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A Forgotten Issue:

Distributional Effects of Day Care Subsidies in Germany

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Abstract

In general, day care subsidies are accepted as a means of creating equal chances for both children and mothers in the labour market. Although there is a broad consensus that the use of children's day care should be publicly supported, there is no consensus on how this should be done. Moreover, there is little knowledge on the distributional effects of day care subsidies. In order to assess whether public expenditures are targeted efficiently, however, it is vital to know which social groups profit most from public expenditures on children's day care and whether tax-payers' money is spent effectively. In Germany, as in other European countries, day care subsidies are mainly provided 'in-kind'. Municipalities and NPOs provide day care for children, which is – apart from a small fee – free of charge. In this study we estimate the distributional effects of state-funded day care in Germany using microdata on households and data on the expenditure of public-funded day care. Major results are that day care subsidies have only modest redistributive effects. Primarily it is the middle-income range that profits from the public provision of children's day care. This contradicts common public-policy recommendations, which state that low-income families should be the first target of day care subsidies.

Zusammenfassung

In westlichen Industrienationen besteht heute im allgemeinen ein Konsens darüber, dass die Betreuung in Kindertageseinrichtungen öffentlich subventioniert werden sollte. Weniger Klarheit besteht jedoch über die verteilungspolitischen Effekte der öffentlichen Förderung von Kinderbetreuung. Eine solche Unkenntnis über die Verteilungseffekte der öffentlichen Förderung von Kinderbetreuung kann jedoch dazu führen, dass Einkommensgruppen öffentliche Mittel in Anspruch nehmen, die dieser Gelder nicht bedürfen. Wie in einigen anderen europäischen Staaten werden auch in Deutschland bestimmte Anbieter von Kindertageseinrichtungen öffentlich gefördert bzw. die Kommunen betreiben selbst Kindertageseinrichtungen. Damit kommen den Eltern, deren Kinder Kindertageseinrichtungen besuchen, indirekt öffentliche Gelder zu, gleichwohl sie über Elternbeiträge einen geringen Teil der Kosten selbst abdecken. In dieser Studie untersuchen wir die distributiven Effekte der Förderung von Kindertageseinrichtungen in Deutschland, indem wir Mikrodaten auf Haushaltsebene mit Informationen über die öffentlichen Ausgaben im Bereich von Kindertageseinrichtungen kombinieren. Ein wichtiges Ergebnis der Analyse ist, dass über die gegenwärtige „Anbieter-Förderung“ nur sehr geringe Umverteilungswirkungen erzielt werden. Vorrangig kommen die Subventionen im Bereich der Kinderbetreuung mittleren Einkommensgruppen zugute, was dem politischen und gesellschaftlichen Ziel, im Kindertagesstättenbereich insbesondere Kinder aus unteren Einkommensgruppen zu fördern, widerspricht.

Résumé

Le financement public des crèches fait aujourd'hui l'objet d'un consensus au sein de tous les pays industriels occidentaux. Cependant, des questions auxquelles il est aujourd'hui primordial de répondre restent posées : quels sont les effets distributifs de ce financement public ? Les familles bénéficiaires de cette aide publique sont-elles vraiment celles qui en ont le plus besoin ?

En Allemagne comme dans d'autres pays européens, certains prestataires de crèches, comme par exemple les communes, bénéficient d'une aide de l'Etat. Même si les contributions parentales couvrent une légère partie des frais, tous les parents, quels que soient leurs revenus, perçoivent indirectement une aide publique. Nous analysons ici les effets distributifs du financement public des crèches en combinant des données micro à des informations sur les dépenses publiques dans ce domaine. Le résultat de cette analyse montre que les effets redistributifs actuels sont de moindre ampleur. En effet, ce sont surtout les familles appartenant aux catégories supérieures de revenus qui profitent de l'aide publique allouée aux crèches. Cela va naturellement à l'encontre de l'objectif social et politique qui est de favoriser en particulier les enfants appartenant aux catégories de revenus les plus faibles.

Resumen

En los países industrializados existe un consenso generalizado sobre el hecho de que las guarderías deben ser financiadas públicamente. Sin embargo, el consenso no es tan generalizado a la hora de concretar como debe llevarse a cabo esta financiación.

Además, hay un conocimiento limitado sobre el efecto redistributivo del gasto público en guarderías. A la hora de analizar si el gasto público en guarderías es llevado a cabo de una manera eficiente, es necesario identificar qué grupos sociales se benefician de dicho gasto. El desconocimiento de los efectos redistributivos de las políticas de gasto público puede llevar a que ciertos grupos de renta para los cuáles dichas subenciones no son necesarias se vean beneficiados por programas de financiación públicos.

Como en otros países europeos, en Alemania las guarderías son mayoritariamente públicamente financiadas. Los gobiernos locales y ciertas ONGs proveen el servicio para el cuál no se pagan tasas, o bien unas tasas reducidas. De esta manera, los padres de los niños que disfrutan de este servicio, se benefician indirectamente del gasto público aún cuando al pagar tasas (que suelen ser reducidas) asumen en parte el gasto directamente.

En el presente estudio analizamos los efectos redistributivos de la financiación pública de guarderías en Alemania. Para ello, combinamos microdatos (a nivel de hogar) con información sobre gasto público en guarderías.

Uno de los principales resultados es que los subsidios a guarderías tienen un efecto redistributivo limitado. Principalmente son las familias de renta media las que se benefician de estas políticas. Este efecto contradice las recomendaciones generales de políticas públicas, en las que se recomienda que sean las familias de renta baja las que se beneficien del gasto público en guarderías.

1 Introduction

In Germany, public funding in the provision of day care for children dates back to the beginning of this century. The Industrial Revolution made it necessary for working-class mothers to seek employment in factories, where they were no longer able to take care of their children during working hours (which was possible on farms and in other forms of rural production). Many children were left without care in harmful conditions. While the first nurseries for the children of poor families were funded by private donors, from the beginning of the 1920s onwards, municipalities began engaging in funding day care for the working class (DAMANN/PRÜSER 1987).

In the 1960s, public funding of day care in West Germany took a new direction. Now, it was regarded as a means of creating equality. This new perspective was partially induced by research conducted in the USA. Several empirical studies showed that a good education from an early age could lead to more equal opportunities (for an overview, see e.g., CONSORTIUM FOR LONGITUDINAL STUDIES 1983). During this time, the West German government significantly expanded its subsidies to increase the supply of high-quality day care for pre-schoolers. In East Germany, the provision of children's day care became even more important. In the former German Democratic Republic (GDR) children's day care was seen as a means to educate children and (and to socialise them in line with communist ideals). Moreover, children's day care became a tool to support female employment (e.g. HANK et al. 2001). In reunited Germany, public funding of day care is back on the political agenda as a means of creating equal chances for women in the labour market.

In Germany, day care subsidies are used primarily to provide places in municipal day care centres, and, to a smaller degree, in day care centres run by non-profit providers. Places in public funded day care centres are scarce, and thus generally rationed (see e.g. NETZWERK KINDERBETREUUNG 1996; SPIESS 1997). Surprisingly, there are rather few empirical studies on the distributional effects of the public provision of day care in Germany. The question of "who gets the biggest share," i.e. who profits most from the public provision of day care, is rarely investigated.

There are several studies on the distributional effects of monetary day care subsidies or on the public provision of other services such as higher education (e.g. DUNCAN et al. 1995; DUNCON/GILES 1996; PAUL/PERCIVAL 1995; PERCIVAL/HARDING 2000; SCHOFIELD et al. 1996a/1996b). However, basically no attention has been given to the distributional implications of the publicly funded day care provided by municipalities or non-profit organisations. In the US-American and Australian contexts this is explicable, since children's day care is financed primarily through monetary transfers, such as through the Child Care Tax Credits in the USA and the Child Care Assistance in Australia. In the European context, however, where day care is primarily publicly provided, one still does not find many studies on its distributional implications. One of the few exceptions is the analysis by GUSTAFSSON and STAFFORD (1992) who investigate the role of publicly provided day care in mother's employment, although here, too, the main focus of this study is not on distributional issues. In the German context, there are some few studies which address the implications of monetary transfers to families in general, such as the family allowance or child-rearing benefits (e.g. CORNELIUS 1988, BÜCHEL/TRAPPE 2001), and the role of the provision of higher education (LÜDEKE et al. 1994). Regarding the distributional implications of public funded day care, to our knowledge, there exists only a study by KAUFMANN et al. (1982), which has its main focus on distributional issues. They find that low-income families are less likely to profit from the public provision of German *Kindergarten* places. Furthermore, a more recent study by BINDER (1995) finds that foreign-born children are less likely to take advantage of the *Kindergarten*.

In a very general sense, we consider our study as a contribution to elucidating the distributional effects of publicly funded educational and social services. More specifically, we address the *distributional effects of publicly funded day care provided by the municipalities and non-profit organisations (NPO)*, taking Germany as an example. For the sake of simplicity, we refer to both aspects (municipally provided day care and day care provided by NPOs) as "public day care" below. This is not strictly correct, since day care run by NPOs is not public in the true sense of the meaning. However, this labelling is still sufficiently precise, since day care centers run by NPOs are heavily supported by public funds. Furthermore, the quality of care

provided, the day care fees charged and the admission policies are fairly similar in day care centres run by NPOs and by municipalities.

In the following section of this paper, we discuss the necessity of subsidising children's day care from the public policy perspective. In section 3, we describe the day care system in Germany. Section 4 comprises the empirical analysis, i.e. we describe the data-set and the methodology, and present our empirical findings on the distributional effects of the provision of day care in Germany. We conclude in section 5 – after a discussion of the limitations of our analysis – with general public policy recommendations.

2 The Public Policy of Day Care Subsidies

In most Western countries, there is a consensus that children's day care should be subsidised. Three main reasons are put forward for this. First, children's day care is a means of creating equal opportunities for children. Second, day care can support mothers' employment. Third, children's day care is considered to be an investment in the human capital of children, which is expected to bring substantial returns to society as a whole (see e.g. BLAU 2000; DUNCAN/GILES 1996; OECD 2001).

Several empirical studies show that high-quality day care can contribute to children's development (e.g. DOBBELSTEEN et al. 1999; DONOVAN/WATTS 1990; YOSHIKAWA 1995, for a more recent overview see WALDVOGEL 1999). This particularly applies to children from deprived backgrounds. By providing children's day care, disadvantages that such children face can be compensated for in part. On these grounds, GOMBY et al. (1996: 18-19) make the following policy recommendations: *“Although we believe that all families should be supported, we believe that low-income families should be first concern for public funding because the long-term child development benefits of child care most clearly accrue to children from low-income families.”*

Taking for granted the traditional division of labour in private households, the provision of children's day care enables the employment of mothers. While women who earn a high labour market wage are expected to be able to purchase childcare from their earned income, women with a low labour market income might be unable

to afford to pay for day care. Ultimately high day care costs should discourage low income mothers to take up paid employment. Against this background, HOFFERTH and PHILIPPS conclude (1991: 5) that “*Employed mothers, whose salaries are generally modest, need care that is low enough in cost to make their employment profitable.*” On these grounds, one could contend that low-income families should be the first target group of day care subsidies.

Although there is a consensus that day care should be funded (as either a “universal education” service or a care service for working parents), it is another question as to whether children’s day care should be publicly provided or supported through demand side subsidies. In the Anglo-American context, day care is primarily supported by demand side subsidies and particularly low-income families receive transfers to purchase day care (e.g. BLAU 2000; DUNCAN/GILES 1996). In the European context, child care is primarily provided by the local communities. Taking the public provision of day care as given, one could ask how day care places are distributed most effectively. Taking into account that in most countries including Germany the public provision of day care does not preclude day care fees paid by parents (e.g. OBERHUEMER/ULICH 1997) one could additionally ask how day care fees should be charged. One could contend that, following the arguments above, firstly, that low-income families should have priority access to public day care (if it is rationed); and secondly, day care fees should take into account “the ability and willingness of parents to pay.” These two arguments are the ones incorporated in our study as well.

3 Children's Day Care in Germany

Modes of public day care

In general one can distinguish between three major modes of day care centres in Germany. This covers (1) *Krippe*, which constitute day care centres for infants ages 0-3, (2) *Kindergarten*, as day care centres for pre-school children ages 3-6, and (3) *Hort*, day care centres for (primary) school-age children (around the ages of 6 to 12). The most important day care centre in terms of its quantitative significance is the *Kindergarten*: In 1998, 63% of all day care centres belonged to this type of centre, while only about 1 percent were *Krippen* and about 8 percent were *Horte* (STATISTISCHES BUNDESAMT 2002). The remaining 28 percent were day care centres which offered care for children of all age groups, covering infants, pre-schoolers, and school children. However, places in these centres usually are subsumed by one of the major centre types, depending on the number of places they offer for each of the three major age groups. Therefore the three-dimensional classification scheme mentioned above reflects common German terminology and is also part of the official classification scheme used by the German Statistical Office. In our analysis we will refer to these three modes as well.

Usually all three types of day care centres are run by a municipality or by a NPO; only a very small fraction are run by for-profit-organisations in Germany. Among all places in day care, only about 1 to 2 percent are covered by this type of providers. Surprisingly, other type of care arrangements, such as family day care (*Tagespflege*), still play a rather insignificant role in Germany. Only about 2 percent of all mothers use such a care arrangement (own calculations, based on data from the year 1996). More important than the *Tagespflege* is the care in social networks. Roughly half of all women with children under age 12 report that they rely on friends and relatives as a provider of care, where the child's grand-parents play the most significant role (HANK/KREYENFELD 2002; TIETZE et al. 1993). If one disregards network care, however, the German "day care regime" offers a rather homogenous picture compared to other countries. There are the public day places in *Kindergarten*, *Hort* and *Krippe* and a negligible use of private care arrangements.

Most of the places in the *Kindergarten* provide part-time care in western Germany. Against this background, one could argue that these public day care arrangements are

more oriented toward education than toward helping parents to combine work and family life (see below). However, it is virtually impossible to distinguish between day care places which serve educational or work-related purposes and those which offer day care for children defined by welfare authorities as “in need”. This has to do with the fact that a group of children in a *Kindergarten* quite often includes children who are in part-time care as well as children in full-time care. And last but not least, one should also mention that the *Kinder- und Jugendhilfegesetz* of 1991 states that child care should be provided as part of an “integrated day care system” for children of all age groups (NETZWERK KINDERBETREUUNG 1996). This also involves that one does not distinguish between places for children of working and non-working mothers.

Rates of provision

Although there is the principle of establishing an “integrated system”, the provision rates for children still differ significantly by the age groups they cater for. Since 1996, by the federal *Kinder- und Jugendhilfegesetz*, the municipalities are required to offer day care for all children between 3 and school age for half-days. In Western Germany, the supply of day care concentrates mainly on fulfilling this requirement and no more. This means that day care for children in pre-school age is generally (in 81% of the cases) part-time, i.e. for only 3-5 hours during the morning hours not including a meal at lunchtime. At first glance, there seems to be a surplus supply for *Kindergarten* places in 1998. However, it is unclear if this indicates indeed an excess supply of child care openings or whether this relates to inaccuracies in the German Youth Statistics. The provision rate is calculated by dividing the available places by the number of children. While information on the number of day care places are inferred from surveys of day care providers, the number of children is taken from annual population statistics. The supply of day care for infants (ages 0-3) or school-age children (ages 6-12) is still very restricted. Only 3 of every 100 infants can get a place in a day care centre. For children of school age, the situation is similar. There are day care places for only 6 percent of all school-age children.

In the GDR, day care for children was generally regarded as a means of helping mothers work (e.g. HANK et al. 2001). As an “inheritance” from this era, there is still relatively broad coverage of public full-time care in the East. As can be seen in table

1, there is a complete coverage of full-time care in Kindergarten (in general, from 8 a.m. until 5 or 6 p.m.). There are day care places for 36 percent of all infants and for 48 percent of all school-age children in 1998. Although the huge East-West differences in the provision of care might seem surprising at first sight, it is explicable in the light of the demographic development in the eastern states. In other words, day care places were drastically cut, but birth rates (and therefore the number of children to care for) declined even faster after German unification (KREYENFELD 2001).

[Table 1 about here]

The low coverage of public full-time care is often considered as main obstacle for women's full-time employment in the western states of Germany. Only about 10% of all West German women with children age 11 and younger are employed full-time; 30% are employed part-time. Roughly 60% are not employed or on parental leave. In the eastern states of Germany, roughly 40% of all mothers are employed full-time, 20% work part-time and only 40% are not working or on parental leave (calculation refer to the year 1996; for details see KREYENFELD et al. 2001, 68ff.). Although the public day care system is a crucial parameter in women's employment decision, one also has to take into account how the day care system is embedded into the other institution of the welfare state (e.g. KAUFMANN et al 2002; OECD 2001). In other words, in order to fully understand the low full-time employment rates among West German mother's, one also has to consider welfare state institutions such as the tax, transfer and parental leave system. Germany (West) is generally classified here as a "archetype" of a conservative welfare state promoting „breadwinner-husband-and-homemaker-wife families“ (TREAS/WIDMER 2000: 1431).

The public funding of public day care

As mentioned above there are practically no for-profit day care centres in Germany. Day care centres are either owned by the municipality or - and this applies mainly to western Germany - run by non-profit providers which are heavily subsidised by the municipality and the federal state (see table 2 below). These NPOs generally belong to one of the major German charity organisations (e.g. the Protestant church, the Catholic church, the workers' welfare association). There are also centres run independently (*Elterninitiativen*), but these usually become “affiliated” with one of the big charity organisations in order to make them eligible for continual public support (for a more detailed discussion, see e.g. BODE 2001).

As shown in table 2, 54 percent of the places overall were provided by municipalities (in 1994), while 46 percent were provided by non-profit organisations. The more detailed breakdown by age group demonstrates that the non-profit organisations mainly provide part-time care in *Kindergartens*, while the municipalities provide the majority of the places in the *Krippen* and *Hort* sectors. For-profit organisations do not receive any public support. Therefore it is not surprising that the percentage of places they provide is so small, as was mentioned above. Against this background, our analysis will concentrate on the distributional effects of day care places provided by the municipalities and by NPOs, which cover almost 98 percent of all places provided in German day care centres.

[Table 2 about here]

Day care fees

Before proceeding with the analysis, it should be pointed out that - although places in day care are subsidised - parents have to pay an *additional fee* for each child in day care. This fee usually takes two family-dependent factors into account: family income and the number of children in day care. The fee covers between 10 and 20 percent of the centre's operating costs. In general, the federal state or the municipality specifies the amount of these fees (FLEHMIG et al. 1995; NETZWERK KINDERBETREUUNG 1996). There is no reliable statistical information on the amount of fees paid per child or household. Data from the German Socio-Economic

Panel (GSOEP, see next chapter), however, suggest that in 1996, the monthly fee for a pre-schooler in part-time care averaged roughly 50 € per month; for all day it was 75 €. This corresponds to 2 percent of the average household income for part-time and 4 percent for full-time care. By international standards, German child care fees are relatively low (see e.g. OECD 2001). This does, however, not rule out that high day care fees can discourage some parents from giving their children into day care. Furthermore, since 1996 all children are entitled to a part-time place in *Kindergarten*. There was a general concern that with the expansion of *Kindergarten* places, day care fees would also increase. Since our analysis refers to the year 1996, we could not incorporate this development into our investigations. More recent data on day care fees in Germany is, to our knowledge, not available.

4 The Distributional Effects of Subsidising Day Care in Germany

4.1 Data and Methodology

In the following, we estimate the distributional effects of the publicly funded provision of day care in Germany. To be more precise, we analyse how different income groups take advantage of the public provision of day care and what kind of day care fees they must pay. To do so, we utilise *household-level microdata* and *macro-level data* on the *expenditures of publicly funded day care*. The household-level information comes from a representative microdata set for Germany, the German Socio Economic Panel (GSOEP). The GSOEP is a data-set providing information on individuals living in private households in Germany (WAGNER et al. 1993). We use data from the 1996 survey because in this survey year detailed data about day care were collected. In contrast to other data-sets, these GSOEP data provide detailed information on the mode of care and the day care fees for each individual child in the household.

In the GSOEP survey parents were asked to report whether their child was in full-day care, only in care during the morning hours, or only in the afternoon or evening. As school-age children usually do not require full-time care (since they are cared for at school during the morning hours), we do not distinguish between full-time and part-time care for school-age children. We do not distinguish between part-time and full-time care for the *Krippe*, as the majority of places (91 percent) are full-time

places (DEUTSCHES JUGENDINSTITUT 1998). Altogether we therefore distinguish between the following: (1) *Krippe* place, (2) part-time *Kindergarten* place, (3) full-time *Kindergarten* place, and (4) *Hort* place.

For our analysis of the GSOEP-sample, we omit all children with missing information on the key variables (day care fees and mode of care). We also omit children who are in family care, as we are unable to distinguish between money spent for family care (*Tagespflege*) and fees for day care centres. In principle, family care is a very special case which certainly demands further research (see e.g. NETZWERK KINDERBETREUNG 1996). But this is beyond the scope of this study, furthermore, family care still plays a marginal role in Germany (see above). Related to this, sample size problems preclude us from performing a separate analysis of this issue.

All in all, we omit only 27 cases from the data-set which leaves the sample with 3,966 households. Information in the GSOEP on the use of day care and on other household characteristics like income and the day care fees a household pays is linked with macro-level information on *public day care* expenditure provided by Statistics Germany (STATISTISCHES BUNDESAMT 1996a). In the following, we describe this information in more detail.

First of all, it is important to note that this kind of information is only provided every four years. The most recent data available at the time of our analysis is from the year 1994 (although we refer to the year 1998 in table 1, we did not have access to all necessary information from this year). Secondly, what is this information about? Statistics Germany presents information on the total annual public expenditure on day care. Moreover, information on the number of day care places is available. Yet there is no representative information on the public expenditure *per place* in day care. Therefore the expenditure per day care place must be estimated on the basis of the information we have at our disposal, which are total public expenditure, the number of children cared for and the total number of public day care places provided in the year 1994. However, estimating average public expenditure by simply dividing the total expenditure on day care by the number of places is rather problematic. First, expenditure per place is very likely to vary with the opening hours of the day care centre; they are also quite likely to vary by the age of the children cared for. Second, non-profit providers of day care are supposed to contribute about 10 percent of operating costs and most of the investment costs out of their own budget. These

expenditures do not appear in the publications provided by Statistics Germany. On the one hand, one could argue that this is no problem at all for an analysis which focuses on public expenditure on day care. On the other hand, one could take up a different stance on this issue: Taking into account the sources from which non-profit providers in Germany receive funds (such as “church taxes” and tax deductions), one could regard their expenditure as public as well. The latter argument is the one which we adopt for our analysis.

In order to obtain a reasonable estimate of the expenditure per day care place, we therefore have to take into account the age of the children cared for, the opening hours and the expenditures by non-profit providers. In the following, we outline how we proceeded in estimating these values. Table 3 displays the public expenditures subdivided by whether they were spent for subsidising NPOs or whether they were spent on public providers, i.e. the municipalities. Subsidies to non-profit providers generally cover up to 90 percent of operating costs. In some cases subsidies may even exceed this amount. In line with other studies, we assume that NPOs contribute 10 percent of their operating costs out of their own budget (in table 4, we label this the “NPO budget”) (FLEHMIG et al. 1995). Comparing various regulations on subsidising investment costs by federal states, we assume that an average of 50 percent of investment costs are covered by NPOs (DEUTSCHES JUGENDINSTITUT 1993). Based on these two assumptions, we calculate the total expenditures for *public day care* (table 4).

[Table 3 about here]

[Table 4 about here]

Further we assume for our estimations that the expenditures for a part-time place for infants (*Krippe*) is twice as expensive as a place for pre-schoolers or a place for school-age children (*Hort*). A full-time place for pre-schoolers is assumed to be 1.5 times more expensive than a part-time place in *Kindergarten* (for a similar approach, see BMFSJ 1992), and thus the expenditures are also 1.5 times more expensive. As data from Statistics Germany refer to the year 1994, and we are using the year 1996 for our micro-level analysis, as a final step we take into account the inflation index.

The estimated cost per place is displayed in table 5. We estimate that the

expenditures for a place in a *Krippe* amounts to roughly 5,700 € per year, a part-time place in *Kindergarten* or in a *Hort* roughly 2,850 €, and a full-time care place entails expenditures of about 4,300 €. Compared to other studies, (e.g. BMFSFJ 1992), the average expenditure per place for all four day care modes are quite low. This means that we might underestimate the expenditures per place. Nevertheless, this is of minor importance considering that our focus is on the distribution effects of public expenditures on day care, and not on its total amount.

[Table 5 about here]

As a next step we use this information on the average expenditure per place to analyse on the micro-level how different income groups profit from average public expenditures on day care. As an indicator for the position of the individual household in the income distribution, we use the *equivalent monthly household income after taxes*, calculated on the basis of the 1996 cross-section using the current OECD scale (FAIK 1997). First, we investigate on the individual level whether there is a difference in the *use of day care* by household income. Second, we estimate whether *day care fees* are correlated with household income. Third, we combine both of these data and estimate whether the household income is correlated with “*net subsidies*.” The term *net subsidies* designates the amount of public expenditure each household takes advantage of. *Net subsidies* for each household in our GSOEP sample are calculated by subtracting the day care fees a household pays from the estimated average public expenditure per day care place. For example, a family whose child is attending a part-time *Kindergarten* receives a gross subsidy of 2,852 €. If the parents spend 50 € per month for day care, they have a net subsidy of 2,252 € per year. This is the main step where we combine micro-level and macro-level data. We also perform a separate distributional analysis for various sub-populations, such as for children living in eastern and western Germany and for children in different age groups.

3.2 Results

In table 6 we display our first set of results, which show the use of care, the day care fees as a percentage of household income and the *net subsidies* per year. The results can be interpreted as follows:

- (1) The lowest and the highest income quartiles are the least likely to use day care; therefore the middle income quartiles are the most likely to use *public day care*: more than 40 percent of the children in the second and third quartiles are in day care (column 1). Several explanations may be found for this. One reason might lie in the *employment pattern* of household members. In other words, women in the lower-income range might be less likely to work and therefore would be more likely to prefer taking care of their children themselves. A separate analysis on the employment status of the mothers by income quartiles (own calculations without table), however, shows that the percentage of employed mothers is relatively homogenous for the different quartiles; it varies between 47 percent and 49 percent and thus does not exhibit any significant difference. Another explanation might be that the percentage of mothers on parental leave substantially differs among the different income groups and thus the necessity for day care differs as well. This is indeed the case: The percentage of mothers on parental leave is highest in the first quartile and lowest in the third quartile (own calculations without table). Furthermore, one could speculate that parents with higher income are more likely to rely on private care arrangements such as paid babysitters and au pairs. This is plausible as these families have more resources to finance such arrangements. However, a separate analysis to test this hypothesis is not possible given the limited pieces of information which is provided in the GSOEP. Since private day care plays such an inferior role in Germany (see above), it is unlikely that this aspect will seriously bias our results. An additional explanation is that children in households headed by foreigners are less likely to use day care than children in households headed by Germans (see BINDER 1995; BÜCHEL et al. 1997; BÜCHEL/SPIEß 2002). The percentage of foreign households in the first quartile is substantially higher than the percentage of foreign households in the fourth quartile (27 percent in the first vs. 19 percent in the fourth quartile, own calculations without table). Thus the relatively high percentage of foreign families might be another reason for the relatively small percentage of children in day care in the first quartile. It is difficult to assess the factors that deter immigrant families

from using public day care for their children. Apart from culture differences in the attitude towards the use of day care, it is also possible that the type of care provided does not meet the special needs of immigrant families. For example, immigrant families with a muslim background are presumably reluctant to use a day care centers which is run by the catholic and protestant church.

- (2) With rising household income, the percentage of household income spent on day care fees decreases. Households in the lowest income quartile pay the highest share of their income on day care. If they use care they spend 4.0 percent of their income on day care, while the fourth income quartile only spends 2.5 percent of its income on day care (column 2). Given the fact that in most German states fees are charged according to the household income, this result is remarkable. As the fees are quite frequently reduced for families who have more than one child in day care, it could be that higher quartiles have more children in day care than others. However, a separate analysis by the number of children per family shows that the average number of children declines in higher income quartiles. The average number of children in the first income quartile is 1.8 while it is 1.5 for the last quartile (own calculations without table). However, if the total average number of children in the family is positively correlated with the number of children in day care, this empirical result cannot explain the higher day care fee load of the first quartile as compared to the other quartiles. In contrast, it should lead to the opposite result.
- (3) Taking into account the use of day care and the day care fees, the middle income range is the one that profits most from the public provision of day care. However, this effect can be characterised as only modest. The *net subsidies* received by the second quartile are the highest at 1,440 €per year. Nevertheless it is remarkable that the subsidies which go to the first and fourth income quartiles do not differ significantly (column 3). Again, this is even more remarkable given the fact that day care fees are income-dependent in most German states. Obviously the households' different capacities to pay are not sufficiently taken into account, or at least they do not result in higher *net subsidies* to the lower income quartile.

[Table 6 about here]

It is very likely that our results are confounded by other aspects. First of all, as we have shown above, eastern German households are substantially more likely to take advantage of the public provision of day care. Therefore we further ask how the “distributional effects” shown above relate to *East-West differences* in the provision of children’s day care. Second there is broad coverage with *Kindergarten* places which the overwhelming majority of children attend. *Hort* and *Krippe* places play a minor role from a quantitative perspective. Therefore another question is whether the distributional effects observed are driven only by the group of children of *Kindergarten* age, and, consequently, how they differ if this sub-population is excluded from our analysis. The question is: Are there differences in the distributional effects of the public provision of *Kindergarten* places on the one hand and *Hort* and *Krippe* places on the other? To answer the questions raised above, we calculate below the distributional effects by (1) region of residence and (2) age of the child.

(1) Distributional effects by region of residence

Table 7 displays the distributional effects of children’s day care separately for the eastern and western states of Germany (the classification of income was undertaken on the basis of a single-income distribution). Column 1 also shows the well-known phenomenon that day care use is more frequent in eastern than in western Germany. As Germany overall, in both regions of residence the first income quartile is the one that uses day care least, while the second income quartile uses it most. Furthermore, the relative share of day care fees decreases with household income in both regions. The group which pays the highest day care fees (in relation to household income) is the lowest income quartile in both eastern and western Germany, whereby the relative burden is higher for eastern German households than for those in western Germany (with the exception of the third income quartile). Given the lower income level in eastern Germany, this is a striking result because the welfare state should support the most vulnerable families. As in the previous analysis, in terms of *net subsidies*, the middle income quartiles are the ones that profit most from the public provision of children’s day care in both parts of Germany, although the difference is more pronounced in western Germany (column 3).

[Table 7 about here]

(2) Distributional effects by age of the child

Table 8 displays the distributional effects for households divided by the mode of care. We distinguish between households where the youngest child is of *Kindergarten* age and households with children in the other age ranges. The latter covers children of the age that attends the *Krippe* (up to three years) and children of *Hort* age, (school children). Again, the general picture does not change. It is basically the lower income quartile which is least likely to take advantage of *public day care*; this quartile is also burdened with the highest relative share of day care fees. However, households of the lower-income range whose youngest child is of *Kindergarten* age present a puzzling group: Although they are the least likely to attend *Kindergarten* and are charged the relatively highest day care fees, they receive the highest *net subsidies*. This aspect might relate to the fact that these households are more likely to use full-time care arrangements than the other income categories. Moreover, the results underline the importance which is still assigned to the *Kindergarten* sector. The *net subsidies* for day care for children younger or older than *Kindergarten* age are much lower, under 1,000 €, while the other subsidies are over 2,000 €

[Table 8 about here]

5 Conclusion

In this study we investigated the distributional effects of *public day care* in Germany. Previous research on the distributional effects of day care subsidies has been conducted only for countries such as the USA, the UK, or Australia. In this paper we argued that, due to differences in welfare policies, these studies do not transfer well to the German context or to the context of other countries with day care funding policies similar to that of Germany. Our study was a first attempt to empirically address the distributional effects of day care subsidies in a welfare setting, where day care is fostered primarily by providing places in *public day care*

centres or by subsidising NPOs that provide day care. As almost all providers also charge parents a day care fee in Germany, this contribution also has to be taken into account for a distributional analysis, especially since the analysis focuses on the financial burden the individual household has to carry with respect to day care. In order to determine *net subsidies*, the difference must be calculated between the actual expenditures for day care places and the day care fees paid by the individual parent. This is the approach we adopted for our analysis.

Nevertheless, our approach has to be viewed against the background of several limitations of our analysis. First, we had to rely on *estimates* regarding the expenditures per day care place as there was no exact information on this. Secondly, due to data limitations we could not investigate more thoroughly how distributional effects are influenced by differences in the socio-demographic characteristics of the households who use *public day care*. Thirdly, and related to this, we were unable to address how *alternative child-care arrangements* (such as private babysitters or nannies) affect the distributional effects of *public day care*.

Nonetheless our study is the first since the early study of KAUFMANN et al. (1982) to focus on distributional effects of day care subsidies in Germany. Our main findings can be summarised as follows:

On the one hand there are practically no re-distributional effects of the public provision of day care in Germany. If any, families with children in the middle income range are the ones that profit most from the publicly funded supply of day care. On the other hand, low income families have to pay a higher share of their household income for day care fees than do other income groups. This particularly applies to the very low income range in the eastern states of Germany. Furthermore children from low-income households (and from high-income families) make use of day care to a smaller degree than their counterparts in the middle-income range.

Given the weak correlation between household income and day care subsidies, one could argue on the positive side that all social groups take advantage of the public provision of day care places in a similar manner. Negatively speaking, however, one could argue that publicly provided day care is not efficiently targeted, because low-income families should be the first concern when subsidising day care. This group of children is the one which would benefit most from high-quality day care in the long-

term perspective. And mothers of low-income households in particular need subsidies to make their employment profitable. From a policy perspective, other important issues should be addressed as well.

First, as households headed by foreigners are represented in the first income quartile to a higher degree, and as fewer children of this quartile are in day care, there should be additional efforts to make day care more attractive for foreign parents. In the long run such an integration or assimilation policy might be less costly than other efforts at a later stage in life.

Second, our analysis shows that families in eastern Germany carry a higher burden with respect to day care fees than their western counterparts. In this respect one might think about more equal burdens for families in both parts of Germany, although the *net subsidies* in absolute terms are already much higher in the eastern than in western Germany.

Third, our analysis demonstrated once more that the main focus of the German day care system is on day care for children of *Kindergarten* age, while the other forms of day care are of minor importance. This is evident not only in the provision rates, but also in the total amount of the subsidy for this mode of care. However, if the equal chances for mothers with children of all age groups are to be improved, it is also necessary to upgrade the financial aspect of day care places for children younger and older than the ones of *Kindergarten* age.

The German funding system therefore could be improved in several ways: First of all, low income families should profit more; second, more children of *Krippe* and *Hort* age should profit to a greater extent; and third, the financial burden for families in eastern Germany should be reduced compared to their western German counterparts. Without changing the basic funding framework there are essentially two ways to do this: Either the public resources reserved for the subsidisation of low-income families can be increased and resources reserved for high-income families can be decreased, or the fees can be decreased for low-income families and increased for parents of higher income groups. Other studies for Germany show that the latter instrument is in the parents' interest, as their willingness to pay for day care is higher than the fees they actually pay (ENGELBRECH/JUNGKUNST 1998). Furthermore, based on a separate micro-simulation we were able to show that a day

care fee policy which charges higher income groups more and lower income groups less than the status quo does, the state could actually save up to 2.5 billion € (KREYENFELD et al. 2001). This additional money could either be invested to create new day care places or used to improve the quality of day care, as the quality aspect is also important - especially when considering the long-term benefits of day care for small children. However, more resources could also be gained to subsidise low-income families in particular by shifting other resources devoted to families in general to this particular policy field.

Similar results of distributional analysis might be yielded for other European countries which have a similar system of primarily state-provided day care (such as Sweden or the Netherlands, see OBERHUEMER/ULICH 1998). However, we are unable to verify this hypothesis. To our knowledge, there are no similar empirical studies for other European countries. We assume that, as in Germany, the database available in such countries is rather weak to allow the distributional effects of the public provision of day care to be studied. In order to perform such analysis in cross-national comparison, a joint effort is required to improve the relevant statistical infrastructure in Europe. We consider our study as a modest attempt to stimulate further research in this direction.

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Table 1: Public provision rate of day care in 1994 and 1998, in percent

	Western Germany		Eastern Germany	
	1994	1998	1994	1998
Krippe	2	3	41	36
Kindergarten	85	102	117	132
Hort	5	6	58	48
Kindergarten (full-time)	14	19	113	129

Note: Public provision rate: places per 100 children of an age group

Source: DEUTSCHES JUGENDINSTITUT (1993, 1998), STATISTISCHES BUNDESAMT (2002)

Table 2: Provision of day care by provider in 1994, in percent

	Public providers	NPO
Krippe	73	27
Kindergarten		
Part-time	33	67
Full-time	65	35
Hort	86	14
Total	54	46

Source: DEUTSCHES JUGENDINSTITUT (1998), STATISTISCHES BUNDESAMT (1996b), and own calculations.

Table 3: Public expenditure on day care (in billion Euro in 1994)

Expenditures related to ...	Public providers	NPOs	Total
Operating costs	5.41	2.72	8.13
Investment costs	0.86	0.37	1.23
Total	6.27	3.09	9.36

Source: STATISTISCHES BUNDESAMT (1996a)

Table 4: Public expenditure on day care plus “NPO Budget” (in billion Euro in 1994)

Expenditures related to ...	Public providers	NPOs		Total
		Public budget	“NPO budget”	
Operating costs	5.41	2.72	0.30	8.44
Investment costs	0.86	0.37	0.37	1.60
Total	6.27	3.09	0.67	10.03

Source: STATISTISCHES BUNDESAMT (1996a), own estimates

Table 5: Estimated expenditures per place for 1994 and 1996

	No. of children in care 1994 (in million)	Public expenditure 1994 (in billion €)	Expenditures per place	
			1994 (in €)	1996 (in € adjusted)
Krippe	0.15	0.83	5,527	5,704
Kindergarten				
Part-time care	1.61	4.45	2,764	2,852
Full-time care	0.86	3.56	4,146	4,278
Hort	0.43	1.19	2,764	2,852
Total	3.05	10.03	3,289	3,395

Note: (1) Inflation index used for 1994 to 1996 is 3.2 percent (2) Numbers of children in day care refers to December 31, 1994

Source: STATISTISCHES BUNDESAMT (1996a, 1996b, 1997, 1998), and own estimates.

Table 6: Use of care, day care fees as percentage of household income, and *net subsidies* by income quartile

Income quartile	Children in day care (% of all children)	Day care fees ^{*)} (% of household income)	<i>Net subsidies</i> (per year in €)
1 st quartile	30	4.0	1,100
2 nd quartile	49	3.3	1,440
3 rd quartile	42	3.3	1,220
4 th quartile	33	2.5	840

Note: ^{*)} only households with at least one child in care

Source: STATISTISCHES BUNDESAMT (1996a, 1996b), GERMAN SOCIO-ECONOMIC PANEL 1996, and own estimates

Table 7: Use of day care, day care fees as percentage of household income, and *net subsidies* by income quartile (for eastern and western Germany)

Income quartile	Western Germany			Eastern Germany		
	% in care	% fee ^{*)}	Subsidies	% in care	% fee ^{*)}	Subsidies
1 st quartile	25	3.5	800	44	4.8	1,780
2 nd quartile	46	3.1	1,280	57	3.8	1,920
3 rd quartile	39	3.4	1,740	54	3.2	1,690
4 th quartile	30	2.4	710	54	3.0	1,760

Note: (1) “% in care” = Children in day care as a percentage of all children; “% fee” = Day care fees as a percentage of household income; “Subsidies” = *Net subsidies* per year in € (2) ^{*)} only households with at least one child in care

Source: STATISTISCHES BUNDESAMT (1996a, 1996b), GERMAN SOCIO-ECONOMIC PANEL 1996, and own estimates.

Table 8: Use of care, day care fees as percentage of household income, and *net subsidies* by income quartile (by mode of care)

	“Kindergarten age”			“Krippe or Hort age”		
	% in care	% fee ^{*)}	Subsidies	% in care	% fee ^{*)}	Subsidies
1 st quartile	72	4.4	2,380	13	3.3	580
2 nd quartile	87	3.7	2,270	20	3.1	820
3 rd quartile	85	3.2	2,270	25	3.5	830
4 th quartile	90	2.6	2,070	10	2.2	350

Note: (1) “% in care” = Children in day care as a percentage of all children; “% fee” = Day care fees as a percentage of household income; “Subsidies” = *Net subsidies* per year in Euro (2) ^{*)} only households with at least one child in care

Source: STATISTISCHES BUNDESAMT (1996a, 1996b), GERMAN SOCIO-ECONOMIC PANEL 1996, and own estimates.