Applying individual level data on children's care periods to microsimulation models

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Abstract

In the area of Finnish child care policy several legislative proposals are currently under preparation and open to public debate. At the moment the focus is on the child home care allowance and on child day care fees. Assessing alternative solutions and exploring potential outcomes of the reforms would require individual level information, concerning not only parents' choices between different care options (and work) but also information about the timing of individual child care spells in the families. The main problem and challenge for current microsimulation models is that there is information about children's care spells in public day care but that the information is inadequate especially in regard to its potential use in register data.

Our aim is first to place care spells into a monthly calendar for each child under school age using existing data sources. These spells are modelled and will be merged into the new SISU model, which utilizes both survey data (IDS, nearly 30 000 individuals) and a new large set of register data (800 000 individuals). Information about attending public day care is based on interviews in the IDS. There exists also an administrative data file compiled by the Social Insurance Institution (Kela) concerning children's day care spells, which could be used in both survey and register data. The shortcoming of the administrative day care file is that it was created for other than statistical purposes and is not fully representative. This is a first attempt to make use of the child daycare file and to link the information later to more comprehensive register data. Before proceeding to that, we have here an opportunity to compare the quality of the administrative data on child care with the survey data.

In practice, it is rather difficult to capture children's care spells one at a time over a period of one year, for example, while linking the information to their parents' situation, especially if there is more than one child in the family. One family can, at any one time, avail themselves of 2-3 different care options for different children or choose the same option for all of them. Furthermore, many children move between different types of care during the year. These transitions and choices have a great impact not only on public resources but also on the parents' potential behaviour in the labour market. We aim to utilize existing data sources to construct a new in-home and out-of-home child day care model which would incorporate information from the perspectives of children, their parents and the family as a whole. In this paper we present the outcomes of comparisons performed among the data sources. Additionally, we present the outcomes of two experimental simulations relating to the current reforms.

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1. Introduction

A 20-year period of silence at the political level concerning a special feature of Finnish child day care policy, the child home care allowance and its role and impact, seems to have come to an end, and the time has come to discuss the steps to reform the scheme. The incumbent Government is preparing substantial reforms to the child home care scheme, affecting length of entitlement, flexibility and the entitlement criteria. The proposed reforms have aroused a lot of public and political debate.

The child home care scheme was introduced in the mid-1980s as a way to offer an alternative to public support to families who did not take advantage of public child day care services while their youngest child was less than 3 years of age. One reason for the silence at the political level probably was that the allowance immediately became very popular. However, its popularity may not have been attributable to the allowance itself, but also to the deep economic recession that Finland experienced in the beginning of the 1990s, which practically eliminated demand for labour (Kalela et al. 2002; Haataja 2005). Criticism of the scheme's negative side effects has always sparked widespread public debate in defence of the scheme and in favour of parents' rights to choose how to arrange care for their children (OECD 2005; Sipilä et al. 2010). The contradictions surrounding the scheme are well summarized in the title of the latest book on the issue edited by Sipilä et al. (2012), which translates to English as 'The beloved and hated child care allowance'.

Current activities to reform the child home care allowance scheme actually started in spring 2012. There were reports in the media about a rumour that the Government had plans to cut the eligibility period for the child home care allowance by one year, so that it would only cover children two years of age or younger. This news touched off a spirited public debate and even led to a motion of censure in Parliament from the opposition (Haataja and Valaste 2013). In autumn 2012 the Government nominated a committee to prepare a proposal for opening up new possibilities to combine part-time work and child care. As of the autumn of 2013, the Government has the proposal on its agenda. The proposal suggests providing an increased partial child home care allowance for parents with children under 3 years of age, on condition that they return to or enter part-time work before the full eligibility period for the child home care allowance ends. The amount of the allowance would be adjusted to working time (STM 2013). In August 2013 the Government published a long-term development programme for structural policy. One of its suggestions was to split the right to the child home care allowance half-and-half between the parents (Valtioneuvosto 2013). This proposal is under further preparation in the Ministry of Social Affairs and Health.

The main motivations for the reforms under preparation are based on the Government's goals to promote employment and longer working careers among mothers as well to foster gender equality in child care. The original 'freedom-of-choice' justification took no notice of gender

equality in working life or family life and thus differed from discussions on similar schemes in Sweden or Norway, for example (Hiilamo and Kangas 2009; Haataja and Nyberg 2006; Gislason and Eydal 2011; Ellinsaeter 2003). This is unlike the case with parental leave policies, where the first reforms for gender equality were introduced as early as the 1970s. However, take-up rates for parental leave among Finnish fathers have been the lowest in the Nordic countries (Haataja 2009; Nososco 2011, 47). The case can certainly be made that the child home care scheme has contributed to this outcome. All reforms dealing with the child home care allowance mainly affect mothers, because about 95% of the beneficiaries are women.

Despite there being two large reforms likely to be implemented during the next few years, few basic studies or calculations about their potential effects have been performed or published. Both reforms, i.e., the new partial child home care allowance and splitting the allowance period between the parents, have a potential impact especially on the demand for public child day care services, both on a part-time and full-time basis. Furthermore the reforms aim to increase mothers' labour supply. Our aim is to develop a better tool to analyse these reforms and to demonstrate their potential outcomes by making some alternative calculations concerning the child home care allowance.

2. Aim and content of the paper

We have both methodological and empirical motivations for writing this paper. For one, we wish to develop a better microsimulation tool to capture child care periods in order to plan reforms and, secondly, we aim to apply this tool in practice by undertaking two alternative simulations within the framework of the current child home care allowance debate.

The main problem and challenge for current microsimulation models is that while there is information about children's care spells in public day care but the information is inadequate especially in regard to its potential use in register data. Thus we aim to develop a new model of child care which makes better use of register data, going down to the level of detailed monthly, child-specific spells of child care. With this method we should be able to answer not only how many families, parents or children may be affected by the reforms but also, as a novelty, for how many months per year they are likely to be affected. To achieve this we need month-by-month information about the children's and their parents' original situations and the transitions they make. We try to capture the transitions by compiling calendar data and building a simulation model capable of using such information. As our ultimate goal, we aim to put the new model-unit into practice in combination with other microsimulation models covering the rest of the income transfer and tax system. Our particular focus concerns the new public microsimulation model SISU[1], which uses both small survey data and a large set of register data.

We begin with a simple exercise to test the SISU microsimulation model: What would be the impact in terms of costs of taking away the right of older siblings of under-3-year-olds to the child

[1] http://www.stat.fi/tup/mikrosimulointi/mikrosimulointi_kayttajanopas.pdf

home care allowance? This highlights a Finnish specialty concerning the child home care allowance compared to the other Nordic countries: Finland is the only country that offers support for home care also of siblings older than 3 years of age.

Our second exercise has both substantive and methodological aims. From a substantive perspective, we are interested in the immediate impacts of splitting entitlement to the child home care allowance between the spouses, especially as regards mothers' labour supply and the demand for public child day care. In practice we simulate the entitlement to the allowance only for parents whose youngest child is less than 2 years of age, for,that is what the splitting would, in practice, mean for mothers who now make use of the allowance for longer than a year after having ended parental leave.

The paper is constructed as follows: In the next chapter we describe briefly the Finnish child day care system and the use of the available alternatives. In chapter 4 we present the data and the method used to build the calendar data. Chapter 5 presents the alternatives to be simulated and chapter 6 the outcomes. The final chapter discusses what we learned about using calendar data and the usefulness of the exercises.

3. Main characteristics of Finnish child day care policy

The child day care issue has a long and tangled history in Finnish politics starting from the 1960s. During that decade, women (and men) started to enter paid work in large numbers. The share of agricultural labour began to decrease rapidly and an increasing share of the population moved to population centres. The official prognosis on trends in women's labour participation lagged far behind the actual numbers, and the availability of child day care services was scant. The labour participation rate of Finnish women, including that of mothers, had risen to a level that was among the highest in the OECD countries (Haataja and Valaste 2013; Datta Gupta et al. 2006; Report of the Committee 1970: A8. 1973). Two alternative policy choices were already then on the agenda to solve this problem: one, to develop the provision of public child day care further, and, two, to introduce a cash for care scheme for mothers to look after their children at home longer than the maternity leave available at the time allowed them to[2]. In 1973 the Act on Child Day Care was passed by Parliament, which, however, worked under the assumption that a cash for care scheme also would be created. One of the justifications was that as long as wage earners have access to publicly provided services, then those who do not use such services, e.g. farmers, should also get some kind of compensation (Mikkola 1991). The Act ordered the local authorities, i.e. municipalities, to build the framework for the delivery of care services. The state would provide support in the form of grants.

In the early 1980s it was obvious that there still was a huge deficit in the availability of child day care facilities, which led to a compromise between the Social Democrats and the Agrarian (now

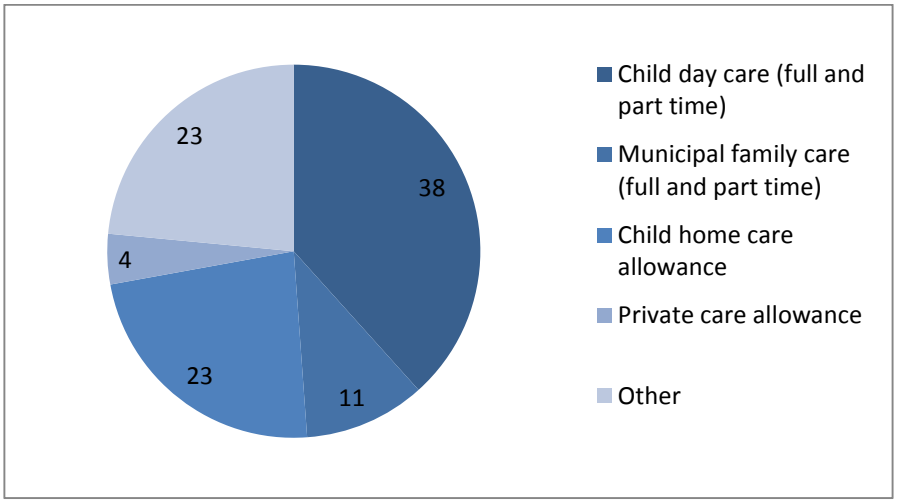
[2] Maternity leave comprised 9 weeks (6 weeks after childbirth until 1971), 3 months in 1971-1973, and about 6 months until the late 1970s.

Centre) party in 1985: the introduction of a subjective right for parents to get a place in public child day care or to receive child home care allowance for children below 3 years of age by 1990. In 1996 subjective child day care rights were expanded to cover all children under obligatory school age (7 years). Since the beginning of 2000 access to free preschool education for children has been extended to all children 6 years of age.

In the early 1990s municipal child day care fees varied a great deal between government mandated minimum and maximum levels. The tendency was for most families to be placed in the high-fee categories. Since 1998 the fees have been regulated at the state level (Forssén 1998), but the regulations only apply to full-time care. In 1998 a care allowance for private child care was introduced. Child day care fees and the level of statutory child home care and private care allowances are standardized across the country, but many municipalities offer a local supplement on top of cash allowances in order to reduce demand for public child day care services and thereby to lower local child care expenses (Kosonen 2011).

The child care provisions have been under the governance of the Ministry of Social Affairs and Health. Early childhood education has been under the oversight of the Ministry of Education and Culture since the beginning 2013, at which time the Ministry also took over administrative responsibility for child day care services. The Ministry is preparing a proposal for new rules governing public child day care fees from 2015 forward, which would better address the use of part-time care. Management of the child home care allowance and private care allowance schemes was left with the Ministry of Social Affairs and Health. The Social Insurance Institution (Finnish acronym: Kela) pays out child home care allowances and is responsible for compiling statistics, but charges the costs of the scheme to the municipalities.

Figure 1. The percentage of children aged 1-6 years in different forms of child day care at year-end 2010 (Source: Pohjola et al. 2013)

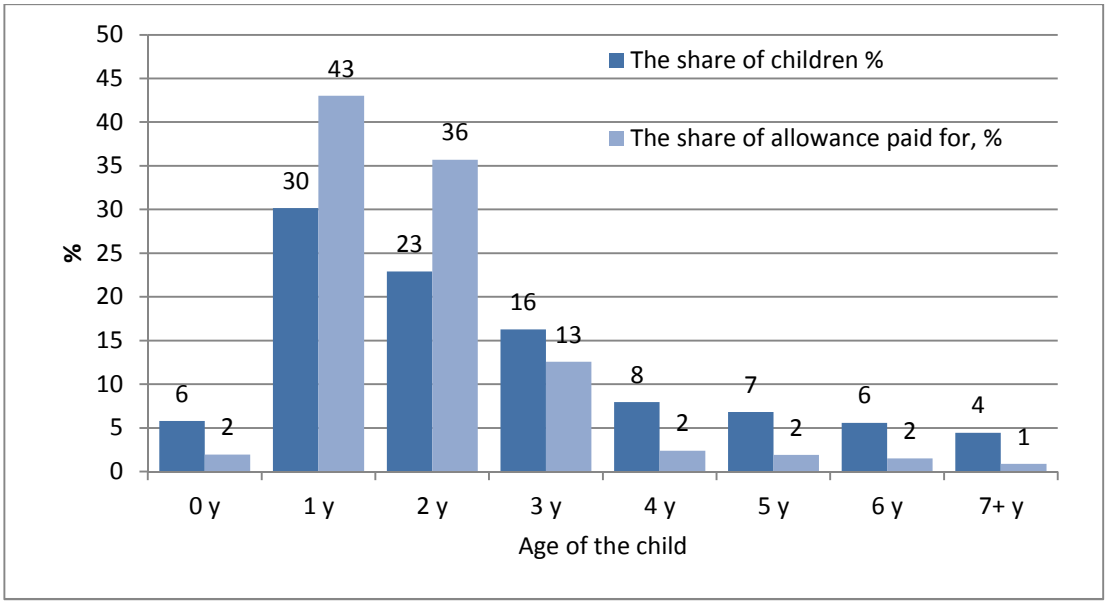


About 49 percent of children aged 1-6 years were in public child day care at the end of 2010 (Figure 1). This is the lowest percentage among the Nordic countries (Nososco 2011, pp. 62 and

64). Almost one quarter of the children are not classified in any category representing publicly supported care. Many in this group are siblings of newborns whose mother or father is on parental leave and looks after their children at home while receiving parental leave benefits. In our previous exercises we found identifying these children to be one of the biggest difficulties (Haataja and Valaste 2013). Another quarter of children are looked after at home by a parent receiving child home care allowance.

The high share of children in home care, and the relatively low share of them in public day care, are an outcome of the fact that the entitlement to home care extends to all children under school age in a family when the youngest of the children is under 3 years of age. Figure 2 shows the distribution of children and the benefits paid for them according to their age. One in four of the children are 4 years or older, but they account for only 7 percent of the total cost of child home care. For the siblings the allowance is only 30 (for those under 3 years of age) or 20 percent (for those at least 3 years of age) of the first child's allowance (see Table 1).

Figure 2. The share of children covered by the child home care allowance scheme and the share of the allowances paid for them as a percentage of the total sum of allowances paid (euros).



There are different rules of compensation for child care depending on whether it is delivered at home on parental leave, at home on child home care leave, or in public child day care. Parental leave benefits are paid either as earnings related benefits or as minimum benefits (for recipients whose earnings are small or nonexistent). Eligibility for the minimum benefits does not require any work history. In table 1 there are two replacement rates, the first showing the net income from benefits compared to the average net wages of women and men, and the second representing the net rate when public child day care fees for 2 children are taken into account. The fees depend on the income and size of the family, and on the number of siblings also in care.

Table 1. Average replacement rates of parental leave benefits with and without child day care (CC) fees for two children, % of net wages (women's and men's average gross monthly wage in 2010, Statistics Finland)

Parental leave benefits, €/month	Minimum (mothers)	Mother	Father
Average wage		2 739	3 343
Net wage		2 023	2 361
Child care fees, 2 children		**443**	**443**
Net income after fees, at work		**1 580**	**1 917**
Gross parental leave benefit	574	1 984	2 288
Net benefit	491	1 519	1 707
Replacement rate, net benefit	24.3	75.1	72.3
CC fees included, at work	31.1	96.1	89.1

Table 2 demonstrates the net compensation rates of the child home care allowance for families with 1-3 children and a low income family with 3 children entitled to the means tested part of the allowance. The allowance is taxable income. Many municipalities provide local supplements on top of the statutory allowance, which may vary from 50 euros to 200 euros per child. There is also substantial variation in the entitlement rights (Pohjola et al. 2013). In the simulations presented below the local supplements are left untouched, meaning that if a family is entitled to a supplement, the supplement will continue to be paid after the reform if they remain entitled.

Table 2. Average replacement rates of the child care allowance (1-3 children) with child day care (CC) fees included/not included, % of women's net wages

Child home care allowance euros/month	Gross per child	Net per family	Replacement rate, % (mother)	CC fees included
Only one child	314.28	279	13.8	17.7
If one sibling <3 years of age	94.09	367	18.1	23.2
If second sibling >3 years of age	60.46	412	20.4	26.1
If means tested supplement	168.19	534	26.4	33.8
Total gross and net (3 children)	637.02	534	26.4	33.8

4. Building calendar data

Data and the microsimulation model

Our analysis makes use of the new Finnish static microsimulation model SISU which was released in spring 2013. The SISU model uses SAS macros as the programming language. The SISU model is administered by Statistics Finland and informed by cooperation with various organizations such as the Ministry of Finance, the Social Insurance Institution of Finland (Kela), the Government Institute for Economic Research (VATT), the Ministry of Social Affairs and Health and the National Institute for Health and Welfare (THL). The SISU microsimulation model simulates taxes and benefits for the Finnish household population.

The SISU model utilizes both the Income Distribution Survey (IDS), which contains about 30 000 persons, and register data consisting of about 800 000 persons (see also Honkanen and Tervola 2013). Both of these data sets have so far suffered from lack of adequate information about the use of child care services. However, the IDS collects information via interviews. The new register file for child day care information from Kela is used in this study for the first time in order to test whether it could serve as an information source for register data (Haataja and Juutilainen 2012).

Assessing data sources

Our aim is first to place care spells into a monthly calendar for each child less than eight years old (due to obligatory school age) using existing data sources. For creating the calendar we have utilized external administrative data from registers: data concerning the child home care allowance, parental leaves (for both the baby and her siblings), children's day care spells, and the parents' working months. The quality of the data varies by source. The data on the child home care allowance and parental leaves come from registers used also for statistical purposes by the Social Insurance Institution (Kela) . They are consequently of a very high quality. Spells are generally registered accurately and very few abnormal entries exist. However, it must be recognized that while information on child care allowance spells are available for each child, information on parental leave benefits exists only for the parents: there is no information concerning the siblings of newborns. Child home care allowances are not paid during parental leave periods, even if the siblings are cared for at home. According to one survey (Väinälä 2004) only 2.1 percent of children whose parent was on parental leave to care for a newborn child attended full-time child day care.

The data on parents' periods in work is based on pension schemes and also used for various statistical purposes, and thus very reliable. The problems related to this data have more to do with its nature than its reliability: it simply denotes the spells during which a person has been covered by a pension scheme (thus it may, for example, omit certain entrepreneurs under specific but narrow circumstances, and spells may continue despite specific temporary absences from work).

The quality of the data related to child day care spells is poorer, since the data is more of a secondary register used to supplement other administrative activities[3], and is not used in statistical work. Very little systematic work has been done to validate the data or to produce systematic imputation or editing for various abnormal observations (Haataja and Juutilainen 2012).

[3] The Act on Child Home Care contains the requirement that Kela, which makes eligibility decisions for the child home care allowance, be informed about the day care situation of the child. Most municipalities communicate that information to Kela electronically to check whether the child is entitled to the allowance, i.e., whether the child is in municipal child day care. This information is collected in a file which unfortunately is not designed for statistical use. However, it is the only source of individual information about children in public child care.

Combining information on different spells

Despite the general reliability of the data sets, combining them produces overlapping spells of different events for two reasons: first, logical reasons related to the choice of time period (month) and other practical reasons; and second, issues that arise from imperfect data. The first issue has to do with multiple varieties of spells in child care (e.g., the child having attended both out-of-home daycare and in-home care during the same month) and overlapping incidents (caused, for example, by the fact that parents' employment spells do not, by default, end due to a parental leave).

The second issue has to do with the nature of the administrative file on day care spells sources from Kela. In this case, the data is in the form of an administrative register which does not indicate the location of each child at a given time but rather is a series of changes in state such as entry into day care or exit from day care (Haataja and Juutilainen 2012). This is combined with the fact that the changes in state are occasionally imperfect, due to municipalities reporting events in different fashions, as both entry and exit, which causes overlap. For the purposes of this exercise, simple rules have been implemented to address the issues with the day care data: for example, consecutive entries have been interpreted as changes in the location of day care, either to a different municipality or a different location within the same municipality: if only an exit has been recorded, it is assumed to have been preceded by an entry at the beginning of the year, and consecutive exits have been assumed to simply lack a record of entry.

In order to solve the problem of overlap caused by both logical and data issues, we have created a priority system to produce a single status for a child for each month in the calendar year. The choice of the month is arbitrary and has to do with practical issues related to legislation and the microsimulation model. Thus we first collect all spells related to the children's status and the relevant parents' status (work and parental leave) and assemble them into a data file. The annual calendar format of course produces some unintuitive statuses for a child, in particular, "not yet born" and "not yet born but mother on maternal leave", which however are necessary to distinguish from missing observations.

Then, a priority system established primarily by reference to the reliability of the data source, where the status of the most reliable data source is selected first, in the absence of that the next, and so on, a status is chosen for each child for each month. The benefit of this step is to be able to check through various spells (e.g. the child is in day care: are her parents at work?), and make changes to the data as necessary (e.g. remove home care spells for children ineligible through changes in legislation). The result thus is a monthly calendar containing the status of each child in the data for each calendar month.

Table 3 contains an example of a household with two children, spanning a period of 12 months. The next step is to sort the outcome file according to priorities: the smallest priority will be the most important. The final data file will contain one row for each child. Table 4 is an example of

calendar data containing priorities for each month. After creating the calendar data, new variables are created for the simulation.

Table 3. Example of priorities for two children with priority statuses for each month *.

Household	Child	m1	m2	m3	m4	m5	m6	m6	. . .	m12
1234	1	1.0	1.0						. . .	
1234	1	1.01	1.01						. . .	
1234	1			3.5	3.5				. . .	
1234	1					4.0	4.0	4.0	. . .	4.0
1234	2	0.5	0.5						. . .	
1234	2			0.7	0.7				. . .	
1234	2					2.0	2.0	2.0	. . .	2.0

* The priorities are 0.5 = unborn, 0.7 = unborn, mother is on maternity leave, 1.0 = Child home care allowance, 1.01 = Means-tested part of CHCA, 2.0 = parental leave for newborn child), 3.5 = child's day care spell, 4.0 = parental leave for sibling.

Table 4. Example of calendar data containing priorities for each month.

Household	Child	m1	m2	m3	m4	m5	m6	m7	. . .	m12
1234	1	1.0	1.0	3.5	3.5	4.0	4.0	4.0	. . .	4.0
1234	2	0.5	0.5	0.7	0.7	2.0	2.0	2.0	. . .	2.0
1235	1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	. . .	9.0
1236	1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	. . .	.
1236	2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	. . .	4.0
1236	3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	. . .	4.0
1236	4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	. . .	0.7

We use the IDS sample data as the basis of our exercise. For the purpose of building calendar data we have merged register based data on child care spells with register files (child home care allowances, parental leave and public day care, parents' employment spells). Currently no imputation rules have been implemented to alleviate the problem of missing data in the child day care spells. Should the data be considered a platform for further development of register based research into children's care, some imputation should be considered to solve this issue. However establishing such rules reliably would require further research into the validity and reliability of the data and the method of establishing such rules.

Table 5 compares the attendance of public day care between the IDS interviews and the administrative data on child care spells. The number of children in public child day care, being a sum of the two data sources, is about 250 000. This is more than the number shown in the official statistics (205 000 children) for year-end 2010 (Altika data base, Statistics Finland). The official statistics, however, collect information only for the year-end situation at the municipal level, and overlook the total volume. Over 140 000 cases (two thirds) appear in both the IDS and administrative data sets sometime in year 2010. Furthermore, there exist spells that are represented only in the IDS data or in the administrative data file. The IDS data or even the combined data derived from IDS interviews and the register file may be a quite accurate representation of the overall situation in each year.

Table 5. Number of children having attended different types of child day care at some point during the year, IDS sample data.

	N	**%**
Number of children having attended public day care, total (48.5 %)	256 000	111.5
IDS interview information	229 600	100.0
Administrative data file (Kela)	169 700	73.9
In both files	143 300	62.4
In IDS data only	86 300	37.6
In administrative data file only	26 500	11.5

With regard to the care spells of children who do not attend child day care, the alternatives are 1) child home care allowance, 2) parental leave, and 3) working (or unemployed) parents, with no information on how their children are cared for. These alternatives are often overlapping and need further work in terms of defining the children's statuses.

Table 6. Child care months placed into the calendar for the year 2010.

	Sum of months, all	%, all	Sum of months, under 3 years	%, under 3 years
Unborn	280 200	4.4	280 200	9.7
Unborn, mother on parental leave	127 600	2.0	127 600	4.4
CH allowance	1 308 900	20.7	966 900	33.6
Means-tested part of CH allowance	60 800	1.0	54 100	1.9
Private child care allowance	185 100	2.9	66 200	2.3
Private part-time child care allowance	110 300	1.7	49 200	1.7
Parental leave for newborn child	553 200	8.7	553 200	19.2
Preschool (from day care file)	11 200	0.2	0	0.0
Public day care (admin. Kela file)	1 444 000	22.8	428 000	14.9
Parental leave for a sibling	284 800	4.5	115 000	4.0
Parents working	1 682 000	26.6	187 500	6.5
Missing	281 200	4.4	49 800	1.7
Total	6 329 400	100.0	2 877 700	100.0

Table 6 shows the total number of child care months placed into the calendar for 2010 after priorities are taken into account. A large number of the months included in the category “Parents working” are likely also to be included in the category “Public day care”, even though they do not appear in the administrative file on public day care spells. It is notable that only 4.4% of all months in the year are missing, and even fewer (1.7%) are missing for children under 3 years.

5. Alternative policies

The year 2010 is used as the baseline in this paper, and the IDS is the base data. By merging the register data on child care spells with the IDS we get calendar data containing 2 400 unweighted observations corresponding to 527 400 children. After creation of the calendar data, three models are simulated. Next we examine the following alternative visions and policy rationales:

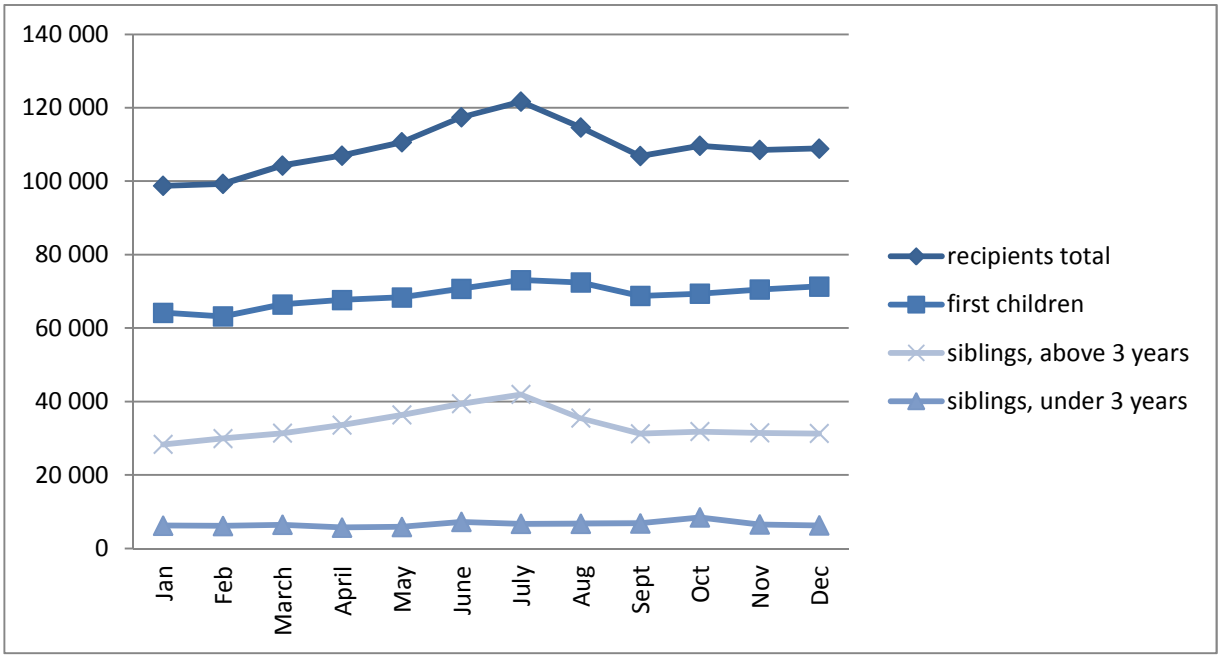
- Baseline model: the actual situation simulated from the calendar data
- Calculation 1: All siblings aged 3 years or older on child home care allowance are no longer eligible
- Calculation 2: Children aged two and their siblings are no longer eligible for CHCA

The baseline model, where no changes were made, was carried out by using the calendar spell data for control and comparison. Calculation 1 resembles the systems in the other Nordic countries where in-home care is supported only for children under 3 years of age. In practice this model corresponds to long-term plans to lower the age of eligibility for pre-school services. Calculation 2 corresponds to the current proposal for reform, in which the entitlement rights to in-home care periods are split between the parents.

The first simulation was carried out on the basis of the present situation by using the calendar data. This baseline simulation produced 122 700 adult recipients (mother/father) of child home care allowance with a youngest child under three years old and siblings under school age. The monthly calendar data allows us to simulate alternative child care scenarios at individual level instead of household level as in previous models. The calendar also enables us to calculate different types of descriptive statistics for children e.g. how many children and how many months they lose in home care and how much their parents lose in allowances. Finally the simulation model produces and summarises results for the parents.

Figure 3 shows the number of children as recipients of the child home care allowance in each month during the year 2010. The calendar has captured the transitions of children from parental leave to child home care, from child home care to school or back to the parental leave, i.e., transitions between different entitlement rights according to current age and situation in the family. Further, the figure demonstrates how some parents take older siblings out of day care and claim child home care allowance for them for at least a couple of months in the summer.

Figure 3. Number of child home care allowance recipients per month in year 2010, baseline model.



6. Outcomes

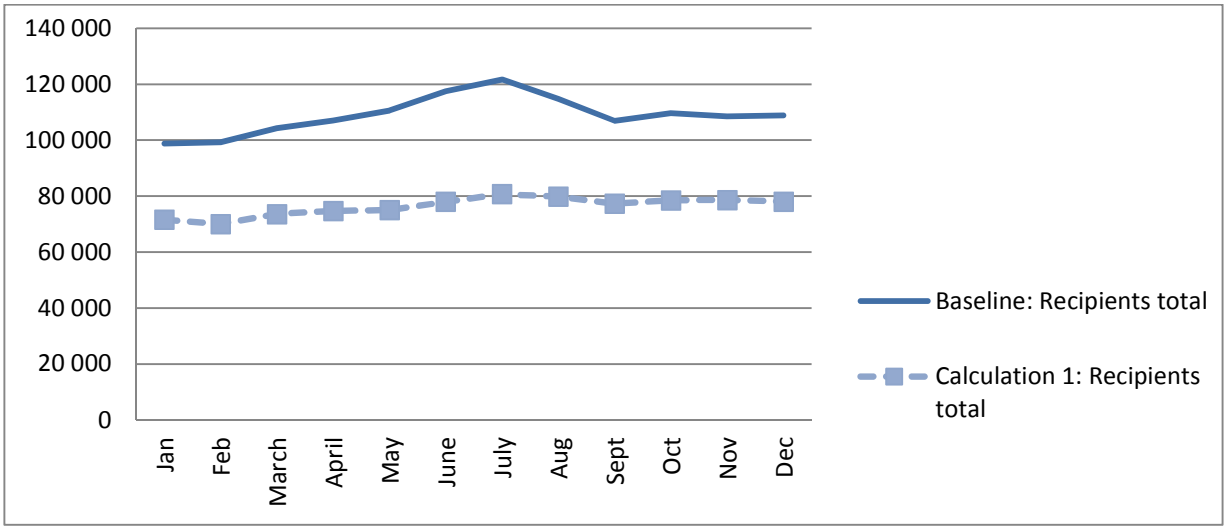
No child home care allowance for siblings 3 years of age or older

Calculation 1 does not change the number of adult recipients (mother/father), but the number of children and the cost of child home care (table 7) both decrease because all siblings at least 3 years of age drop out. The decrease in the number of children is depicted in Figure 4 for each month in 2010. The average number of children per month is 76 300 for calculation 1, compared to 109 000 for the baseline model. At the monthly level, about 30 000 – 40 000 siblings, 30-35 per cent of the children entitled to child home care allowance before the reform, will now be cared for at home without any compensation, or their parents may seek at least part-time access to out-of-home day care.

Taking away entitlement rights from siblings at least 3 years of age decreases the gross costs of the allowance by 31.3 million euros, which is 9.6 per cent of the original costs. This share is only a little larger than the corresponding share in the register data (see figure 2 above). The total decrease in the number of eligible children due to the reform on a yearly basis would be 47 600 (26%) children, which share corresponds to the share seen in the register data (Figure 2). The total number of months used by children on child home care allowance decreases from 1 308 900 to 916 000 months (Table 7 below). Taking away the right to the allowance from all siblings aged 3 years or older may thus increase demand for child day care on average by 8.2 months per each

child 3 years of age or older, at least on a part-time basis[4]. Or the parents go on caring the siblings at home receiving totally 31 million Euros less cash allowance as before the reform (Table 7).

Figure 4. Recipients (children) before (Baseline model) and after cuts in eligibility (Calculation model 1).



In conclusion, this exercise demonstrates that calendar data can be used in calculating even simple changes in the allowance scheme. The outcomes of the calculations, however, give a broader range of output data and information about the effects of the reforms than do traditional models, i.e., information about changes among adult and child recipients, and on monthly and yearly bases. When these exercises are applied to more comprehensive register data, more analyses can be performed also on very small population groups, such as fathers or single parents.

Child home care allowance for one parent only until the child reaches the age of two years

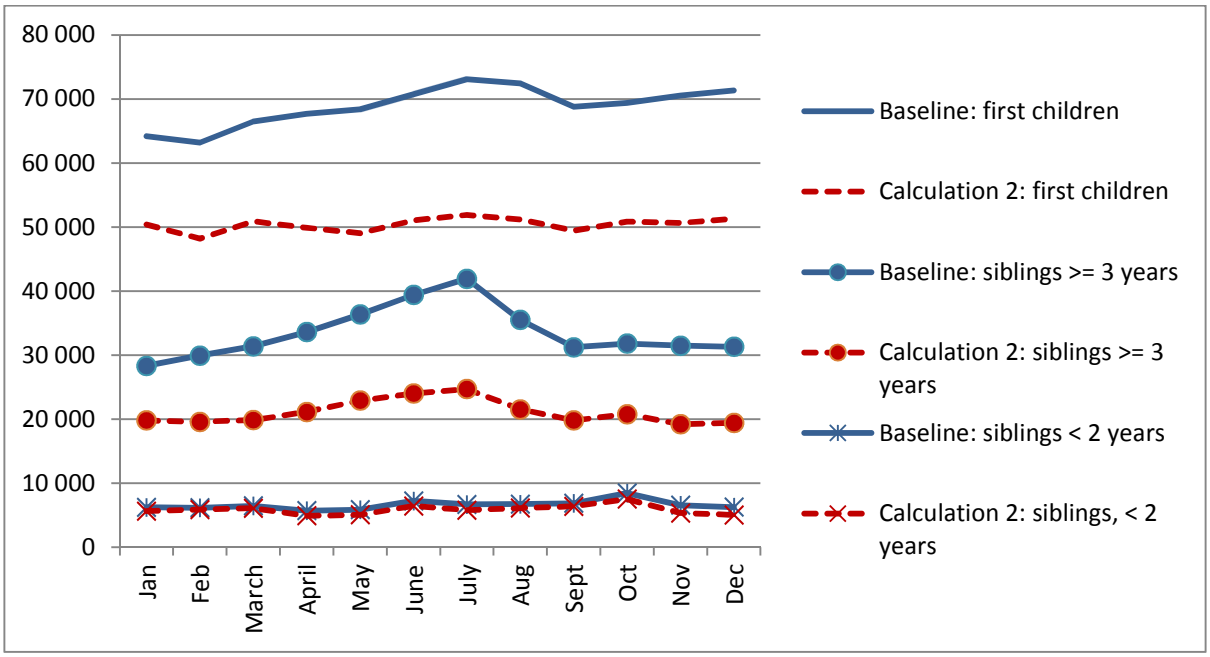
In Calculation 2 the right to continuous child home care allowance is shortened for one parent only until the child is two years of age. In practice this means cutting eligibility for mothers on an extended home care leave. Children's home care periods would also be shortened if the father does not use up his share of the allowance. Use of the allowance would currently be on a rather low level, because the total number of fathers using the allowance is very small. In the IDS sample they are not even representative (in the sample there were 40 fathers and 496 mothers using child home care allowance in 2010). That is why we do not split outcomes by gender, and we assess the outcomes to present only the mothers' and the children's perspectives.

Figure 5 presents the outcomes showing the decrease of children as recipients of child home care allowance by age groups before (blue) and after the reform (red curves). The decrease of the

[4] One further suggestion in the Government's long-term development programme for structural policy is to limit the subjective right of children to public child day care by offering only part-time care if a parent is at home taking care of younger siblings while on parental leave or child home care leave (Valtioneuvosto 2013).

number of the youngest children (aged 2-3 years) in fact also describes the number of families (mothers) who will lose the entitlement. The change varies monthly from about 15 000 to 20 000, which is about 24-28 per cent of first children before the reform. Along with the first children 6 000 – 7 000 siblings of the same age and about 10 000 siblings at least 3 years of age leave the ranks of the recipients. On the whole the cut would affect about 74 100 children (40%) in 2010 (Table 7).

Figure 5. The number of children at different age groups as recipients of child home care allowance, calculation model 2.



The reform would affect 44 000 parents (36%). About one third would drop out of the scheme entirely and two thirds would leave it for a certain period during the year. For more than 78 000 parents (64%) their situation would remain unchanged. (Table 7.)

For mothers the drop in the number of allowance months for the first child would mean a potential increase in labour supply during the year. For children the decrease in home care months would mean a potential increase in demand for child day care services. The reduction in home care months for first children would be about 200 000 months. An increase of 200 000 months in mothers' labour supply would mean 16 700 person years in the labour market, on average 5 months per affected parent. (Table 7 and 8.)

The total decrease in care months (381 500) for children is almost the same as in Calculation 1. However the age groups of the children are different. In Calculation 2, the cut will also target the first children, who are 2-3 years old. The cost of child home care decreases by 92 102 800 euros, which is almost triple the amount in calculation 1.

Table 7. Recipients (mothers/fathers), cost, and number of months for all models. (Source: microsimulation model and calendar data).

	Recipients, parents	Recipients, children	Costs, € (left)	Number of months in care, children (left)
Baseline model	122 700	185 600	324 097 900	1 308 900
Calculation 1	122 700	138 000	292 812 800	916 000
Change	0	47 600	- 31 285 100	-392 900
Calculation 2	107 400	159 000	231 995 100	927 400
Change	-15 300	26 600	-92 102 800	-381 500
Unchanged	78 300	111 400	166 338 000	661 500
Partly affected	29 000	47 600	65 657 100	265 900
Fully affected	15 300	26 600		

Table 7 presents the number of adult recipients whose situation remains unchanged (78 300 recipients), who are fully affected (15 300 recipients), and who are only partly affected (29 000 recipients), as well as the cost and number of months for these groups, before and after the reform. Table 8 contains results for potential change in child day care demand in months for first children aged 2 years and their siblings. Compared to realized months in 2010 the decrease in home care is 381 500 months, which corresponds to the potential increase in child day care services. Potential increase of labour supply of the mothers corresponds the months of the 1st children (200 100 months).

Table 8. Potential demand for public day care (children and months), calculation 2.

Potential demand for public day care (months)	Children affected*	Baseline	% of total	Calculation 2	% of total	Change (months)
1st child *	43 000	779 400	59.5	579 300	62.5	-200 100
2nd child	25 000	413 000	31.6	271 300	29.3	-141 800
3rd child	5 500	98 900	7.6	62 100	6.7	-36 800
4th and subsequent children	600	16 500	1.3	13 700	1.5	-2 800
Total	74 100	1 308 900	100.0	927 500	100.0	-381 500

* The number of first children and their months on child home care allowance corresponds to the number of parents and the months entitling them to child home care allowance before and after the reform.

Finally, table 9 presents some descriptive information about parents' socioeconomic and other characteristics. Socioeconomic status is based on the information in the IDS about income and activities during the whole year. It is therefore no wonder that about a quarter of those affected by the cuts in mothers' rights have been in employment. However, the largest share of them over the year are stay-at-home mothers, whose share among mothers who do not use the allowance is only 3 percent. Furthermore, those who have stopped using child home care allowance or never used it at all, are more likely to have higher education levels than those affected. There seem also

to be relatively more single parents among those who are on child home care allowance for long periods of time and who would be affected by the reform, than in the comparison group.

Table 9. Socioeconomic status and education level of recipients who would lose eligibility for the child day care allowance entirely or partially and parents who did not use the allowance although their child would have been entitled to it.

	Fully affected	Partly affected	Affected, total	No CHCA when the child is < 3
Socioeconomic status				
In employment	24.6	26.2	25.6	87.9
At home	47.0	69.5	61.7	2.7
Other	28.4	4.3	12.7	9.4
Total	100	100	100	100
Education level				
Pre-primary and upper secondary	67.8	52.1	57.5	55.8
Lowest tertiary level	23.6	32.6	29.5	25.3
Higher degree etc.*	8.7	15.3	13.0	18.9
Total	100	100	100	100
Household type				
Single parent	7.3	4.8	0	1.8
Couple and children	87.1	92.5	90.7	95.5
Other household	5.6	2.7	3.7	2.7
Total	100	100	100	100
Total number	15 300	29 000	44 300	77 000

* Higher-degree tertiary education and doctorate or equivalent

Table 9 is an example of a simple analysis focusing on parents potentially affected by the reforms. The problem in presenting very detailed analyses based on the IDS is its small sample size especially in the case of small population groups such as fathers providing in-home care, single parents, etc. It is therefore important in the future to apply the calendar approach to large register based sets of model data.

7. Summary and conclusions

Our motivations for writing this paper were both methodological and empirical in nature. We utilized new data sources to construct a novel in-home and out-of-home child care model. The model makes use of monthly child-based calendar data, developed during this exercise, in order to incorporate information from the perspectives of the children, their parents and the families as a whole. After building the calendar data we performed two alternative exercises with the data and with the SISU microsimulation model.

The calendar data was built on the basis of each child's care status in every month of the year. The original situation is such that children's care status may change during the year not only because of their parents' decision to change the care arrangements but also because of "natural" reasons such as changes in the child's age or chronological order in the family. These changes may have a

direct effect on children's (and families') care benefit status and level. Simulated changes in children's status, i.e., changes in the entitlement rules, also take into account these "natural" changes. The outcomes of transitions between the original and the simulated statuses capture child based information to be merged with parental and family level data for further assessment. This can be done with the help of tax-benefit models and possibly other models and calculation methods, the object being, e.g., to assess potential changes in parents' statuses and behaviour in terms of transitions between care and the labour market.

The calendar data and calculations presented here were applied to survey data, the IDS, in which we merged new kinds of information on child care spells derived from registers and from an administrative file on child day care. The sample represents all Finnish households (about 2 millions), the sample size being about 10 000 households and 30 000 household members. The microsimulation model SISU can also be run on a large set of register data with about 800 000 million persons, but is, so far, entirely lacking in information about child day care.

In this exercise we wanted to assess the usefulness of an administrative child day care file when imputing child day care information to a large set of register based model data. The IDS offered a good source for comparison between day care information gathered from interviews and a rather arbitrary administrative child day care file, which is not collected for statistical purposes. The outcome was that both sources gave about the same information for two thirds of the families in the IDS. This means that the administrative child day care file certainly is a better starting point for imputing child day care information to register based model data than entirely fictive imputations.

In the empirical part of the paper we tried to answer the following two questions concerning the child home care allowance scheme: 1) the cost and potential child care need of siblings who at present receive child home care allowance by virtue of being the older siblings of children under 3 years who entitle their families to the allowance; and 2) how many children and parents would be affected if entitlement to the child home care allowance were split between the parents.

The first exercise produced information according to which the decrease in beneficiaries would be 26 percent and the decrease in the cost of the child home care allowance less than 10 percent under rules whereby less was paid for siblings than for the first child. The outcomes correspond rather well to estimates made on the basis of child home care statistics, and indicate the rather good reliability of the calendar data. It would be difficult to assess whether or not the children who fall outside the scope of the allowance scheme would be cared for at home with the youngest child, because their mother might stay at home with her youngest child in any case.

The second exercise, on the other hand, might increase demand for child day care, due to an increase in mothers' labour supply and perhaps of fathers not making increased use of child home care. About 40 percent of the children in home care would have to change their care status, if their father did not use their opportunity. Further, about one third of mothers might enter the labour force or stay at home without any income of their own. Assessing the impacts on single

parents or fathers would require a bigger data set than the IDS, because these groups are far too small to be analysed.

This exercise has offered new ways of analysing the impacts of reforms in child care provisions. Here, we calculated only the number of children and parents, the number of months, and the amount of immediate savings in allowance expenditures during the year among those affected by the two alternative reforms. The calendar data offers the possibility to give new rules and new statuses for children and then to calculate the changed outcomes directly. Next we will give full-time or part-time child day care status for those children who lose entitlement to the child home care allowance, and then calculate with the SISU child day care model the affected families' child day care fees. Furthermore, other methods, especially those related to dynamic models, could benefit transitions detectable by means of calendar data applications, for example in assessing potential changes in parental employment status and income, as employed or unemployed.

Regarding further development, it can be said that a similar calendar could be produced on a weekly or even daily basis, solely on the basis of administrative data. The benefits of calendar and multi-status data are several. In summary, the system allows for simple observations of family choices (e.g., in cases of home care, are all siblings cared for at home or are some in out-of-home day care?; or, when a younger sibling is born, does the older sibling remain in out-of-home day care or return home?), and it provides a platform for further development not only for research related to the field but also for dynamic models.

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