansion by county in West Germany between 2002 and 2015.
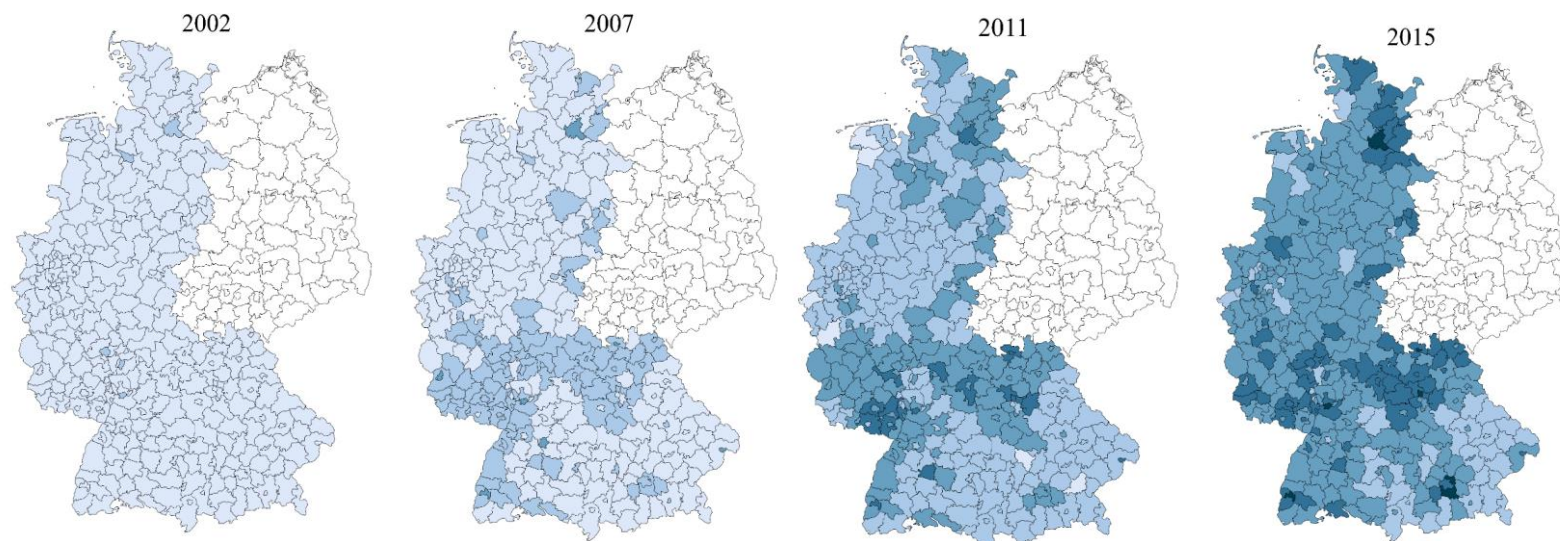
Public childcare coverage for children under three years based on the number of children in this age group, in percent

☐ 0 -< 10 (0) ☐ 10 -< 20 (41) ☐ 20 -< 30 (183)
☐ 30 -< 40 (93) ☐ > 40 (8)
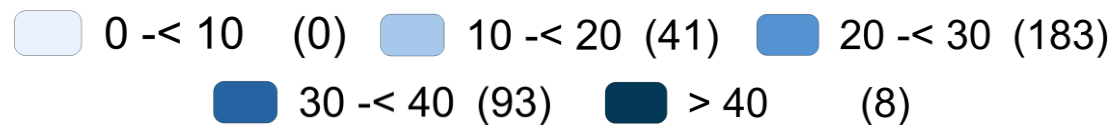
Notes: Data provided by the Statistical Offices of the German Laender on public childcare coverage for children under the age of three. Numbers in brackets refer to number of counties in each class in 2015. Calculations by the authors.

Table 1: Sample descriptive statistics

	Age: 0 to <6
	Mean
Gender	
Male	0.54
Reason for the Case	
Overburden of Parents	0.37
Neglect	0.36
Abuse and Sexual Abuse	0.12
Other	0.26
Living Arrangement Before the Case	
Single Parent	0.41
Both Parents	0.33
Single Parent with Partner	0.13
Relatives, Foster Family, Other	0.12
Case was Suggested by	
Youth Office	0.67
Parents	0.11
Police	0.10
Nursery/Teacher	0.01
Medical System, Relatives, Other	0.11
Number of Cases	48,757

Notes: Data provided by the German child and youth welfare statistic for the years 2002 to 2015.

Table 2: Balancing test

Unemployment rate	-0.205*
	(0.106)
Share of foreign population	-0.031
	(0.111)
Share of women in the workforce	0.103
	(0.164)
Share of men in the workforce	-0.053
	(0.118)
Share of school drop-outs (w/o degree)	-0.050
	(0.062)
Share of school graduates with high-school degree	0.003
	(0.012)
Share of the population below 6	-1.003*
	(0.536)
Share of the population between 6 and 18	-0.129
	(0.377)
Year fixed effects	Yes
County fixed effects	Yes
Observations	3,447
p-value for joint significance of covariates	0.2024

Notes: The table reports coefficients from regressions of the childcare rate on county characteristics conditional on year and county fixed effects. The last row reports the *p*-value for the hypothesis that the county characteristics are jointly equal to zero. All coefficients on shares refer to 1-percentage-point changes in these shares. Standard errors clustered at the county level are reported in parentheses. Statistical significance indicated by stars (* $p<0.1$, ** $p<0.05$, *** $p<0.01$).

Table 3: Effects of universal public childcare provision on child protection cases (log cases per 1,000 children).

Panel A	Age 0 to <6 years Log cases per 1,000 children			Age 12 to <18 years Log cases per 1,000 children		
	(1)	(2)	(3)	(4)	(5)	(6)
Effects of one pp. childcare expansion	-0.018**	-0.017**	-0.017**	0.002	0.001	0.002
	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)
Year fixed effects	Yes	yes	yes	yes	yes	yes
County fixed effects	Yes	yes	yes	yes	yes	yes
Regional economic factors	No	yes	yes	no	yes	yes
Regional educational factors	No	no	yes	no	no	yes
County year observations	*3,496*	*3,469*	*3,447*	*3,496*	*3,469*	*3,447*
Number of counties		*324*			*324*	

Panel B	Age 0 to <3 years Log cases per 1,000 children			Age 3 to <6 years Log cases per 1,000 children		
	(1)	(2)	(3)	(4)	(5)	(6)
Effects of one pp. childcare expansion	-0.018*	-0.017*	-0.016*	-0.020***	-0.019***	-0.019***
	(0.009)	(0.008)	(0.011)	(0.007)	(0.007)	(0.007)
Year fixed effects	Yes	yes	yes	yes	yes	yes
County fixed effects	Yes	yes	yes	yes	yes	yes
Regional economic factors	No	yes	yes	no	yes	yes
Regional educational factors	No	no	yes	no	no	yes
County year observations	*3,496*	*3,469*	*3,447*	*3,496*	*3,469*	*3,447*
Number of counties		*324*			*324*	

Notes: The table reports coefficients from regressions of the log of child maltreatment cases per 1,000 children on childcare rate for years 2002 to 2015. Regional economic and educational factors include the variables shown in Table 2. All observations are weighted by the county population of the observed age group. Data are provided by the German child and youth welfare statistic. Standard errors reported in parentheses are clustered on the county level. Statistical significance indicated by stars (* p<0.1, ** p<0.05, *** p<0.01).

Table 4: Effects of universal public childcare provision on child protection cases - different model specifications.

	Age 0 to <6 years					
	Cases per 1,000 children	**Cases per 1,000 children (Poisson regression)**	**Log cases per 1,000 children**	**Log cases per 1,000 children**	**Log cases per 1,000 children (childcare t-1)**	**Log cases per 1,000 children (childcare t+1)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Effects of one pp. childcare expansion	-0.030***	-0.018*	-0.018**	-0.020**	-0.019***	-0.003
	(0.010)	(0.010)	(0.009)	(0.009)	(0.007)	(0.009)
Year fixed effects	yes	yes	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes	yes	yes
State-year fixed effects	no	no	yes	no	no	no
Linear and quadratic state trends	no	no	no	yes	no	no
County year observations			3,496			
Number of counties			324			

Notes: The table reports coefficients from regressions of different specifications of equation (1). All observations are weighted by the county population of the observed age group. Columns 1-4 show the effect of childcare expansion in t while column 5 shows the effect of childcare expansion in t-1 and column 6 in t+1. Standard errors reported in parentheses are clustered on county level. Statistical significance indicated by stars (* $p<0.1$, ** $p<0.05$, *** $p<0.01$).

Table 5: Effect for subgroups for age 0 to <6

Panel A: Who reported the Case	Youth Office	Police	Parents	Nursery
Effects of one pp. childcare expansion	-0.026**	-0.001	-0.013	-0.000
	(0.010)	(0.007)	(0.008)	(0.004)

Panel B: Living Arrangement Before Case	Single	Both parents	Single with partner	
Effects of one pp. childcare expansion	-0.009	-0.017**	-0.030***	
	(0.008)	(0.005)	(0.002)	

Panel C: Reason for the Case	Overburden	Neglect	Abuse	
Effects of one pp. childcare expansion	-0.006	-0.017**	-0.019***	
	(0.010)	(0.008)	(0.006)	

Panel D: Gender	Boy	Girl		
Effects of one pp. childcare expansion	-0.015**	-0.023***		
	(0.007)	(0.009)		

Year fixed effects	Yes	yes	yes	yes
County fixed effects	Yes	yes	yes	yes

Notes: The table reports coefficients from regressions of equation (1) with log cases per 1,000 children in the specific category as dependent variable. Estimations are based on fixed-effects panel regressions for years 2002 to 2015. All observations are weighted by county population age 0 to <6. Standard errors reported in parentheses are clustered on the county level and are robust. Statistical significance indicated by stars (* $p<0.1$, ** $p<0.05$, *** $p<0.01$).

Appendix I: Average cases of child protection age < 6 and between 12 and < 18.

| | | Average cases per 1000 children | | | |
| | | Age: < 6 | | Age: between 12 and < 18 | |
Year	Counties	Mean	S.D.	Mean	S.D.
2002	286	0.501	0.753	1.873	2.365
2003	296	0.501	0.657	1.815	2.331
2004	311	0.534	0.672	1.832	2.377
2005	317	0.547	0.691	1.893	2.441
2006	316	0.690	0.877	1.927	2.400
2007	319	0.872	1.122	2.096	3.091
2008	322	1.089	1.179	2.437	2.717
2009	322	1.123	1.077	2.554	3.076
2010	319	1.198	1.223	2.707	2.866
2011	321	1.319	1.348	2.813	2.837
2012	321	1.252	1.191	2.970	3.078
2013	323	1.289	1.223	2.957	2.932
2014	323	1.317	1.261	3.063	3.307
2015	324	1.361	1.394	2.930	2.774
All years	4,420	0.980	1.132	2.430	2.817

Notes: Data provided by the German Child and Youth Welfare Statistic on absolute individual cases of child protection in a particular year on the county level of children under six years of age. Calculations by the authors.

Appendix II: Childcare coverage over time.

Year	Counties	Mean	S.D.	Min	Max
2002	324	0.022	0.023	0.000	0.130
2006	324	0.073	0.038	0.010	0.233
2007	324	0.094	0.044	0.022	0.284
2008	324	0.118	0.047	0.034	0.340
2009	324	0.142	0.049	0.036	0.344
2010	324	0.171	0.053	0.071	0.360
2011	324	0.200	0.060	0.092	0.378
2012	324	0.222	0.059	0.110	0.392
2013	324	0.242	0.060	0.113	0.432
2014	324	0.270	0.058	0.139	0.469
2015	324	0.274	0.058	0.136	0.472

Note: Data provided by the German Child and Youth Welfare Statistic. The figures show mean childcare coverage rates across West German counties as well as standard deviations, median, minimum, and maximum values. All information is provided for the years 2002 and 2006 to 2015. Calculations by the authors.

Appendix III: Total cases of child protection age < 6 in each year

Year	Total number of cases, age < 6
2002	2,150
2003	2,147
2004	2,085
2005	2,149
2006	2,566
2007	3,050
2008	3,823
2009	3,865
2010	4,044
2011	4,277
2012	4,604
2013	4,523
2014	4,760
2015	5,116
All years	49,160

Notes: Data provided by the German Child and Youth Welfare Statistic on absolute individual cases of child protection in a particular year on the county level of children under six years of age. Calculations by the authors. Cases of counties with missing data are imputed by the average cases per county within the state and the specific year.

Appendix IV: Childcare utilization by different family situations and welfare

	Early Child Care Utilization in pp.
All households	33.6
Two parents	31.5
Single parents	39.6
Number of households	*2,079*
Only households with welfare receipt	37.8
Two parents	28.6
Single parents	47.4
Number of households	*162*

Notes: The results base on the German Socio-Economic Panel Study (SOEP). The sample includes all households with children below 3 years in the year 2015.