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ORIGINAL PAPER

Home care allowance and labor market participation of immigrant and native-born mothers

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Abstract

Most countries still have a significant gender gap in labor force participation, and this gap is especially large for immigrants. Despite this gap, Germany introduced various forms of home care allowances in the last decade. Parallel to the extension of early child care and the inclusion of a legal claim for it, from 2013 to 2015, a nationwide home care allowance existed for parents who did not use public child care for children aged one or two years. After 2015, home care allowances continued to exist in several German federal states. Some politicians strongly criticized this transfer for allegedly decreasing work incentives, particularly for mothers with lower labor market integration, such as immigrant mothers. Using federal state differentiated data obtained from the German Socio-Economic Panel, we investigate the impact of a home care allowance on the labor market participation of mothers. For both native-born and especially immigrant mothers, the effects are significantly negative. We conclude that a home care allowance has negative effects on the labor force participation of mothers of young children, irrespective of the legal claim for and the extension of public child care.

Keywords Home care allowance · Mothers' labor supply · Integration of immigrants · Family policy · Germany

JEL Classification J13 · J22 · H31

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Introduction

The majority of adult men in industrial countries participate in the labor market, and their employment behavior is quite stable across the life course. However, the employment pattern of women is quite different. Most part-time workers are women, and the growth in the labor supply of women in recent decades has mainly been in part-time jobs (Deschacht 2017). Del Boca (2015) emphasizes that poverty risk is closely related to the non-employment rates of mothers. Most industrial countries still have a significant gender gap in labor force participation, and this gap is especially large for immigrants. According to data from the German Socio-Economic Panel (GSOEP), the gender gap in full- or part-time work participation in Germany in 2020 was 12% among immigrants and 9% among native-born individuals. Many studies have provided evidence for the negative effects of family migration on wives' employment rates (for an overview, see Shauman and Noonan 2007). However, other studies suggest that the pattern of employment among recent migration cohorts changed. It apparently no longer fits the assumption of female immigrants as secondary workers (Adserà and Ferrer 2016; Blau et al 2003; Duleep and Dowhan 2002). Furthermore, Boos-Nünning (2020) emphasized the challenge employed immigrant mothers face in overcoming the conservative image of women in Germany.

A recent child care reform in Germany was highly criticized for reinforcing this image. In August 2013, Germany introduced a nationwide child care reform that included a new fiscal benefit called 'Betreuungsgeld' (home care allowance), intended to financially compensate families for not using public child care for their children aged one or two years. Some politicians strongly criticized this reform for allegedly decreasing work incentives, particularly for immigrant mothers or, in general, mothers with low labor market integration. In addition, the public discussed the reform's impact on children of immigrant families, as not attending public child care has negative effects on early education and integration, as several studies have shown (e.g., Klein and Sonntag 2017; Magnuson et al. 2006). The nationwide home care allowance was ruled unconstitutional in 2015 and consequently abolished. Nevertheless, discussions of the impacts of such policy tools have continued at the national and international levels. As several German states continue to pay a (form of) home care allowance, we are able to evaluate the impact of such allowances by comparing mothers' labor supply between different German federal states from 2015 onwards.

Several studies evaluate recent reforms in Germany aimed at increasing either the labor force participation of women or fertility. Schönberg and Ludsteck (2014) examine the effects of expansions in maternity leave coverage since 1979 and show that every expansion led to mothers delaying their return to work. Bergemann and Riphahn (2010) and Spieß and Wrohlich (2008) show that the modification of family support in 2007 (introduction of the 'Elterngeld' (parental allowance)) increased the working hours of mothers in the second year of a child's life. Stahl and Schober (2018) find that education is relevant to work-care arrangements and that employment and child care use increased more among

families with moderately and highly educated mothers than among families with less educated mothers. Furthermore, Boll and Lagemann (2019) focus on the impact of several child care expansions on maternal employment and show that a rising child care coverage rate significantly correlates with the intensive margin of maternal employment. Microlevel indicators and regional differences seem to strongly influence work decisions.

To date, empirical evidence on the impact of a home care allowance in Germany is mixed. Müller and Wrohlich (2016) evaluate the effects of child care reforms of 2013.[1] They use the GSOEP and a corresponding dataset on families in Germany ('Familien in Deutschland,' FiD) from 2010 to simulate labor supply effects after 2013. Their results assume that the reforms lead to a small increase in mothers' labor supply. In contrast, using GSOEP data from 2002 to 2006, Beninger et al. (2010) simulate a reduction in labor supply and child care usage due to the home care allowance together with the expansion of publicly funded child care. Moreover, based on 'Kifög-Länderstudie 2015,' Alt et al. (2015) apply event data analyses to show that the probability of returning to work after childbirth varies between those who did and did not claim the home care allowance.

To the best of our knowledge, we are the first among studies on German child care reforms to exploit the fact that only one state, namely, Bavaria, continued to pay a home care allowance after 2015. Furthermore, in contrast to the studies from Alt et al. (2015), Beninger et al. (2010) and Müller and Wrohlich (2016), who consider joint effects of both reform components, we purely focus on the effects of a home care allowance examining federal state differentiated labor supply effects. We compare GSOEP data before and after the nationwide reform period from 2013 to 2015 and apply multivariate analyses based on a difference-in-difference (DiD) approach. Therefore, we assess how responsive immigrant and native-born mothers are to changes in economic incentives regarding labor market participation in Germany.

The remainder of this paper is organized as follows. The next section provides information on the institutional background of the home care allowance and further family policies in Germany. In the third section, we discuss theoretical foundations, international evidence and derive our hypotheses. The fourth section describes the identification strategy. The fifth section introduces the dataset and provides descriptive statistics, and the sixth section discusses the estimation results. The seventh section concludes the paper.

Institutional background: home care allowance and other family policies in Germany

In recent years, the German government has put much effort into improving the compatibility of labor market participation and family life for parents, particularly for mothers. Policy instruments incorporate direct transfers to parents to bridge income

[1] In addition to the home care allowance, a legal claim for public child care for children aged one or two years (Kinderförderungsgesetz, 10.12.2008; Sozialgesetzbuch VIII, § 24, Abs. 1) was part of the 2013 child care reform. This second part of the reform was intended to have positive effects on the labor market participation of mothers.

losses due to child care periods as well as infrastructure investments, namely, the expansion of child daycare centers.

From 2007 onwards, the parental allowance (*Elterngeld*) was paid as a direct transfer for up to 14 months after the birth of the child to bridge income losses. It amounts to up to two thirds of the net income of the parent staying at home with the child until a maximum of 1.800 €. The minimum parental allowance is 300 €, which is paid to parents with no income before birth.[2] With the nationwide child care reform in August 2013, Germany launched an additional fiscal benefit called 'Betreuungsgeld' (home care allowance). In contrast to the parental allowance, only parents of children aged 15 to 36 months not using public child care facilities were eligible. These 36 months are equal to a maximum unpaid parental leave, i.e., a legal entitlement to return to one's job, with a maximum of 3 years after birth of the child.[3]

The home care allowance amounted to 100 € per month prior to August 2014 and 150 € thereafter, regardless of parents' income (*Betreuungsgeldgesetz*). In July 2015, the Federal Constitutional Court ruled that the nationwide home care allowance was unconstitutional and, therefore, had to be abolished. Following this decision, the state of Bavaria implemented a state home care allowance almost equivalent to the former nationwide allowance.[4] Consequently, only mothers living in Bavaria were able to apply for a home care allowance from then onwards.

In four states, Baden-Württemberg, Thuringia, Saxony, and Bavaria, education benefits ('Landeserziehungsgeld'), including elements of the former nationwide home care allowance, existed. This education benefit was abolished in Baden-Württemberg in 2012 but continued to be paid in Thuringia until July 2016[5]; in Saxony, it still existed. In Bavaria, it existed in parallel with the Bavarian home care allowance, and a similar family benefit ('Familiengeld') has replaced the education benefit since 2018. Similar to the former nationwide home care allowance, the education benefit in Thuringia did not depend on parents' income. However, children of the relevant age were allowed to visit a public child care facility up to 5 hours a day.[6] In Saxony, on the contrary, only mothers of young children up to 3 years not using public child care facilities at all are eligible, but the education benefit depended/still depends on parents' income. In the relevant period, parents' income in Saxony must have been below 17.100 €. In Bavaria, the education benefit also depended on parents' income, and the use of public child care facilities was possible. Except for Saxony, none of these benefits is comparable to the Bavarian or nationwide home care allowance in terms of being paid only to parents not using public child care. In the empirical analysis, we control for these state education benefits.

[2] *Bundeselterngeld- und Elternzeitgesetz* 01.01.2007. From 2015 onwards, the parental allowance could be used partly for up to 28 months after the child's birth.

[3] It is also possible to split these 3 years into 2 years directly after birth and the third year any time before the eight's birthday of the child.

[4] The Bavarian home care allowance was limited to an income threshold of 250.000€ per parent.

[5] The respective law was abolished in 2015, but payments continued to be paid until July 2016.

[6] Gathmann and Sass (2018) find that the child care allowance in Thuringia negatively affected female labor force participation, with the strongest effects for single parents and low-income households.

Apart from direct transfers to parents, German family policies included the expansion of daycare and the establishment of legal entitlements to it. With the day expansion act (*Tagesbetreuungsausbaugesetz, TAG*) coming into effect in 2005, 230,000 additional child care facilities were established until the end of 2010. Despite these efforts, the availability and use of public child care for children under 3 years of age remained low, especially in West Germany. In 2011, approximately 20% of children under 3 years of age in West Germany and 47% of such children in East Germany visited child care centers. According to the Childcare Funding Act (*Kinderförderungsgesetz*), coming into effect in 2008, states had to offer child care places for 35% of all children under the age of three by 2013. From August 2013 onwards, there was even a legal claim for public child care for children aged one or two years (*Kinderförderungsgesetz*, 10.12.2008; Sozialgesetzbuch VIII, § 24, Abs. 1). Although visiting child care centers increased to 29% in West Germany and 51% in East Germany in 2017 (Statistisches Bundesamt 2018), there are still different propensities for public child care usage in East and West Germany. They can best be explained by historical developments. In the former German Democratic Republic, it was normal and expected that mothers would return to work soon after they gave birth, whereas in former West Germany, it was more common for mothers to stay at home for at least 3 years. Even 30 years after unification, these sociological preferences remain in place to a certain extent. We, therefore, also control for potential differences in mothers' participation rates between former East and West Germany in our empirical analysis. Because the treatment group of the empirical analysis is Bavarian mothers—hence, one Western German state—we, however, cannot compare the effect of the home care allowance between East and West Germany.

Descriptive analysis of the GSOEP data shows that the use of public child care for children under 3 years of age has increased in the last 10 years among both native-born and immigrant mothers.[7] However, Boll and Lagemann (2019) emphasize that the German child care market is still characterized by excess demand, including for children under 3 years of age. In 2017, the demand was approximately 13 percentage points higher than the supply in Western Germany and 7 percentage points higher in Eastern Germany. The importance of regional characteristics is also emphasized by Alt et al. (2015), who show that the decision to use public child care or claim the nationwide home care allowance is related to child care supply at the regional level (German states).

The expansion of publicly funded day care has been steadily ongoing in Germany over a longer period of time. This institutional part of German family policy was intended to have positive effects on the labor market participation of mothers. However, the political intention of direct transfers was ambivalent. Whereas the parental allowance intends to bridge a relatively short income loss of 14 months after birth, thereby having negative work incentives as a side effect, the home care allowance is far lower but paid for a longer period, and the negative effect on participation results

[7] According to the GSOEP, the use of child care centers for children below the age of three increased from 2003–2008 to 2009–2018 by approximately 60 percentage points among both immigrant and native mothers.

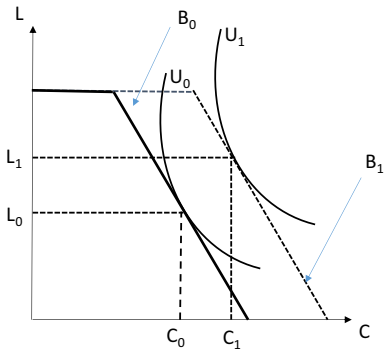

Fig. 1 Labor supply before and after the introduction of a home care allowance for mothers using a childminder or mothers who do not work outside the home. Optimal choice of leisure (L) and consumption (C) within a model comparing indifference curves and budget constraints. *Source* Schøne (2004)

directly by explicitly only being paid to those parents not using public day care. Put differently, it is not meant as an income bridge but as a compensation payment. We, therefore, would expect the home care allowance to have negative work incentives despite the legally supported expansion of publicly funded child care. In the following chapter, we will address this idea from a more theoretical point of view and compare it to international evidence.

Theoretical foundations, international evidence, and hypotheses

A home care allowance decreases the relative price of caring for one's own children and, therefore, reduces the incentives of mothers to work. Following Schøne (2004), Fig. 1 illustrates possible substitution and income effects within a standard labor market model. Here, a mother chooses a maximum value of consumption (C) and leisure (L) subject to budget constraints. The home care allowance positively affects budget constraints. We distinguish between mothers who work outside the home and use privately paid child care and mothers who do not work outside the home.

B_0 and the chosen combination of L_0 and C_0 illustrate the situation before the introduction of the home care allowance, assuming that the non-working mother has a minimum level of non-labor income. After introduction of the allowance, the maximum possible level of consumption increases because both mothers who work and hire a privately paid childminder and mothers who do not work are able to claim the allowance and, hence, gain a financial benefit. Given a parallel shift in the budget line, Fig. 1 shows no substitution effect and only an income effect, determined by the size of the benefit.

For non-working mothers, the benefit poses a negative incentive to participate in the labor market. For employed mothers, the benefit leads to a reduction in working time outside the home when leisure is a normal good. The preferences of employed mothers for leisure and consumption will determine the size of the reduction in working time outside the home.

Concerning the effects for immigrant mothers, the benefit will also influence the decision of whether to enter the labor market after migration. To make entering the

labor market attractive, the potential wage must be equal to or larger than the reservation wage. The home care allowance increases the opportunity costs of working outside the home, which are already higher for immigrant mothers than for native-born mothers due to problems of labor market integration. Shauman and Noonan (2007) explain problems of labor market integration of immigrant women by their higher probability of moving for their partner's employment prospects. For Mincer (1978), a tied mover's individual migration gain (or loss) is smaller in absolute value than the gain (or loss) of the other partner. According to human capital theory, married women have more discontinuous employment histories on average than men; they are, therefore, less able to develop in their career and tend to work in lower-paid jobs (Halfacree 1995). Although studies have shown that women who recently migrated have similar labor market behaviors as native-born women (Adserà/Ferrer 2016; Blau et al 2003; Duleep/Dowhan 2002), on average, for immigrant women in Germany, the assumption of inferior integration is still valid. Descriptive analysis of this study shows that immigrant mothers have with a higher share no educational degree and less work experience than native-born mothers, probably determining inferior integration prospects. These problems of labor market integration should result in particularly weak work incentives for immigrant mothers for whom the home care allowance is available.

In Sweden, Norway, and Finland, a home care allowance has existed for many years for children under 3 years of age whose parents do not or only partly use public child care. Several studies provide empirical evidence on its effects on mothers' labor market participation.[8] In all three countries, mothers with low income, low educational levels, or an immigrant background are overrepresented in receiving the allowance (Ellingsaeter 2012). As Giuliani and Duvander (2017) point out, Sweden's cash-for-care benefit had negative effects on mothers' employment, but primarily in rural areas. Hardoy and Schøne (2010, Naz (2004), and Rønsen (2009)) show that the introduction of the home care allowance in Norway has negatively affected mothers' labor market participation. These results are confirmed by Kornstad and Thoresen (2007) using a discrete choice model. Hardoy and Schøne (2010) also find much stronger effects for non-Western immigrant mothers than for native-born mothers. In contrast to Ellingsaeter (2012), Naz (2004) identifies a stronger negative participation effect for highly educated women. In contrast, Drange and Rege (2013) find negative effects on earnings and full-time employment, particularly for mothers without a university degree or with below median earnings after the introduction of the Cash-for-Care program, even if there was no eligibility for this transfer anymore, i.e., when the child was four or five years. However, this effect vanished by the child's age of six.

For Finland, Kosonen (2014) provides evidence that the home care allowance reduces mothers' labor market participation, and Österbacka and Räsänen (2022) identify that a higher level of home care allowance combined with low labor market attachment and low earnings potential before birth extends home care lengths.

[8] Other studies concentrate on different family policies. Rønsen and Sundström (2002), for example, find that leave extensions delay the return to work among entitled mothers.

Nevertheless, as Drange and Rege (2013) show for Norway, this effect diminishes over time.

The German reforms may also affect the labor supply of fathers. Their employment decisions are an important contribution to fertility, as shown by Faria and Wang (2007). Nevertheless, in this study, we only focus on the labor market effects of immigrant mothers compared to native-born mothers.

Applying the theoretical foundations and the knowledge gained from international experiences, we derive the following hypotheses:

H1 A home care allowance has a negative effect on the labor market participation of mothers in Germany even if there is a parallel expansion of child care provisions.

H2 The negative effects of a home care allowance are higher for immigrant mothers due to their—as a consequence of integration problems—higher opportunity costs of working outside the house.

Identification strategy

We analyze the effects of a home care allowance on mothers' employment, that is, the possibility of receiving additional financial support when not using public child care. In the data used, we do not observe whether the mothers received the home care allowance and, therefore, cannot analyze its direct effects. If the labor supply function of mothers of young children is stable over time, one could identify the reform's effect by comparing participation rates of mothers whose children were of the relevant age to be eligible for the allowance before and after the nationwide allowance's introduction in 2013. However, we cannot ensure the absence of contemporaneous shocks to labor market outcomes during these two periods, considering, among other factors, the worldwide economic and financial crisis in 2008–2009, which may have long-term effects. Therefore, comparable to Dustmann and Schönberg (2012), we apply a DiD approach that compares behavioral changes in the period after 2015 (i.e., the federal state reform period in Bavaria) between two groups with similar characteristics in which only one group is affected by the policy change, namely, eligible mothers in Bavaria. As mentioned before, the nationwide home care allowance did not exist after 2015. Only the state of Bavaria continued to pay a state home care allowance until mid-2018. To account for potential differences in labor market participation between women in Bavaria and the rest of Germany, we also compare the labor market participation rates of women in these two groups before they gave birth. The basic formula of the DiD approach is given by (1).

$$DiD = \left\{ (Y^{C}_{after} - Y^{T}_{after}) - (Y^{C}_{before} - Y^{T}_{before}) \right\} \tag{1}$$

We examine how labor market participation rates differ between mothers eligible for the home care allowance in Bavaria (treatment group, T) and mothers with children of the same age but not eligible because they live in another German state

(control group, *C*) in the years the home care allowance existed for the treatment group (*after*), relative to the years the allowance did not exist for any group and none of the women had children (*before*).[9] We consider participation rates in 2011 and 2012 as points of reference *before* the nationwide and the Bavarian home care allowance existed. From 2013 to 2015, the allowance was equally accessible nationwide for all mothers with children of the relevant age, and no straightforward control group existed. *After* 2015, i.e., after the nationwide home care allowance was abolished due to its unconstitutionality, in 2016 and 2017, the home care allowance—as identified in section two—existed only in the German federal state Bavaria. To address our second hypothesis, we also examine effects separately for immigrant and native-born mothers.

We assume that the treatment and control groups face a similar labor market situation. For both groups, we consider only mothers whose children were between 15 and 36 months of age in 2016/17. As all mothers with young children in 2016/17 gave birth in the 3 years between the two observation periods, for both groups, the employment rates change greatly during this time (see Fig. 2 on employment rates before and after birth of the first child (i.e., by age of the first child).

To estimate an unbiased average treatment effect on the treated (ATT) based on the DiD method, several assumptions must be fulfilled. First, there should be no correlation between implementation and outcome for the treatment group. A reason why Bavaria implemented a home care allowance equivalent to the former nationwide allowance could have been a higher demand for external child care and higher employment rates among mothers in Bavaria than in other federal states, hence, lower expected costs due to a benefit-related reduction in maternal labor force participation. As shown in Fig. 3, we find no evidence for deviation of Bavaria from the other German federal states in terms of external child care take-up and labor force participation of mothers with young children. Concerning the use of public child care of young mothers, all shares greatly increased in 2009 due to the integration of family-specific samples into the GSOEP.

Second, the DiD relies on the absence of spillover effects assumption, based on the idea that territorial borders separate treatment from the control group, with only the former having access to the treatment. After 2015, the home care allowance was only available for parents residing in Bavaria. Spillover effects may exist when a significant number of parents (probably especially those living close to the Bavarian border) changed residence to receive home care allowance for their children of respective age. Since a change in residence includes direct costs as well as possible indirect costs such as an increase in living expenses, longer commuting ways or higher distances to the common environment, we assume that the number of households who moved to receive the home care allowance was negligibly low. Remember that the home care allowance was only 150 € per month. In an additional robustness check, we excluded all federal states directly

[9] We exclude Saxony from the analysis because here a comparable benefit that forbids recipients from external child care usage has existed since 1992 (see the second section on Institutional background: home care allowance and other family policies in Germany").

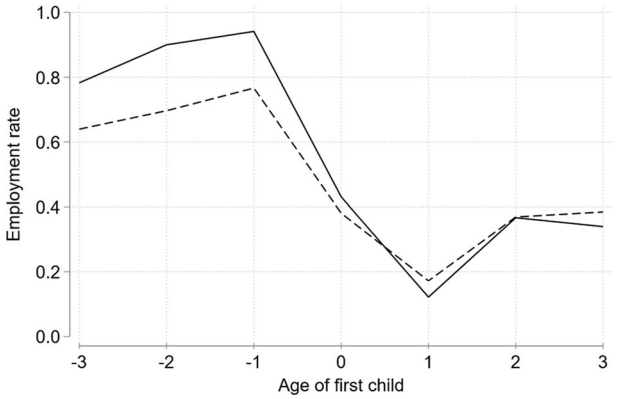

Fig. 2 Employment rates of the treatment and control groups (women whose children were 15–36 months in 2016/17) by age of the first child. The solid black line represents the treatment group, while the dashed black line represents the control group of the analytical sample. Women living in Saxony are excluded. *Source* GSOEP, 2010–2018

neighboring Bavaria (e.g., Saxony, Thuringia, Hesse, and Baden-Württemberg). The results (not included but available on request) were very similar to those of the main specification.

Third, to estimate an unbiased ATT, it is necessary that labor supply would have evolved similarly in both groups in the absence of a treatment effect; hence, as Neill et al. (2016) emphasize, the outcome variable is independent of whether the unit is assigned to the treated group (after conditioning on observables). Considering the similar developments of the labor supply of the treatment and control groups shortly before and after birth, as presented in Fig. 2, the parallel trends assumption appears to apply.

As the figure further shows, before the birth of the first child, future mothers in Bavaria have a higher average employment rate, but between the first and second years of the child's life, they have a slightly lower average employment rate. This difference may be a first hint of a negative effect of the home care allowance on the one hand or reflect regional factors, such as more traditional behavior in Western compared to Eastern German federal states, on the other hand. Thus, the differences between the treatment and control groups may reflect a treatment effect or be systematic. Apart from regional factors, systematic differences in participation rates may occur due to differences in individual characteristics (e.g., age, education, family status). Therefore, it is important to control for observable labor supply determinants. To prevent a biased DiD resulting from simultaneity, observable control variables should, on the one hand, not influence the outcome after the treatment (such as a good or bad health status influencing labor supply but possibly also be influenced by the home care allowance). On the other hand, the consideration of control variables measured as close before the treatment as possible is important to have the intended effect of controls in the regression analysis. Therefore, we use for the time after the treatment in 2016/17 information of the control variables measured in 2015 or if 2015 is not available than from 2014.

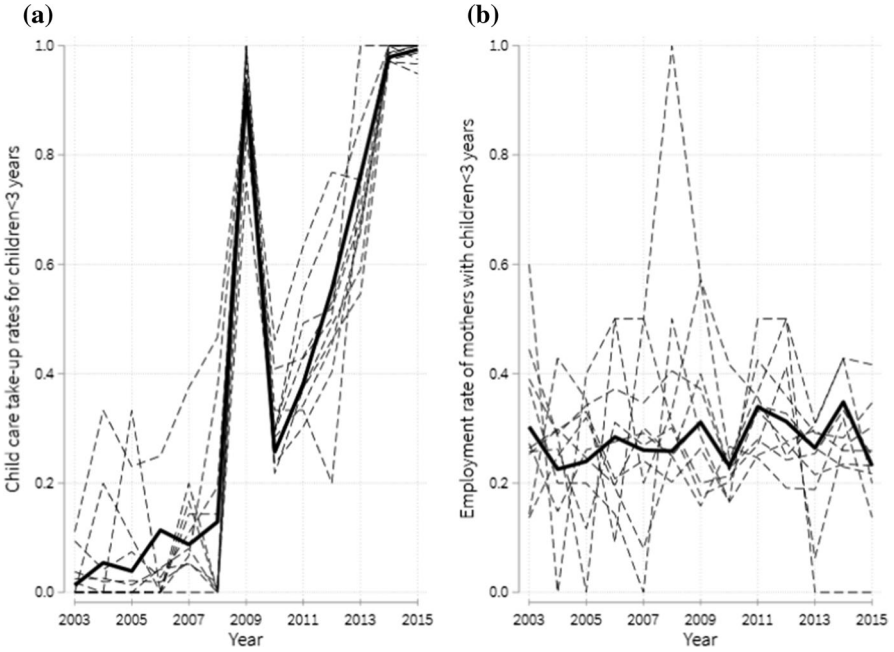

Fig. 3 Child care take-up rates and labor force participation of mothers with young children over time in Bavaria compared to other German federal states. **a** Development of child care take-up rates from 2003 to 2015 among mothers of children below 3 years of age. The solid thick black line represents mothers in Bavaria, while the 16 thin-dashed black lines represent mothers in other German federal states. **b** Development of employment rates from 2003 to 2015 among mothers of children below 3 years of age. The solid thick black line represents mothers in Bavaria, while the 16 thin-dashed black lines represent mothers in other German federal states. *Source* GSOEP, 2010–2018

Because the DiD compares average participation rates, we do not restrict the data to mothers who are observed in all 4 years or to mothers who are observed in both periods. We estimate a probit model in the form presented in (2) for the whole sample of mothers in the treatment and control groups as well as separately for immigrant and native-born mothers, considering only the relevant years 2011, 2012, 2016, and 2017:

$$Y_{i,t} = \alpha_1 + \alpha_2 TREAT_{it} + \alpha_3 R1617_i + \alpha_4 (R1617_i * TREAT_{it}) + \alpha_5 Z_{i,t} + \varepsilon_i \quad (2)$$

where i indexes mothers and t indexes the observation year. $TREAT_{it}$ is an indicator variable equal to one if mother i belongs to the 'treated' cohort living in Bavaria. $R1617_i$ is an indicator variable equal to one if mother i is observed in 2016 or 2017 or zero for 2011 and 2012. $R1617_i * TREAT_{it}$ is the interaction term between these two variables and, thus, equals one for Bavarian mothers in 2016/17. The coefficient of the interaction term α_4 identifies a possible causal effect of the home care allowance on labor market participation. It measures the variations in the labor supply for the Bavarian reform period relative to the period before an allowance existed and relative to mothers with children of the same age but not eligible for the Bavarian

home care allowance. $Z_{i,t}$ includes the observable characteristics of mother i in 2015 or—if 2015 is not available—in 2014, affecting her labor supply in 2016/17. This vector contains her age and—to consider nonlinear effects of age—her age squared, her work experience in years and her educational degree in three categories (no degree, vocational, or university degree). Work experience and education are suitable proxies for earnings. As we do not observe earnings for non-working mothers, a variable on 'earnings' would create an endogeneity problem and is, therefore, not included. The vector also considers whether she receives unemployment benefit II (ALGII[10]), whether she lives with or without an official partner, whether she has a good health status and the number of own children younger than 6 years of age in her household. In the specification of the whole sample, we further include a variable stating whether the mother migrated to or was born in Germany. For the separate estimation on immigrants, the function includes a variable on the country group of origin that differentiates among 1. countries of the European Union (EU) and other high-income countries, 2. former Soviet Union (USSR) or former Yugoslavia, 3. Turkey and Arabic countries, and 4. other countries in Asia, Africa, and Central/South America. We further control for living in East Germany and for year fixed effects. In a robustness check, we control instead of living in East or West Germany for state fixed effects. Fitzenberger et al. (2013) emphasize that employment behavior after childbirth highly depends on pre-birth employment. Because the DiD analysis is based on *differences* in labor supply before and after the treatment between the treatment and control group, in a robustness check, we additionally control for the mothers' absolute pre-birth employment rate in the before-treatment period. In this robustness check, the sample is reduced to mothers appearing in both periods before and after the treatment. There might also be further unobservable time constant and variable factors influencing employment decisions such as gender values or individual taste for work for which we cannot control with the applied approach. Therefore, we interpret the estimated effects on labor force participation as indicating correlations rather than causality.

Data and descriptive statistics

The analysis is based on data obtained from the GSOEP, an ongoing representative panel survey of private households in Germany starting in 1984 in West Germany and including data from the East German federal states after unification in 1990. The data contain detailed information on employment behavior and sociodemographic characteristics as well as household-oriented information on children, their time of birth, and use of child care (Schröder et al. 2020).

We restrict the analytical sample to the years 2011, 2012, 2016, and 2017 and to the treatment and control group, that is, mothers with a 15- to 36-month-old child

[10] In Germany, individuals who are long-term unemployed (longer than 1 year) or who are not able to secure living expenses with their earned income are entitled to receive unemployment benefit II.

in 2016 or 2017 from Bavaria or another German federal state.[11] If possible, we control for missing values with an additional category (which applies to education and living together with a partner variable) and exclude observations with missing values in other variables (work experiences, living in East Germany and German federal state indicator variable) whose share was below 1% of all observations. The sample then contains 2537 observations of 856 mothers. The share of mothers with a direct migration background (being born outside Germany) is 30% of observations in the data. The share of immigrants is not representative of the German population or GSOEP participants because immigrants have a higher probability of living in households with children than native-born women in Germany. The composition by country group is also not representative of the entire population or of women in general since the probability of having a child is higher among non-Western immigrants than Western immigrants. The highest share (40%) of the sample's immigrant mothers were born in the former USSR or former Yugoslavia, 35% in the EU or in another high-income country, 15% in Turkey or an Arabic country and 9% in Asia, Africa or Central/South America. Twenty percent of mothers (of the control group) live in East Germany.

Table 1 displays the main characteristics of the mothers in the treatment and control groups pooled over the observation years 2011, 2012, or 2015 (or 2014 if 2015 was not available) as lagged information for 2016 and 2017 by migration

Table 1 Socioeconomic characteristics of mothers considered in the analysis

	Immigrant mothers		Native-born mothers	
	Mean/share	SD	Mean/share	SD
Age	33.42	5.54	32.58	5.58
Educational level				
No education	0.30	0.46	0.18	0.38
Vocational education	0.34	0.47	0.47	0.50
University education	0.33	0.47	0.32	0.47
Work experience in years	4.71	4.49	5.21	4.36
Unemployment benefit II	0.14	0.35	0.11	0.31
Health is (very) good/satisfactory	0.90	0.29	0.90	0.30
Living with no partner in the household				
Yes	0.14	0.35	0.37	0.48
No	0.61	0.49	0.59	0.49
Missing information	0.25	0.43	0.04	0.20
Number of children in HH < 6 years	1.37	0.74	1.18	0.79
Living in Eastern Germany	0.08	0.27	0.25	0.43
Number of observations	764		1773	

Only mothers with children aged 15–36 month in 2016/17, excluding mothers from Saxony

Source GSOEP, 2011/12/15 (or 2014 if 2015 not available) unweighted data

[11] Except Saxony.

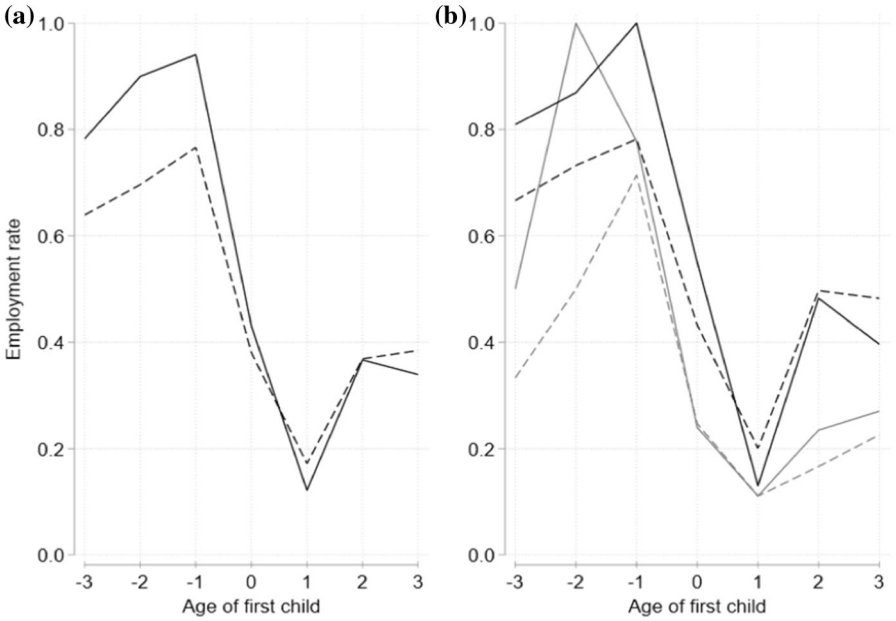

Fig. 4 Employment rates of the treatment and control groups by age of the first child. **a** Employment rates of women whose children were 15–36 months in 2016/17. The solid black line represents the treatment group, while the dashed black line represents the control group. **b** Employment rates of women whose children were 15–36 months in 2016/17 by migration background. The solid gray line represents immigrant mothers of the treatment group, while the dashed gray line represents immigrant mothers of the control group. The solid black line represents native mothers of the treatment group, while the dashed black line represents native mothers of the control group. Saxony is excluded from the analysis. *Source* GSOEP, 2010–2018

background. For the analysis, we restrict the sample to mothers between 18 and 64 years of age; the average *age* is 33 years. With respect to education, 30% of immigrants and 18% of native-born mothers have no educational degree. Both considered groups of mothers have approximately 5 years of *work experience*, and 14% of immigrants and 11% of native-born mothers receive unemployment benefit II. Among both groups, 90% of mothers evaluated their *health* as (very) good or satisfactory. For 14% of the immigrant and 37% of native-born mothers, there is no official partner in the household (*living with no partner in the household*). In the treatment and control groups, immigrant mothers live with approximately 1.4 and native-born mothers with approximately 1.2 own children (*number of children in HH* [the household]) younger than 6 years of age in one household.

Figures 4 and 5 analyze in four panels the employment rates of women 3 years before to 3 years after the birth of the first child. For all analyses in this study, we consider full- and part-time employment covered by social security or self-employment. Interns, mothers in vocational training or marginally/irregularly employed are coded as not employed. We compare the analytical sample of mothers who had children aged 15–36 months in 2016/17 (the treatment and control groups, Fig. 4)

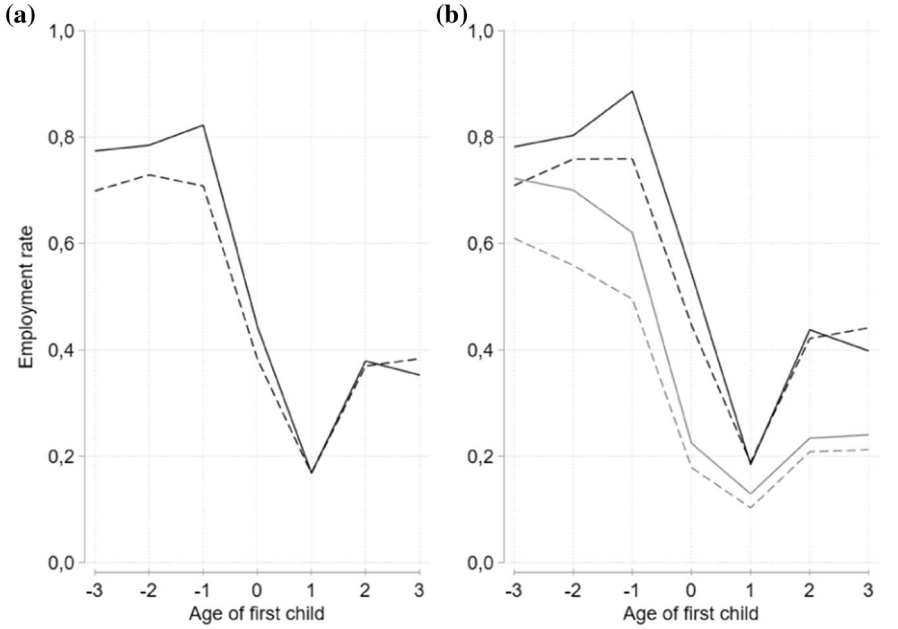

Fig. 5 Employment rates of women who gave birth since 2003 by age of the first child. **a** Employment rates of women who gave birth since 2003. The solid black line represents Bavarian mothers, while the dashed black line represents mothers from other states. **b** Employment rates of women who gave birth since 2003 by migration status. The solid gray line represents immigrant mothers from Bavaria, while the dashed gray line represents immigrant mothers from other states. The solid black line represents native mothers from Bavaria, while the dashed black line represents native mothers from other states. Saxony is excluded. *Source* GSOEP, 2003–2018

with all mothers who gave birth between 2003 and 2018, hence, considering a long period of time in which no home care allowance existed. Analogous to the treatment and control groups, we divide all mothers who gave birth since 2003 into Bavarian mothers and mothers living in other federal states (see Fig. 5). On the one hand, this procedure highlights the relevance of controlling for individual characteristics. On the other hand, a difference between the treatment and control groups that does not exist between Bavarian mothers and other German mothers who gave birth since 2003 may be a descriptive indicator of a treatment effect. Lower participation rates for some mothers in the second and third years after childbirth may be the consequence of an additional childbirth. Figure 4a, b show the sample of mothers whose children were aged 15–36 months in 2016/17. Figure 5a, b shows any mother from Bavaria or another federal state in the GSOEP from 2003 to 2018 who gave birth since 2003. Therefore, instead of 'treatment group,' Fig. 5a, b names the relevant group more generally 'Bavaria' and the other group 'Other federal state' instead of 'control group.' As an extension of Fig. 4a and 5a, Figs. 4b and 5b differentiates both groups by migration status. Figure 4a shows that the average employment rate is much higher for the treatment group than for the control group in the years before

childbirth. Figure 4b indicates that this effect is more or less alike for immigrant and native-born mothers. Figure 5a further shows that the average employment of Bavarian women compared to women living in another German state in the time before giving birth is also higher when a longer period of time is analyzed. Again, this holds for immigrant and native-born mothers. The opposite is true for the time during which their first child is between one and two years of age. Here, the treatment group mothers have a slightly lower participation rate than those in the control group (see Fig. 4a), while in Fig. 5a, the average employment rate of mothers of young children does hardly differ between mothers from Bavaria or other federal states. The difference between the treatment and control groups relative to the difference between any mother living in Bavaria or another federal state is a clear descriptive indicator of a treatment effect. Figures 4b and 5b further show that foreign-born mothers have, on average, lower employment rates than respective native-born mothers, with differences similar to those between Figs. 4a and 5a. The high employment rate 2 years before childbirth of immigrant mothers in the treatment group has to be considered cautiously, as the rate is based on only twenty-seven observations. However, Figs. 4b and 5b show that immigrant mothers living in Bavaria (among the treated or any other mothers) have no lower employment rate after birth compared to immigrant mothers outside of Bavaria.

Results

We estimate a probit model to identify the probability of participating in the labor market, as presented in Eq. (2). Table 2 reports the marginal effects calculated from the probit model coefficients, differentiating between the overall sample, immigrant mothers and native-born mothers. The models include the explanatory variables presented in Table 1, and the marginal effects are calculated at their means for the three samples. As described in the section on the "Data and descriptive statistics" , the interaction term of R1617 and TREAT represents the DiD estimate indicating the effect of a state home care allowance on Bavarian mothers' labor supply. As presented in Table 2, the marginal effect of the interaction term at the means of the observed variables is significantly negative for the whole sample as well as for the separate groups of immigrant and native-born mothers. The effect is particularly large for immigrant mothers. Due to the reform in Bavaria, immigrant mothers' average employment rate is 24 percentage points lower than the employment rate of immigrant mothers not eligible for the reform, i.e., living outside of Bavaria in the respective period. For the whole sample (native-born mothers), the employment rate is 18(14) percentage points lower. The results of the DiD confirm hypotheses H1 and H2. We find a negative impact of a home care allowance on the employment of mothers, and this effect is larger for immigrant than native-born mothers

The marginal effects of the other control variables are also significant and point in the expected direction concerning the effect on maternal labor force participation, but some vary between the groups. We find that the probability of working increases with a vocational or university degree, work experience and good health status . The significant increases in labor market participation based on these variables (with the

Table 2 Marginal effects from probit model on labor market participation of mothers

	Total	Immigrant mothers	Native-born mothers
1.R1617	− 0.053*	− 0.028	− 0.049
	(0.024)	(0.041)	(0.029)
1.TREAT	− 0.055	− 0.066	− 0.054
	(0.029)	(0.039)	(0.036)
1.R1617_TREAT	− 0.184**	− 0.241*	− 0.139**
	(0.056)	(0.096)	(0.070)
Foreign-born	− 0.128***		
	(0.025)		
Age	0.002	0.003	− 0.001
	(0.003)	(0.004)	(0.004)
Education (Ref. no education)			
Vocational degree	0.199***	0.054	0.298***
	(0.027)	(0.040)	(0.035)
University degree	0.306***	0.097*	0.425***
	(0.031)	(0.044)	(0.040)
Work experiences in years	0.019***	0.007	0.024***
	(0.003)	(0.004)	(0.004)
Unemployment benefit	− 0.302***	− 0.138**	− 0.389***
	(0.030)	(0.044)	(0.036)
Good health status	0.116**	0.011	0.166***
	(0.035)	(0.061)	(0.040)
No partner in household	0.052*	0.033	0.055
	(0.028)	(0.057)	(0.032)
Number of children below 6 years in HH	− 0.148***	− 0.145***	− 0.149***
	(0.017)	(0.026)	(0.020)
Living in Eastern Germany	0.115***	0.078	0.147***
	(0.030)	(0.064)	(0.034)
N	2537	764	1773
Pseudo R^2	0.214	0.153	0.228

The analysis excludes mothers from Saxony and additionally controls for age squared as well as year and home country fixed effects. *Source* GSOEP 2011/12/16/17 (not balanced)

Control variables for the years 2016/17 are lagged, we use information from 2015 or, if not available from 2014

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (2-tailed)

exception of a university degree) seem to be mainly driven by native-born mothers. However, the interpretation of marginal effects of immigrant mothers must be considered with caution, as the sample is less than half the size of that of native-born mothers.

As expected, the number of children younger than 6 years of age and receiving unemployment benefit II have negative effects on the employment probability in both groups. Reverse causality probably influences the latter variable, although it is

important to control for indigence. We also include a dummy variable for living in East Germany because there are high content-specific historical cultural differences in the availability of child care facilities and maternal labor force participation. As expected, for the whole sample, native-born mothers living in East Germany had an increased probability of working among the treatment and control groups.

Robustness checks

Thus far, we have excluded Saxony from the analysis because it has been paying an educational benefit similar to the nationwide home care allowance, which does not allow the use of external public child care since 1992. Until 2016, Thuringia paid a comparable education benefit, but in contrast to the home care allowance paid in Bavaria in 2016 and 2017, this benefit did not (completely) forbid the use of external child care. In Thuringia, children of the relevant age were allowed to attend public child care for a maximum of five hours per day. Such a benefit also existed in Baden-Württemberg in the prereform period of 2011 and 2012. To account for these special institutional settings, we apply a robustness check where we exclude, in addition to mothers from Saxony, mothers from Thuringia and Baden-Württemberg. The results are presented in Table S1 in the supplementary material. Our results are robust to this modification.

In a further robustness check, we control for regional differences at the level of the German federal states by including sixteen federal state indicator variables instead of an indicator variable for living in East Germany. While the other marginal effects hardly differ, we cannot identify any systematic differences in mothers' regional labor market supply for native-born or migrant mothers among the federal German states (see Table S2 in the supplementary material, showing only marginal effects calculated form probit estimation coefficients of federal states).

Finally, in another robustness check, we control for pre-birth labor force participation. In this case, the effect of the home care allowance increased to − 31 percentage points for immigrant mothers. This increase may not only result from the consideration of the pre-birth labor force participation rate as a control variable but also from the required drop out of immigrant mothers only participating in the after period and, hence, the focus on immigrant women migrating to Germany not recently, such as during the high inflow of refugees since 2014 (see Table S3 in the supplementary material).

Discussion and outlook

This study evaluates the effect of a home care allowance on mothers' labor supply. From 2013 to 2015, a nationwide home care allowance was paid to families not using public or publicly subsidized child care for their young children in Germany. This benefit may have demotivated mothers to return to work after childbirth. In particular, parents with low labor market integration, such as immigrant mothers, may have been discouraged from using external child care to (re)enter the labor market.

In 2016 and 2017, a home care allowance existed only in the state of Bavaria, as the nationwide allowance was ruled unconstitutional after 2 years in force. We apply a DiD approach to compare changes in employment rates between the *after* (nationwide home care allowance) reform and *before* reform periods between treatment and control group mothers who have at least one child aged 15–36 months in the after reform period. Descriptively, we find that the average employment rate of the treatment group mothers (Bavarian mothers for whom the home care allowance was available) is lower than that of control group mothers (comparable mothers from other German states) when the first child is 1–2 years old in 2016/17, i.e., when the state home care allowance existed in Bavaria. As systematic differences between treatment and control groups may yield biased results, we control for these potential differences in multivariate analyses. Here, our results are confirmed with higher negative effects of the home care allowance for immigrants than for native-born mothers. The control variables show the expected effects, such as higher mothers' labor force participation in East Germany over the entire period. Overall, our results show that home care allowance–as expected–decreased the labor supply of mothers in general and of immigrant mothers in particular.

The German context can give two important contributions to the literature, supplementing existing studies—especially using Scandinavian data—having shown that home care allowance has negative effects on the labor force participation of mothers. First, in the years prior to the introduction of the state home care allowance in Bavaria in 2015, publicly financed child day care was heavily extended in Germany, including a legal claim for it for one-year-old children from 2013 onwards. Thus, our results show that home care allowances continue to have negative effects on the labor force participation of young mothers irrespective of the legal claim for and the extension of public child care. Second, we can see that even after more than 30 years after unification, neither the extended childcare facilities nor other family policies have overcome the differences in labor market participation of young mothers between Western and Eastern Germany. For historical reasons, labor force participation and child care use have always been and are still higher in Eastern federal states than in Western German federal states. This indicates that historical experience and cultural reasons might play a larger role in the labor force participation of mothers than policy measures and institutional settings.

There are several potential reasons why the negative effects of the home care allowance are higher for immigrants than for native-born mothers. The media and policy often attribute problems such as modernization deficits and backward looking to immigrant families. Apitzsch (2014) emphasizes that immigrants build tradition and reflect their culture during the process of integration and orientation in a new environment. However, low public child care take-up rates may rather than be due to a focus on traditional values resulting from immigrants' lack of knowledge about their child care rights. Several studies emphasize that immigrants' unfamiliarity with the receiving country's child care system is a major barrier to formal childcare access, especially when language skills and social ties are low (Seibel 2021). Nevertheless, it is questionable whether the lack of knowledge then also applies to the take-up of home care allowance. Another more plausible reason for the high negative effects of the home care allowance for immigrant mothers may be employer

discrimination. Employers may have promoted immigrant women who live together with a partner more slowly before birth due to a higher assumed commitment to family and household responsibilities compared to immigrant men. This may reduce young mothers' incentives to return to work early after childbirth, increase the probability of taking up home care allowance and, therefore, result in high negative effects of the benefit on their labor force participation.

Irrespective of potential reasons, our results suggest that immigrant mothers in Germany may on average have higher barriers to the use of external child care than native-born mothers. Any sort of public benefit tied to the non-usage of public child care seems to increase this effect and is, therefore, counterproductive to integration of the mother.

Furthermore, Klein and Sonntag (2017) emphasize that the duration of institutional child care for children younger than three has a positive impact on the German language skills of immigrant children and children from mixed ethnic families. Magnuson et al. (2006) show that preschool raises reading and math scores as much for children of immigrants as it does for other children. The authors of both studies conclude that institutional child care can reduce ethnicity-related differences in educational achievements. Hence, a home care allowance that increases incentives for mothers not to use public child care has also negative effects on integration of immigrants' children.

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Data availability The data from the German Socio-Economic Panel used in this study are part of an anonymized dataset; the data user is not able to trace information back to individual participants. The personal data are processed in such a way that the rights of the subjects to the confidentiality and integrity of their data are not affected. Nevertheless, due to data security obligations, we are not permitted to publish the data underlying the study.

Code availability The codes used in the present study are available for replications (https://doi.org/10.7802/2414 (not yet published)).

Declarations

Conflict of interest The authors declare that they have no conflicts of interest.

Data sources

Dataset German Socio-Economic Panel (GSOEP), data for the years 2011–2017, version 34, https://doi.org/10.5684/soep.v34

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