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Investing in Subsidized Childcare to Reduce Child Poverty: an Adequate Strategy?

JRC Working Papers on Taxation and Structural Reforms, No. 06/2019

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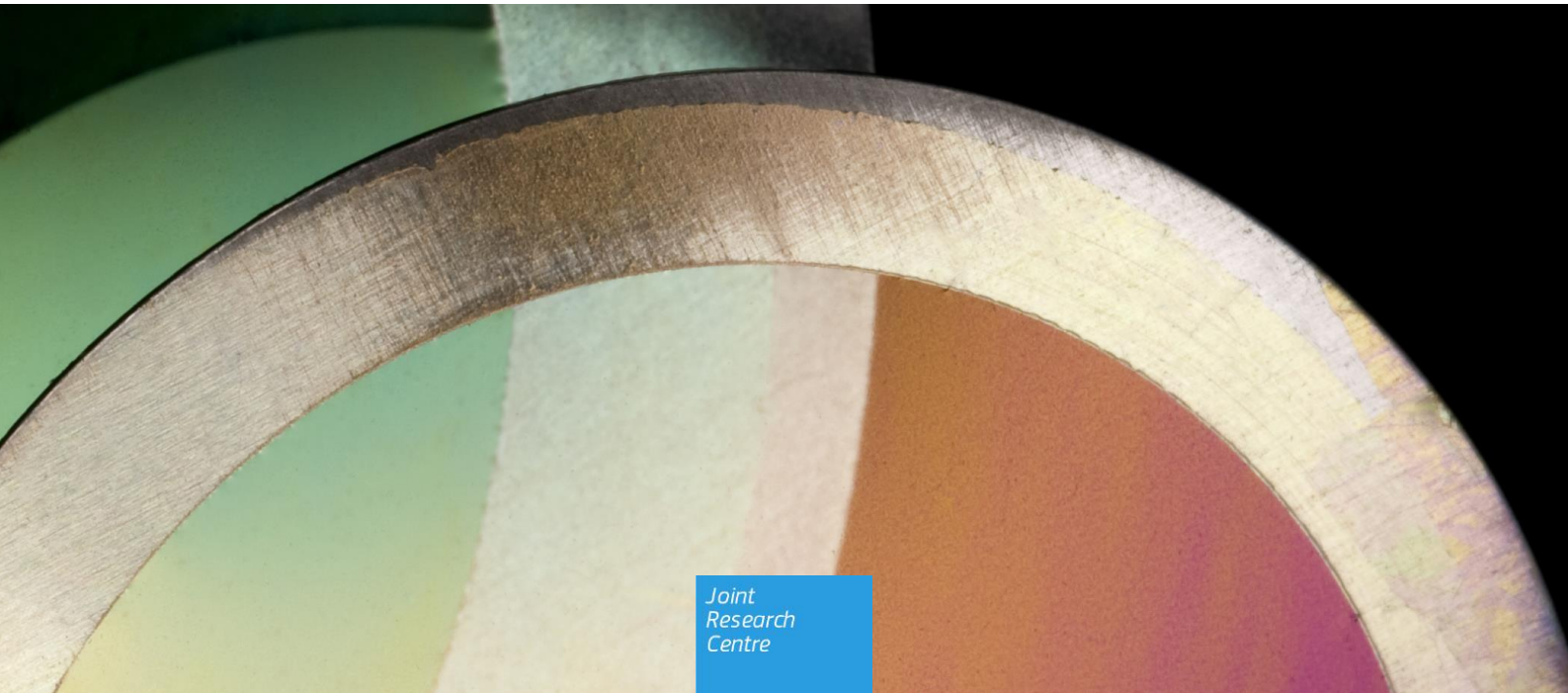
Investing in Subsidized Childcare to Reduce Child Poverty: an Adequate Strategy?

JRC Working Papers on Taxation and Structural Reforms No 06/2019

Tine Hufkens, Francesco Figari, Dieter Vandelannoote, Gerlinde Verbist

March 2019



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Abstract

Expanding childcare is often considered as a suitable way to enhance employment opportunities of mothers with young children as well as to reduce child poverty. In this study the authors critically investigate this assertion by simulating a set of scenarios of increasing subsidized childcare slots and mothers' employment. For a variety of European welfare states we estimate the impact on poverty and on the government budget using the European microsimulation model EUROMOD. The findings suggest that to achieve significant poverty reductions among young children, both additional childcare slots and increased mothers' employment should be well targeted. The expenditures for additional childcare slots can to a large extent be recovered by the government receipts generated by the additional employment; however, there appears to be a trade-off between the extra revenue that can be generated and the extent of poverty reduction.

1 Introduction

The rising participation of women in the labour market urged European welfare states to develop and expand childcare policies. Concrete childcare targets for European countries were set at the Barcelona Summit of 2002 and several countries reformed or expanded their childcare policies in the last decade. This manifests itself for instance in an increase of the number of children in formal childcare facilities as well as in public childcare expenditures (Hegewisch & Gornick, 2011; OECD, 2017). Not only stimulating employment among mothers with young children is put forward as a major aim of these reforms and expansion, but also the combat against child poverty (European Commission, 2013; 2014). The anti-poverty impact, however, cannot be determined a priori, as opposing forces may be at work. On the one hand, the expansion of childcare policies may benefit in principle especially low-income families, as it makes it easier for mothers to (re)enter the labour market, thus increasing their disposable household income. On the other hand, such new active welfare state programs are in practice relatively less distributive as compared to traditional welfare state polices (Cantillon, 2011; Van Vliet & Wang, 2015). This has for instance been demonstrated by Ghysels and Van Lancker (2011) for public resources on childcare and parental leave programmes in Flanders (Belgium).

Policies to care for young children can take different forms ranging from cash benefit support for parental home care to in-kind benefits. The first type focusses on the parent, often the mother, as a caregiver; home care allowances are an example of this type. The second enables the mother to reconcile paid work and care e.g. through the provision of subsidized childcare services. This second strategy, with increased mothers' employment is claimed to be more effective for reducing poverty among families with young children (European Commission, 2013; Misra et al., 2007), as the income from employment increases disposable income and hence should reduce poverty risks. A critical examination of these claims is the topic of this paper: does an expansion of subsidized childcare services necessarily lead to a decrease in child poverty? Under which conditions will such a strategy be successful? In addition, we investigate whether the extra government revenue generated in the form of taxes and social contributions through additional employment would be sufficient to fund the increase of public childcare slots.

We examine the effect on child poverty of a hypothetical increase in both subsidized Early Childhood Education and Care (ECEC) places and employment of mothers, simulating different policy scenarios. We use the European microsimulation model EUROMOD and data from the EU-Statistics on Income and Living Conditions for five European countries representing different welfare regimes, notably Belgium, Estonia, Hungary, Italy and Sweden. Analysing countries that differ in terms of socio-economic characteristics as well as in policy instruments will help to gain a better understanding about how care policies can help to combat child poverty. The selected countries differ considerably in terms of the share of under three year olds in formal childcare, and of maternal employment (see Table 1 in the Appendix). The use of childcare for under three year olds is highest in Belgium (50%) and Sweden (64%) and lowest in Hungary (only 15%). Also in Estonia and Italy childcare participation rates are relatively low. Belgium and Sweden also have the highest employment rates for mothers with young children, while these rates are below 60% in Hungary and Italy.

These five countries also have a very different policy mix for the reconciliation of work and family (see Figure 1 in the Appendix). Policies for the reconciliation of work and family include maternity leave, paternity leave, parental leave, child home care leave and subsidized childcare services. Some countries (e.g. Estonia or Hungary) spend more on parental care and leave policies; others (e.g. Belgium) spend more on childcare services. Leave policies allow parents to take care of their children at the time of childbirth and maintain the contractual link with the labour market. When childcare can be outsourced or the child is old enough, mothers (or parents) return to their working place (Hufkens & Verbist, 2016; OECD, 2016). Our focus here is on outsourced childcare, notably the ECEC services.

The article starts by reviewing the literature on the relation between childcare policies and poverty reduction. In the following section we introduce the data and methodology, after which we present the results. The last section concludes.

2 Childcare policies and poverty reduction: a complex relationship

Childcare policies have been set up to help families to cope with work-family life issues, and aim to facilitate employment for mothers. The literature mainly focuses on labour supply effects of publicly provided childcare, although other goals, such as enhancing social inclusion and combatting poverty, are also important (Del Boca, 2015; Figari et al. 2011). When countries were asked to indicate important policy goals for ECEC within the Survey for the Quality Toolbox and ECEC Portal 'equity measures' were ranked as the most important policy goal for early education and care policies, ahead of e.g. maternal labour participation or demographic challenges (OECD, 2012). Equity goals may be achieved on the short or the longer term, and can go through different channels, such as the child's well-being or its human capital formation (Del Boca et. al, 2016; Esping-Andersen et al., 2012; European Commission, 2013). Human capital formation of young children through participation in childcare services, thus enhancing their school readiness, and their potentially higher future wages later in life (see e.g. Currie and Gahvary, 2008; Karoly et al., 2005) can be considered as a long-term strategy to reduce poverty. A growing literature shows how childcare can diminish the chance of school failure. A substantial part of the differentiation in ability, motivation to learn and cognitive skills takes place before a child starts primary school. To limit the negative effect of poverty and childhood disadvantage, early childhood experiences are very important. Limited and unequal access to childcare services can perpetuate social inequalities, whereas investment in early education may be an efficient way to protect children from further social disadvantages (Vaalavuo, 2011; Esping-Andersen 2005). Early-intervention programmes can be effectively equalizing, as they support the most vulnerable groups (Esping-Andersen, 2008). It has been shown that high-quality care can improve cognitive functioning from age three to five (Esping-Andersen et al., 2012; OECD, 2009). These long term effects come on top of short term effects. In the short term, employment of mothers is considered to be a good strategy to reduce child poverty. Despite the expansion of work-family life policies and the rise in female employment, women with children still participate to a lesser extent in the labour market as compared to women without children (Gornick & Meyers, 2003; Nieuwenhuis et al., 2012; Uunk et al., 2005). In its recommendation 'Investing in children' the European Commission stresses the importance of the need for support for parents' participation in the labour market. This support includes effective access to affordable, qualitative ECEC (European Commission, 2013). Two caveats, however, should be made, notably the social stratification in the use of public childcare and the fact that employment alone is often not sufficient to escape poverty. First, the fact that these services are often used by high-income families may hamper the impact of public childcare as a successful antipoverty strategy (Van Lancker, 2013). This social stratification differs considerably across age groups (Cantillon, 2011; Ghysels & Van Lancker, 2011). For the youngest age group (0 to 3 years) enrolment is much more stratified along socioeconomic lines, with dual-earner couples (and hence higher incomes) making relatively more use of childcare (Förster and Verbist, 2012; Van Lancker, 2013). For children aged 4–5 years, pre-primary education is much more widespread, with often very high enrolment rates when getting closer to the age of compulsory schooling.

A strategy to try to enhance the participation in childcare services for low-income families has been the use income-dependent fee structures. Evidence of whether such a strategy increases participation in childcare facilities and in the labour market is ambiguous. Abrassart and Bonoli (2015) studied the impact of the availability of childcare and the various progressive fee structures on childcare use in the Swiss canton of Vaud. They find that low-income families participate more in childcare in municipalities with more progressive fee structures. The availability seems to matters less for low-income families. Secondly, employment in itself may not be sufficient to get out of poverty. Although employment is a very important pathway out of poverty, increasing employment rates do not necessarily result in proportional drops in poverty rates. Marx, Vandenbroucke & Verbist (2012) showed that it depends very much on where in the income distribution

employment growth occurs and on its impact on the poverty line. In the last decades job growth has not sufficiently benefited poor people and a job does not always pay enough to escape poverty (Cantillon, 2011; Marx, Vandenbroucke & Verbist, 2012). In order to fully understand the interplay between patterns of employment and the use of childcare and the social distribution of ECEC services, we should pay more attention to how employment and use of services interact with each other, and how this impacts on poverty. This interaction has remained largely understudied and is the topic of this paper. We fill a gap in the literature by linking the use of childcare services and mother's employment with the reduction of child poverty.

3 Data and methodology

3.1 Data and microsimulation model

For our empirical analysis, we use data from the Survey on Income and Living Conditions (EU-SILC) in combination with the tax-benefit model EUROMOD. EU-SILC provides information on the use of ECEC services in five variables. These variables refer to the type of ECEC service (daycare, centre-based care, child minders or preschool) a child attends and the number of hours of attendance in a normal week. This information is used to identify current beneficiaries of formal childcare facilities. The standard cross-sectional weights are used to scale up our results to population levels.

EUROMOD is a multi-country European wide tax-benefit microsimulation model (Figari et al. 2015). EUROMOD simulates tax liabilities (direct taxes and social insurance contributions) and cash benefit entitlements for the household populations of EU Member States in a comparable way across countries on the basis of the tax-benefit rules in place and information available in the underlying datasets. Market incomes and income components which are not simulated due to lack of information (on e.g. previous employment and contribution history) are taken directly from the data. EUROMOD is a static model in the sense that the arithmetic simulation of taxes and benefits makes abstract from potential behavioral reactions of individuals (Sutherland & Figari, 2013). As such, EUROMOD is very suitable to assess the first order effects of tax-benefit policies in terms of income distribution, work incentives and government budgets. Policy rules refer to 2015 (except for Hungary where we use policies of 2014[1]); as the EU-SILC input data refer to 2012, these data have been uprated to the corresponding policy year by using the standard EUROMOD uprating factors.

For the five selected countries we have extended EUROMOD with calculations of the parental fees for formal childcare. For Belgium (both for Flanders and Wallonia) and Sweden we have been able to simulate parental fees in detail. For Estonia and Italy, we simulate parental fees making use of average regional fees or referring to the capital of each region (Italy). For Hungary only catering costs are simulated, as subsidized childcare and pre-primary education is free of charge. Belgium and Italy have income dependent childcare fees and free of charge pre-primary education. Sweden and Estonia[2] have an income dependent tariff system for preschool systems from +/-1 to 7 years old (Förster & Verbist, 2012; Hufkens & Verbist, 2016). We have also simulated the tax advantages related to these fees for the countries where these apply (notably Belgium, Estonia and Italy).

3.2 Simulation scenarios

We simulate the effect on disposable household income and the public budget for a number of scenarios in which we increase subsidized childcare slots and change mothers' employment. We focus on families with a

[1]For Hungary we use 2014 because this was the most latest available policy year in simulated in EUROMOD at the time of the calculations.

[2] Although for the simulation of parental fees in EUROMOD, regional average parental fees were used in Estonia, instead of the tariff system.

child younger than 3 years old. Table 1 gives an overview of the different scenarios. The baseline corresponds to the actual situation in 2015.

Table 1. Overview simulations

Baseline	***Increase of volume subsidized childcare for young children by 10 pp***	***Increase in employment of mothers who are in the baseline not working and whose young child has been allocated a subsidized childcare slot***
Current situation scenario	Allocated to children with the **highest probability** to start childcare (**scenario 1.A**).	Mothers ranked according to employment probability, selection of: - **50%** highest **(scenario 1.B**) - **70%** highest (**scenario 1.C**). - **90%** highest (**scenario 1.D**)
	Allocated to children in families **under the poverty line** (**scenario 2.A**).	All mothers who have a **strictly positive employment probability** (> 0) (**scenario 2.B**).

In a first step, we increase in each country the total volume of formal childcare slots by 10 percentage points (pp), situating this increase entirely in the publicly funded formal sector. We do not change the availability of childcare places in the non-subsidized sector, nor do we make changes in the use of childcare for those families who are currently using more than 10 hours formal childcare per week. The additional childcare slots are assigned to families with at least one child between zero and three years old who are currently not using any type of formal childcare (either subsidized or non-subsidized; this also includes those families that use less than 10 hours of childcare per week). This means that we assume that substitutions are possible between informal and subsidized childcare, but not between formal non-subsidized (private) childcare and subsidized childcare[3]. We further assume that the additional childcare places are used by the families on a full-time basis. By assigning childcare slots to families, we make sure that all children between 0-3 years old in one family will use the same type of childcare.

To assign the childcare slots we take into account the duration of the maternity/parental leave and the age at which children start pre-primary school in the selected country. Families are eligible for these additional childcare slots when mothers have used up their maximum leave time (or when the child reaches the age that most children generally enter childcare) and when the child's age is below starting age of pre-primary school (see Table 2 in the Appendix). We simulate two types of scenarios for the allocation of the newly created subsidized childcare places (Scenarios 1.A and 2.A). For the first scenario (1.A), we estimate for each household

[3] In practice, expanding formal subsidized childcare will probably not only affect current non-users. It may also lead to an increase in the amount of hours of childcare by current users of formal subsidized childcare or it may cause a shift from the often more expensive non-subsidized childcare to the cheaper subsidized alternative (see e.g. Del Boca, 2015 and Vandelannoote et. al, 2015). These effects, however, fall outside the scope of this analysis, as it would require a labour supply model, which combines both the availability of childcare services and household preferences.

with a child under three years old currently not in formal childcare (including also children who go to childcare for a maximum of 10 hours per week) the probability that they would use formal childcare, if more childcare places were available. This is done on the basis of a regression on all households with a child between 0-3 years old. Consistent with the literature, the following positive significant relationships were found, i.e. higher educated parents and those living in more densely populated areas have a higher probability of using formal childcare; households with a migrant background have a significant lower probability[4]. In Belgium and Italy, also the region of residence has a significant effect on the use of formal childcare. We then use the coefficients to estimate, for each household with a child under three years old currently not using formal childcare, the probability of using formal childcare if more childcare places were made available. For allocating these new places, we select the households with the highest estimated probability, until the 10 percentage point increase is reached. In the second scenario (2.A), the extra childcare places go to the poorest households with a child between 0-3 years old who currently do not use any type of formal childcare; poor households are defined on the basis of standard equivalent disposable household income, using 60% of disposable income as the poverty line.

In a second step, we simulate for each of the two scenarios explained above an increase of employment of young mothers. For the scenario in which we increase childcare according to probability, we simulate three different scenarios of changes in the employment level of the mothers (1.B, 1.C and 1.D), thus also testing the sensitivity of the outcomes for the share of mothers going to work. We assume that either 50%, 70% or 90% of the mothers who now receive formal childcare (due to the increase by 10 pp) will actually start working. We have not simulated a 100% increase in employment level, as we judge this to be a non-realistic scenario, considering that also currently not all mothers using formal childcare are at work. The focus is on mothers, as many fathers with a child less than three years old work full-time and do not change their working hours when having a child. Mothers, as the main care takers, are the ones who mainly adapt their working hours (Misra et. al, 2007). For the scenario in which childcare places go to the poorest households, we simulate a maximum increase of employment, i.e. all poor mothers with a strictly positive employment probability will start working. Mothers in poor households often have a very low or zero probability to start working, so in scenario 2.B we only select those mothers that probably will start working. Table 2 shows the total percentage of working mothers with a child under 3 years old in the baseline and in the scenarios after increasing maternal employment[5].

Table 2. Percentage (%) of working mothers of all mothers with a child under three year olds, 2015.

	Belgium	**Estonia**	**Hungary**	**Italy**	**Sweden**
Baseline	70	49	22	64	87
S.1.B (50%)	77	59	27	66	89
S.1.C (70%)	79	63	29	67	90

[4] For reasons of space outcomes of the regressions are not shown in the paper. They are available from the authors upon request.

[5] 1) The EUROMOD input data includes income information related to the year preceding the survey. For consistency between demographic variables and income variables, children born after the income reference year and before the interview are dropped from the data set. 2). Note that the age of the mothers in Table 1 in the Appendix does not correspond to that of the mothers in Table 2.

S.1.D (90%)	81	67	32	68	90
S.2.B (full)	79	57	31	69	89

Source: own calculations based on EUROMOD G3.0+ and EU-SILC 2012.

Note: Simulations for 2015, except for Hungary: 2014.

We use a regression model to estimate the probability of mothers with a child under three years old to start working[6]. Being higher educated, having past work experience or having an expected higher hourly wage all have a significant positive impact on the probability to start working, but a significant negative impact is found for migrant women, women with more children and for older women. Using these regression coefficients, we determine for each mother with a child under three years old currently not at work, their probability to start working. We assume that the mothers with the highest estimated probability will start working, until respectively 50%, 70% or 90% of the mothers who now use additional childcare are at work. For these mothers we also estimate their expected hourly wage if they would start working. This is done using a Heckman selection model, which is the standard procedure in the literature (Heckman, 1974). Results go in the expected direction, with a higher estimated hourly wage if the mother is higher educated (Stahl & Schober, 2017), has more work experience (but diminishing in the quadratic term), is an EU migrant (the opposite is true for non-EU migrants) and/or has fewer children. Finally, we calculate for mothers currently not working their expected hours of work if they would start working, hereby also using a Heckman selection model. Our estimations for the different countries show that the probability of working more hours is higher if the mother has more work experience and/or has a migrant background. In Belgium and Sweden highly educated mothers work more hours, the opposite is true in Hungary and Estonia (no significant difference in Italy). The preference for working more hours is higher when the mother has a low education level, a higher expected hourly wage, more work experience and/or fewer children. Region of residence has a significant effect in Belgium and Italy. Also the hours of work of the partner can have a small impact: in Belgium the impact of the partner working many hours is positive, but the opposite is true in Estonia and Hungary (no significant effect in Italy and Sweden). For the different employment scenarios (1.B, 1.C, 1.D and 2.B) we do not include labour demand effects in our analysis. This means that we assume that additional labour supply of mothers translates to additional employment on the macrolevel, which is a standard assumption in the literature (Vandelannoote et al. 2015).

In the scenarios with increased employment, we change the input data by adding market incomes (i.e. wages) for a selection of mothers of young children. For the selected mothers we put the unemployment benefits, sickness benefits, pensions and leave benefits to zero and add estimated employment income. This is run through EUROMOD in order to arrive at new disposable household income (taking account of simulated taxes and benefits that apply for the new situation). The new disposable income is used for assessing the poverty and the budgetary impact of the different scenarios.

3.3 Outcome indicators: child poverty and budgetary impact

We focus on the at-risk-of-poverty rate and the change in public spending due to increased childcare coverage and increased female employment. We calculate the at-risk-of-poverty rate before and after subtraction of parental fees for childcare, such that we can also show the impact of the private cost associated with a place in subsidized childcare. Income (components) are equivalised on the basis of the modified OECD equivalence scale, which assigns a weight of 1 to the first adult in the

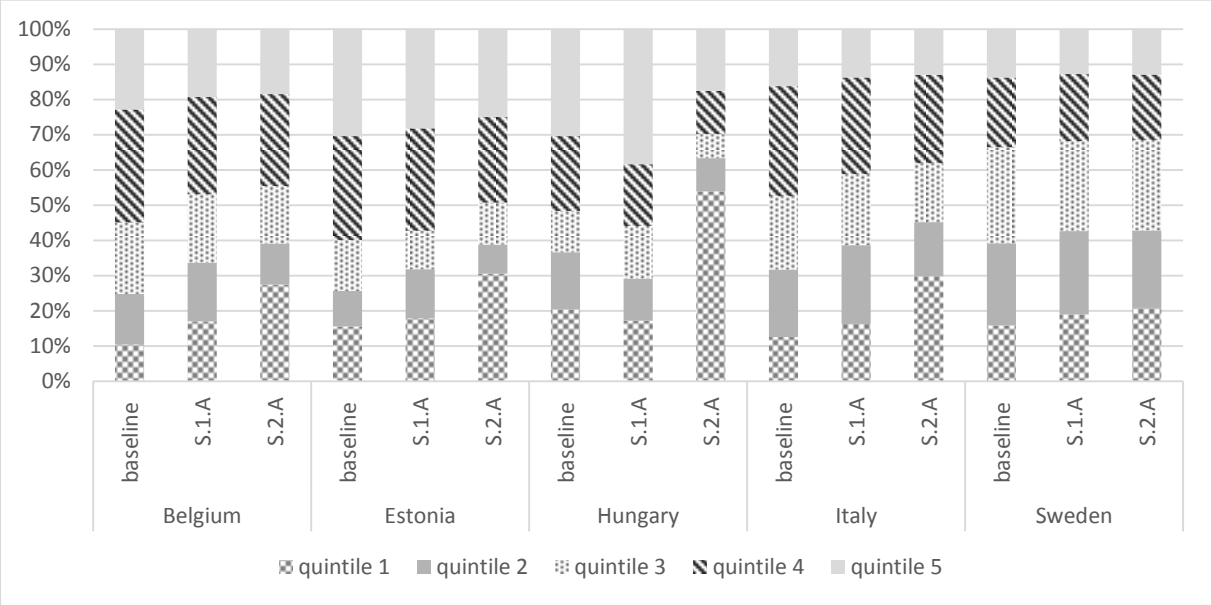
[6] For reasons of space outcomes of the regressions are not shown in the paper. They are available from the authors upon request.

household, 0.5 to every other adult and 0.3 to each child (under 14 years old). We use 60% of equivalised cash disposable income as the poverty threshold to calculate poverty rates. The poverty threshold is kept fixed at the baseline level in all scenarios. This means that for the calculation of the poverty rates before subtraction of parental fees, we use a fixed poverty line based on cash disposable income before subtracting parental fees and for the poverty rates after subtraction of parental fees, we use the fixed poverty line based on cash disposable income after subtraction of parental fees. We consider all individuals with an equivalised income under the poverty threshold to be poor. Income quintiles are also based on equivalised cash disposable income as calculated in the baseline. Finally, we calculate the budgetary impact of the increase in childcare places and in female employment, i.e. to what extent would the extra budget for the additional subsidized childcare slots be 'earned back' by the government in terms of extra receipts of personal income taxes and social contributions and of savings through reduced social benefits due to an increase in female employment.

4 The Impact of Additional Childcare Places on the Distribution of Beneficiaries

We first show how increasing childcare slots in our scenarios affects the distribution of beneficiaries. Currently, children under three years old in childcare facilities are overrepresented in higher income quintiles; this is the case for all countries, only Sweden shows a more equal distribution (Figure 1). These outcomes are in line with the literature on the social stratification of the use of childcare (see e.g. Förster & Verbist, 2012; Ghysels & Van Lancker, 2011; Vaalavuo, 2011). In the first scenario (1.A), where the new childcare slots are distributed on the basis of probability, the distribution of beneficiaries is in general rather similar to the one in the baseline. In Belgium, Italy and Sweden the share of beneficiaries shifts slightly to the lower quintile groups, although in Hungary, higher quintile groups take up a relatively higher share of the additional places. In Estonia, the increase is roughly proportionally distributed. In the second scenario (2.A) we observe, as one would expect, a substantial increase of beneficiaries in all countries in the bottom quintile group. In Hungary, the share of beneficiaries in the bottom quintile group rises from 20% to more than 50% of all children in childcare. This large impact in Hungary relates to the fact that currently participation in childcare for under three years olds is very limited (around 15%). In Belgium, Estonia and Italy, the increase in the bottom quintile group share is around 15 percentage points. In Sweden, the increase of the number of beneficiaries in the lower quintile group is rather limited, as this country already has high childcare participation rates; also its relatively long parental leave period leaves little scope for expansion.

Figure 1. Distribution of beneficiaries of subsidized childcare (0-2 year olds) over income quintile groups, 2015.



Source: own calculations based on EUROMOD G3.0+ and EU-SILC 2012.
Notes: income quintiles based on cash equivalent income. Simulations for 2015, except for Hungary: 2014.

5 The Impact of Additional Childcare Places and Increased Mothers' Employment on Child Poverty

Child poverty rates for under three year olds are currently between 11 and 21% in the selected countries. In all countries, except Estonia, young children have a higher at-risk-of-poverty rate in comparison with the total population. Hungary and Italy have the highest at-risk-of-poverty rates for young children. When using the poverty line based on cash disposable income minus parental fees, we find somewhat higher poverty rates for young children in all countries except Sweden. The overall pattern is, however, very similar to the results using a cash disposable income poverty line.

If we increase the number of childcare slots by 10 pp without changing employment, we see no change in the at-risk-of-poverty rate in Estonia, Hungary, Italy and Sweden when the effect of parental fees is not incorporated in the income concept (see Table 3). In these scenarios disposable income is affected by the tax advantages for parental fees only. Hence, there is no (Hungary, Sweden) or a very small (Belgium, Estonia, Italy) effect on disposable income (which is negligible and statistically non-significant). Also when using the income concept after deduction of parental fees we find only very small, not statistically significant increases of child poverty.

As indicated in the second section, the expected poverty reduction should come from income gains through additional employment, which is simulated in scenarios 1B-1D and 2B. The decrease in poverty rates among young children is stronger, when employment rates are higher. With the exception of Hungary, we find significant reductions when 70% or 90% of mothers with a young child in an additional childcare place are given a job. Using income after subtracting parental fees results in small, but still significant decreases in poverty rates for Belgium, Estonia, Italy and Sweden in the 70% and 90% scenario. In Hungary the effect on poverty rates is very small due to the low female employment rates in the baseline and the characteristics of the mothers that start working in the three scenarios: hardly any of these mothers are poor in the baseline. In the other countries the

employment rate of mothers of young children is higher in the baseline; increasing mothers' employment rate according to probability also reaches families under the poverty line. The poverty reduction due to increased employment of mothers is, however, partly counteracted by the cost of childcare.

The poverty impact of increased employment when additional childcare places go to children in poor families (S.2.B) is bigger than in the scenarios 1.B-D, as one would expect. The change in employment decreases the at-risk-of-poverty rate for under three year olds significantly for all countries. Especially in Belgium, Estonia and Hungary, the impact is substantial, as young child poverty is close to being halved.

Table 3. Poverty rate among young children (<3y), baseline and after increase of childcare provisions & increase of employment of mothers, 2015.

Income concept: cash disposable income							
	Baseline	Increase childcare by probability				Increase childcare for poor	
		Increase in employment				Increase in employment	
		no (S1.A)	50%(S1.B)	70%(S1.C)	90%(S1.D)	no (S2.A)	full (S2.B)
Belgium	14.8	13.4	12.2	11.2*	11.2*	13.4	7.3**
Estonia	11.2	11.2	10.5	8.7*	8.4*	11.2	5.8**
Hungary	21.3	21.3	21.2	21.2	21	21.3	11.0**
Italy	19.7	19.7	18.8*	18.4*	18.2**	19.7	15.2**
Sweden	16.4	16.4	15.1*	15.0*	15.0*	16.4	15.0*
Income concept: cash disposable income after subtraction of net parental fees							
	Baseline	Increase childcare by probability				Increase childcare for poor	
		Increase in employment				Increase in employment	
		no (S1.A)	50%(S1.B)	70%(S1.C)	90%(S1.D)	no (S2.A)	full (S2.B)
Belgium	15.6	15.9	14.4	13.2*	11.9*	15.5	8.8**
Estonia	12.7	13.5	12.2	10.6*	10.3*	12.7	7.7**
Hungary	21.8	22.7	22.0	21.9	21.5	21.8	11.6**
Italy	20.4	20.5	19.7	19.3*	19.0*	20.4	15.9**
Sweden	16.3	16.3	15.1*	14.9*	14.9*	16.3	14.9*

Source: own calculations based on EUROMOD G3.0+ and EU-SILC 2012. Notes: 1) Simulations for Hungary for 2014. 2) Difference with baseline: * Significant at 0.05, ** significant at 0.001.

The direction of outcomes based on the poverty gap, i.e. the depth of poverty (to what extent does income fall short of the poverty line), is similar to those when using the poverty rate, though effects are somewhat stronger (see Table 4). For the income concept after subtraction of parental fees, the change in the poverty gap for the two scenarios in which childcare is increased is significant compared to the baseline for all countries (except Sweden in S1.A). In the scenarios 1B, 1C and 1D, where employment is increased, we find significant decreases in the poverty gap for Belgium, Estonia, Italy and Sweden before subtraction of parental fees. For Hungary the poverty gap changes are not significant. In all selected countries the employment increase by probability also reaches children in poor families (even though in Hungary the majority of the affected families is not poor). If employment is increased in the scenario 2B, the poverty gap changes are significant when using cash

disposable income. The impact is smaller, but still significant when using the income concept after deduction of parental fees. This shows that the reduction of the poverty gap is partly undone by the childcare costs, which cautions for the impact of childcare fees at the bottom of the income distribution.

Table 4. Poverty gap among young children (<3 year), baseline and after increase of childcare provisions & increase of employment of mothers, 2015.

Income concept: cash disposable income							
	Baseline	Increase childcare by probability				Increase childcare for poor	
		Increase in employment				Increase in employment	
		no (S1.A)	50%(S1.B)	70%(S1.C)	90%(S1.D)	no (S2.A)	full (S2.B)
Belgium	3.0	3.0	2.7*	2.6*	2.6*	2.9*	1.5**
Estonia	1.5	1.5*	1.4	1.3*	1.2*	1.5*	0.8**
Hungary	3.8	3.8	3.8	3.8	3.8	3.8	2.0**
Italy	6.7	6.7	6.2*	6.2*	6.1*	6.7	5.1**
Sweden	4.0	4.0	3.6*	3.6*	3.6*	4.0	3.6*
Income concept: cash disposable income after subtraction of net parental fees							
	Baseline	Increase childcare by probability				Increase childcare for poor	
		Increase in employment				Increase in employment	
		no (S1.A)	50%(S1.B)	70%(S1.C)	90%(S1.D)	no (S2.A)	full (S2.B)
Belgium	3.2	3.4*	3.0	2.9	2.9	3.8**	1.9**
Estonia	1.9	2.2*	2.1	1.8	1.7	2.3**	1.2**
Hungary	4.0	4.0*	4.0	4.0	4.0	4.6**	2.2**
Italy	7.0	7.1**	6.6	6.5*	6.5*	7.2**	5.5**
Sweden	4.1	4.1	3.7*	3.7*	3.7*	4.1*	3.7*

Source: own calculations based on EUROMOD G3.0+ and EU-SILC 2012. Notes: 1) Simulations for Hungary for 2014. 2) Difference with baseline: * Significant at 0.05, ** significant at 0.001.

6 The Impact on the Public Budget

Finally, we look at the impact on the public budget of a change in childcare coverage and employment of mothers. Table 5 shows to what extent the extra budget for subsidized childcare[7] would be 'earned back' by the government in terms of extra receipts of personal income taxes and social contributions and of savings through reduced social benefits, such as unemployment benefits and parental leave benefits, due to the increase in female labour market participation. Social contributions refer to employee contributions only. There is an additional effect on revenue through extra employer contributions, which is not taken into account here, on the presumption that it is strictly a form of compulsory saving. The change in taxes, social contributions and benefits is shown

[7] We use the net subsidy before subtraction of tax advantages in order to avoid double counting of the tax advantages for childcare fees.

as a proportion of the cost for additional childcare slots (i.e. gross subsidy for the additional childcare slots minus gross parental fee).

The decline in tax receipts in the scenarios where only extra childcare places are allocated (1.A and 2A) in three countries is due to the tax advantages for childcare fees. The small decrease in social insurance contributions for Belgium follows from the special social insurance contribution, which is based on taxable income, which is affected by the tax advantages for childcare fees.

Higher female employment rates substantially increase the compensation of the cost of the additional childcare places for all countries. In the 50% scenario between 31% (Hungary) and 169% (Belgium) of the additional subsidy cost is earned back, and this increases to 60%, resp. 265% in the 90% scenario. The reduction of social benefits is especially important in Estonia and Belgium. In Belgium also the extra revenue from taxes and contributions is large, in Estonia the extra revenue from taxes and contributions is more limited. But also for Italy and Sweden, we find substantial 'earn back' effects: in the 90% scenario extra revenue mainly through taxes, but also contributions and reduced benefits is sufficient to pay for the increase in subsidy expenditures. The budgetary effect is smallest (though far from negligible) for Hungary.

For scenario 2.B the compensation of government expenditures is, as expected, more limited. We find that in Belgium and Estonia the extra costs of the subsidies are earned back. To a large extent this is due to the reduction of social benefits, notably the generous parental leave benefits in Estonia, whereas in Belgium it refers to unemployment, sickness and parental leave benefits. But also the extra receipt from taxes and social contributions is not negligible: personal income taxes generate 30%, resp. 37% of the subsidies in Belgium, resp. Estonia, for social contributions this is 26%, resp. 12%. The total impact is smaller but with 64% still substantial in Italy and Sweden. Benefit reduction is relatively small in Sweden. In Italy total benefits even increase, which is due to child benefits; these child benefits are targeted to families of employees and pensioners with low family incomes and are not given the unemployed. Hence, starting to work generates a child benefit entitlement for parents with a low employment income. This partly offsets the large impact on tax revenues (70% of the subsidies). Both in Italy and Sweden the impact on social contributions is relatively small (8%). The total impact is with 34% smallest in Hungary, where social benefits hardly decrease. The small benefit reduction of 5% is explained by the limited benefits. Many mothers stay at home to care for children without leave allowance. The childcare allowance for one year old children does not depend on employment status so families with increased employment still receive this allowance. The change in social assistance benefits mainly explains the change in total benefits. Also the impact on taxes is relatively limited, related to the characteristics of the Hungarian tax system (a flat tax of 16% and some non-refundable tax deductions).

Table 5. Impact on public budget, in millions of local currency (a) and as a percentage of the cost of additional childcare slots (b) 2015.

	Taxes(T)		Social contributions(S)		Benefits(B)		Total(=T+S-B)	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
No change in employment (S1.A)								
Belgium	-6.72	-3%	-0.14	0%	0	0%	-6,87	-3%
Estonia	-0.17	-1%	0	0%	0	0%	-0.17	-1%
Hungary	-0.003	0%	-0.005	0%	-0.009	0%	0.001	0%
Italy	-5.62	-1%	0	0%	0	0%	-5.62	-1%
Sweden	0	0%	0	0%	0.002	0%	0	0%
50% employed (S1.B)								
Belgium	140.75	74%	80.92	43%	-98.32	-52%	319.99	169%
Estonia	3.93	30%	1.02	8%	-7.55	-58%	12.5	96%
Hungary	5,420.11	13%	7,568.05	18%	-388.66	-1%	13,376.82	31%
Italy	158.12	32%	61.37	12%	-31.81	-6%	251.3	51%
Sweden	808.11	36%	181.05	8%	-448.16	-20%	1,437.33	64%
70% employed (S1.C)								
Belgium	176.58	98%	98.94	55%	-111.07	-62%	386,59	214%
Estonia	4.65	36%	1.36	10%	-11.67	-89%	17.67	135%
Hungary	8,169.26	19%	11,122.20	26%	-415.9	-1%	19,707.36	46%
Italy	215.27	45%	85.93	18%	-41.31	-9%	342.51	72%
Sweden	1,387.94	62%	274.87	12%	-456.51	-21%	2,119.32	95%
90% employed (S1.D)								
Belgium	222.86	131%	118.47	69%	-111.07	-65%	452.39	265%
Estonia	5.77	44%	1.66	13%	-13.96	-107%	21.4	164%
Hungary	10,630.91	25%	14,191.82	33%	-668.98	-2%	25,491.71	60%
Italy	314.13	68%	98.18	21%	-44.39	-10%	456.7	99%
Sweden	1,458.88	66%	296.14	13%	-456.51	-21%	2,211.52	100%
Increase in childcare for poor (S2.A)								
Belgium	-4.65	-2%	-0.05	0%	-	0%	-4.7	-2%
Estonia	-0.04	-1%	-	0%	-	0%	-0.04	-1%
Hungary	-	0%	-	0%	-	0%	-	0%
Italy	-0.17	0%	-	0%	-	0%	-0.17	0%
Sweden	-	0%	-	0%	-	0%	-	0%
Increase in childcare for poor & mothers employed (S2.B)								

Belgium	75.62	30%	66.16	26%	-114.27	-46%	256.05	102%
Estonia	2.07	37%	0.68	12%	-5.83	-103%	8.57	152%
Hungary	5,477.70	14%	6,115.73	15%	-1,883.75	-5%	13,477.19	34%
Italy	341.23	70%	37.35	8%	68.22	14%	310.36	64%
Sweden	571.49	31%	151.46	8%	-456.51	-25%	1,179.46	64%

Source: own calculations based on EUROMOD G3.0+ and EU-SILC 2012.

Notes: 1) Simulations for Hungary for 2014. 2) The additional childcare slots refer to the net subsidy before subtraction of the tax advantages (i.e. gross subsidy minus gross parental fee).

7 Conclusion

At the Barcelona Summit of 2002 concrete childcare targets were set for European countries. In 2013 the European Commission recommended member states to organise and implement policies to address child poverty and social exclusion, promoting children's well-being, through multidimensional strategies and following certain principles and guidelines. An important first element of the strategy is to gain access to adequate resources, amongst others by parents' participation in the labour market. In policy circles it is – often implicitly – assumed that a job is the best protection against poverty. Hence, enhancing employment opportunities for mothers, by investing in childcare policies, is a good strategy to combat child poverty. In this article we have simulated different scenarios of an expansion of publicly subsidized childcare slots in a selection of EU countries. By applying different selection criteria for children for the additional childcare places and for the selection of the mothers that start working, we provide more insights in the link between childcare policies and the way they can reduce poverty among young children. When the current labour market characteristics are replicated in the employment scenario (i.e. mothers with the highest probability of going to work are given priority for a job), then the poverty impact is low. The scenario that generates the strongest poverty impact is the one in which all additional childcare places are being allocated to poor children and all mothers that have a positive employment probability among this group are taking on a job. Our simulations indicate the importance of where in the income distribution the additional jobs end up and that the poverty impact of expanding childcare depends on the characteristics of those effectively using the additional childcare slots and starting to work. In Belgium, Estonia and Hungary young child poverty is almost halved in the scenario targeted at children and mothers in poor families. There is a substantial reduction of poverty rates both before and after subtraction of parental fees. The different income concepts, however, reveal that charging parental fees to low income parents may counteract the potential positive poverty outcomes; this calls for attention for affordable childcare, especially for low income households.

The impact of increased childcare slots and increased mothers' employment on public expenditure shows that 30 to more than 100% of the additional cost for childcare can be 'earned back' by the government in terms of extra receipts of personal income taxes and social contributions and of savings through reduced social benefits. Our calculations also show that the impact of additional employment on the tax-benefit budget is larger for the scenarios in which employment of these mothers is allocated on the basis of employment probability. Women with a higher employment probability, in general also have a higher earnings potential, and hence generate a higher tax base. In addition, in countries with an income dependent system for childcare fees these mothers pay a higher parental contribution. Our results thus indicate that there is a trade-off in what can be achieved in terms of poverty reduction and in terms of generating additional government revenue. To reduce child poverty, childcare policies should be targeted to poor households. If, on the other

hand, the policy goal is to limit government costs as much as possible, additional childcare places should not be targeted to families at-risk-of-poverty.

References

Abrassart, A., & Bonoli, G. (2015). 'Availability, Cost or Culture? Obstacles to Childcare Services for Low-Income Families.' *Journal of Social Policy*, 44(4), 787-806.

Cantillon, B. (2011) 'The Paradox of the Social Investment State: Growth, Employment and Poverty in the Lisbon Agenda.' *Journal of European Social Policy*, 21(5): 432–449.

Currie, J. and Gahvari, F. (2008). 'Transfers in cash and in-kind: theory meets the data. ' *Journal of Economic Literature*, 46(2): 333-383.

Del Boca, D. (2015). 'The impact of child care costs and availability on mothers' labor supply.' *ImPRovE Working Paper 15/04, Herman Deleeck Centre for Social Policy, University of Antwerp.*

Del Boca, D., Pasqua, S. and Suardi, S. (2016), 'Child Care, Maternal Employment, and Children's School Outcomes. An Analysis of Italian Data.' *European Journal of Population*, 32: 211-229.

Esping-Andersen, G. (2005). 'Children in the welfare state. A social investment approach.'

Esping-Andersen, G. (2008), 'Childhood investments and skill formation.' *International Tax and Public Finance*, 15(1):16-44.

Esping-Andersen, G., Garfinkel, I., Han, W.J. & Waldfogel, J. (2012), 'Child Care and School Performance in Denmark and the United States.' *Children and Youth Services Review*, 34(3): 576-589.

European Commission (2013), 'Commission Recommendation: Investing in children: breaking the cycle of disadvantage', Brussels.

European Commission (2014), 'Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth', COM(2014) 130 final/2, Brussels.

Figari, F., Paulus, A. and Sutherland, H. (2011), 'Measuring the size and impact of public cash support for children in cross-national perspective.' *Social Science Computer Review* 29(1): 85-102.

Figari, F., Paulus, A. and Sutherland, H. (2015), 'Microsimulation and Policy Analysis.' in Atkinson A.B., Bourguignon F.(Eds), *Handbook of Income Distribution*, Volume 2. Elsevier-North Holland.

Förster, M. and Verbist, G. (2012), 'Money or kindergarten? Distributive effects of cash versus in-kind family transfers for young children' OECD Social, Employment and Migration Working Papers, No. 135. Paris: OECD Publishing.

Ghysels, J. and Van Lancker, W. (2011), 'The unequal benefits of activation: an analysis of the social distribution of family policy among families with young children', *Journal of European Social Policy*, 21(5): 472 – 485.

Gornick, J. C., & Meyers, M. K. (2003). *Families that work: Policies for reconciling parenthood and employment*. Russell Sage Foundation.

Heckman, J. J. (1974). 'Effects of child-care programs on women's work effort. ' *Journal of Political Economy*, 82(2, Part 2), S136-S163.

Hegewisch, A., & Gornick, J. C. (2011). 'The impact of work-family policies on women's employment: a review of research from OECD countries.' *Community, Work & Family*, 14(2): 119-138. http://dx.doi.org/10.1080/13668803.2011.571395

Hufkens, T. and Verbist, G. (2016), 'The distributive effects of work-family life policies in European welfare states', *ImPRovE Working Paper N°16/09. Antwerp: Herman Deleeck Centre for Social Policy – University of Antwerp.*

Karoly, L.A., Kilburn, M.R., & Cannon, J.S. (2005), 'Early childhood interventions: Proven results, future promise', MG-341. Santa Monica, CA: The RAND Corporation.

Marx, I., Vandenbroucke, P., & Verbist, G. (2012). 'Can higher employment levels bring down relative income poverty in the EU? Regression-based simulations of the Europe 2020 target.' *Journal of European Social Policy*, *22*(5), 472-486.

Misra, J., Moller, S., & Budig, M. J. (2007). 'Work-family policies and poverty for partnered and single women in Europe and North America.' *Gender & Society*, *21*(6), 804-827.

Nieuwenhuis, R., Need, A., & Van Der Kolk, H. (2012). 'Institutional and demographic explanations of women's employment in 18 OECD countries, 1975–1999'. *Journal of Marriage and Family*, 74(3), 614-630.

OECD (2009), 'Doing Better for Children', Paris: OECD Publishing.

OECD (2012), 'Starting Strong III - A Quality Toolbox for Early Childhood Education and Care.' Paris: OECD Publishing.

OECD (2014), 'Education at a Glance 2014', Paris: OECD Publishing.

OECD (2014), OECD Social Expenditures Database, Paris: OECD Publishing.

OECD (2016), OECD Family Database: PF2.1:Key characteristics of parental leave systems. Paris: OECD Publishing.

OECD (2017), OECD Family Database, Paris: OECD Publishing.

Stahl, J.F. and Schober, P.S. (2017), 'Convergence or divergence? Educational discrepancies in work-care arrangements of mothers with young children in Germany.' *Work, employment and society*, Advanced online publication.

Sutherland, H. and Figari, F. (2013), 'EUROMOD: the European Union tax-benefit microsimulation model', *International Journal of Microsimulation,* 6(1) 4-26

Uunk, W., Kalmijn, M., & Muffels, R. (2005), 'The Impact of Young Children on Women's Labour Supply: A Reassessment of Institutional Effects in Europe.' *Acta Sociologica*, 48(1), 41-62.

Vaalavuo, M. (2011), 'Towards an Improved Measure of Income Inequality. The Impact of Public Services in Income Distribution. An International Comparison.' PhD Thesis. European University Institute, Florence, Italy.

Van Lancker, W. and Ghysels, J. (2012), 'Who benefits? The social distribution of subsidized childcare in Sweden and Flanders.' *Acta Sociologica*, 55, pp. 125-142.

Van Lancker, Wim (2013), 'Putting the Child-Centred Investment Strategy to the test: evidence for the EU27.' *European Journal of Social Security*, 15, 1, 4-27.

Vandelannoote, D., Vanleenhove, P., Decoster, A., Ghysels, J. and Verbist, G. (2015), 'Maternal employment: the impact of triple rationing in childcare.' *Review of Economics of the Household*, 13(3), 685–707.

Van Vliet, O., & Wang, C. (2015). 'Social Investment and Poverty Reduction: A Comparative Analysis across Fifteen European Countries.' *Journal of Social Policy*, 44(3), 611-638.

Verbist, G. (2017), 'Measuring Social Investment Returns: Do Publicly Provided Services enhance Social Inclusion?' in A. Hemerijck (Ed.), *The Uses of Social Investment*, Oxford, Oxford University Press.

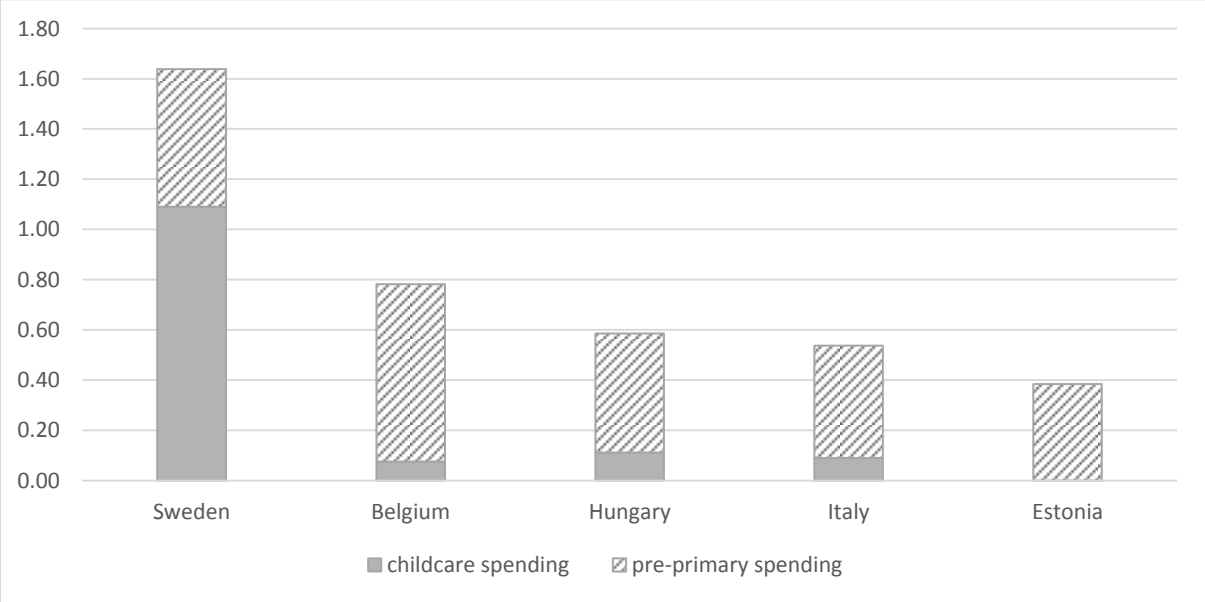
Appendix

Table A.1 Mothers' employment and children in formal childcare, 2014/2015

	Share of users in formal childcare, <3y, 2015	Mothers' employment by age of the youngest, < 3 years old, 2014 (%)
Belgium	50	66
Estonia	21	24
Hungary	15	13
Italy	27	54
Sweden	64	83*

Source: maternal employment, OECD, 2017; Formal childcare, Eurostat, 2017. Notes: Employment rates are for women (15-64 years old) by the presence of at least one child aged 0-14. * For Sweden maternal employment refers to mothers with at least one child aged 0-18 and to women from 15 to 74 years old.

Figure A.1 Public expenditures on early childhood education and care as a percentage of GDP, 2013



Source: OECD Family Database, 2017; Note: For Estonia data cannot be split between childcare and pre-primary education. Ranked according to total spending on ECEC.

Table A.2 Leave policies, 2015

	Leave systems: duration and benefits		Home care benefits
Belgium	ML:15 weeks (benefit) PtL:2 weeks (benefit)	PrL: 17.3 weeks full time (flat rate benefit)	-
Estonia	ML:20 weeks (140 calendar days) (benefit)	PrL:82 weeks (575 calendar days) (benefit)	Home care allowance (non means tested benefit) for child up to max. 8 year old + additional allowance for large families (benefit)
Hungary	ML: 24 weeks (benefit)	PrL: 136 weeks (benefit)	Home care allowance (3 types of benefits) for child up to max. 8 year old
Italy	ML: 21.7 weeks (benefit)	PrL: 47.6 weeks (11m) (benefit)	**-**
Sweden	ML: 14 weeks (benefit)	PrL:69 weeks (480d)* (390d at % of wage + 90d at flat rate)	**-**

Note: ML=Maternity leave; PrL=Parental leave; PtL: Paternity leave. * In Sweden 90 days out of the total parental leave period are allocated to each parent and cannot be transferred to the other.

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