

## Redistribution effects of the childcare system in Hungary - Who is cared for?

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## **Abstract**

The role of child care services is very complex in terms of how they serve different public policy goals, as female employment, child poverty, early childhood development and the fulfilment of childbearing intentions. The level and the distribution of access to public daycare for children is therefore highly relevant for policy making, while distribution patterns and institutional forms of care may have different impacts on these policy objectives. There is some cross country evidence for Europe showing that access to public childcare is unevenly distributed among households, with a clear bias against low-income families. The present paper considers the case of Hungary, where the targeting of relatively scarce service capacities should be of high concern to policy makers.

After arguing why investigating the redistribution effects of the early child care institutions is important, we present the institutional settings of the investigated institutions. The empirical part is comprised of two main sections: main descriptive statistics and a multivariate analysis of main factors that may affect redistribution outcomes.

The empirical results are in line with the main objective of the legislation: child care services are used by children of working mothers. However, since service supply is scarce, not all mothers in employment have access to these institutions. Among them, their age, the age of child and the availability of nurseries are the most important differentiating factors. Employed mothers aged 31-35, with a child aged 2 and living in settlements with local nursery (including Budapest) are most likely to have their children enrolled in nurseries. Considering the complex role of day care services in respect with several public policy objectives (early development, parental labour market participation and poverty reduction) and the trade-offs arising when capacities are scarce, the Hungarian system faces the challenge of widening access to quality daycare services. Without a considerable increase in the available places from the presently low levels, the system may not meet the expectations of reducing the cost of labour market entry for all mothers, of reducing work-life tensions, of promoting equal opportunities by fostering early child development and of contributing to the reduction in child poverty.

**Keywords:** public childcare, female participation, social inequalities, Visegrad countries

## 1. Introduction

The role of child care services is very complex in terms of how they serve different public policy goals, as female employment, child poverty, early childhood development and the fulfilment of childbearing intentions<sup>1</sup>. The level and the distribution of access to public daycare for children is therefore highly relevant for policy making, while distribution patterns and institutional forms of care may have different impacts on these policy objectives.

There is some cross country evidence for Europe showing that access to public childcare is unevenly distributed among households, with a clear bias against low-income families (Ghysels and Van Lancker, 2011; OECD, 2011). The present paper considers the case of Hungary,<sup>2</sup> where the targeting of relatively scarce service capacities should be of high concern to policy makers. The distribution of access to public daycare for children is highly relevant for policy making since it can potentially alter the impact of public subsidies on female employment, child poverty and early childhood development.

The positive effect of access to formal childcare on female labour supply can be derived from classic economic theory and has been confirmed by many empirical studies (e.g. Apps and Rees 2001, Jaumotte, 2003; Van der Lippe and van Dijck, 2002, Uunk et al. 2005; Scharle 2007). Chevalier and Viitanen (2002) show that the availability of childcare determines participation (and not the other way round) and that women could be constrained in their labour force participation by the lack of childcare facilities. Apart from the direct effect on mother's employment, the availability of affordable and high quality childcare services may increase female participation by reducing statistical discrimination against women and also by modifying social norms concerning male and female roles<sup>3</sup>.

Through the labour supply effect, daycare services may also contribute to reducing poverty, and especially child poverty, which to a large extent depends on the employment of the mother. This has also been supported by several cross-country comparative studies (e.g. Whiteford and Adema 2007, EU Task-Force 2008, TÁRKI-Applica 2010 and TÁRKI 2011) as well as single country studies in Hungary (Gábos and Szivós 2010). Ghysels and Van Lancker (2012) show that the contribution of daycare services to reducing poverty depends not only on the overall level of access, but also on the interaction of these provisions with other elements of the welfare system, notably on cash transfers and tax rules that may discourage the labour supply of low educated mothers and may cancel out reductions in daycare fees.

Lastly, high quality formal daycare has been shown to be an important instrument for reducing disadvantages of family background and preventing problems of school performance at a later age. There is convincing evidence that attending good quality formal daycare increases cognitive and social skills, especially in the case of children from a socially disadvantaged background (eg. Vandell és Ramanan 1992; Dearing et.al. 2009; Melhuish 2004).

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<sup>1</sup> On the impact of childcare services on fertility see Dorota Szelewa and Hana Hašková (2013), Fertility and availability of childcare services for children under three in Visegrad countries: A review.

<sup>2</sup> The paper was prepared within the frame of the 'Day care provision in the Visegrad countries' project funded by the Visegrad Fund. We are grateful to Árpád Földessy (Budapest Institute) for his assistance and to Ágota Scharle and Adrienn Győry for their comments and assistance in compiling the policy overview in section 2.

<sup>3</sup> On the impact of childcare services on maternal employment see Michal Polakowski (2013), Childcare and female employment.

All three of the above concerns are relevant in the Hungarian case, considering the country's poor or mediocre performance in female employment, child poverty and the ability of public education to compensate for social disadvantages. This paper aims to provide some empirical grounding that may help policymakers in refining the system of daycare services. The focus is on daycare for children aged 2 (where capacities are especially scarce) and the primary data source is individual level data of the Hungarian Labour Force Survey of 2010.

The analysis is structured in the following way. First, we argue why investigating the redistribution effects of the early child care institutions is important, mostly for policy reasons. The second part presents the institutional settings of the investigated institutions, crucially affecting the redistribution outcomes. Thirdly, our research questions are formulated based on earlier investigations of the topic at international and local levels. The empirical part is divided into two: Part 4 includes the main descriptive statistics, while Part 5 provides a multivariate analysis of main factors that may affect redistribution outcomes. Finally, the sixth part of the paper concludes and raises some open question that either may affect the interpretations of the results or require further investigation.

## **2. Institutional setting in Hungary<sup>4</sup>**

### 2.1 Family policy

Family policy in Hungary is characterised by relatively generous cash benefits and an unevenly developed system of daycare services. The relative level of government spending on cash transfers is the fourth highest in the EU (at 2.4 % of GDP in 2009), and the full time equivalent of the insurance based paid maternity and parental leave is the second longest in the OECD (at 96 weeks in 2011).<sup>5</sup> Public daycare is available to almost all children aged 3 or above, but for smaller children, coverage barely exceeds 10% and existing facilities tend to be overcrowded.<sup>6</sup>

The expressly legislated general aim of cash benefits has been to contribute to childcare costs and compensate for lost income. However, the political motivation for sustaining such an extended system has varied considerable over the past two decades. Conservative governments have justified generous state support by the necessity to encourage reproduction, while Socialist governments have emphasised needs and more recently the alleviation of child poverty (Gyarmati 2010). The difference in the political targets of successive governments may in fact have contributed to the extension of cash benefits in the past 20 years. Each government has adjusted the targeting of the

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<sup>4</sup> This section is mostly based on Gyóry and Szikra (2013).

<sup>5</sup> Cash transfers include a universal child benefit (family allowance), a tax allowance for working families, insurance based paid maternity and parental leaves (maternity allowance and child care fee), and a universal flat rate parental leave benefit (child care allowance). The maternity leave pays 70% of the previous wage (with no cap) for 24 weeks, the paid parental leave pays 70% of the previous wage (with a cap at 140% of the minimum wage) until the child turns 2. (OECD Family Database, TRANSMONEE).

<sup>6</sup> Note the Barcelona target of 33%.

system, and in order to reduce the political cost, this has typically entailed an extension of transfers favouring certain groups rather than cuts affecting disfavoured social groups.<sup>7</sup>

In terms of their actual impact, cash transfers have a considerable effect on reducing poverty, and this effect tended to increase until the global recession (Gábos 2008). By contrast, daycare services may have a limited role in poverty reduction. Until very recently, there was no regulation to improve poor families' access to public daycare services (except for admitting the children of lone parents). Daycare was made compulsory starting from the age of 5 in 2003 but below that age, kindergartens and nurseries enjoyed considerable freedom in devising their admissions policy. Concerning kindergartens, there is some evidence that this resulted in the exclusion of poor and disadvantaged families, and better than average access for middle class children (Tokajiné 2011, Kertesi and Kézdi 2012). Kertesi and Kézdi (2012) find that on average, 2 in 3 children aged 3 attend kindergarten, but the corresponding ratio is only 1 in 3 among children born to a mother with only primary education. The authors show that this is partly due to lack of capacities, but partly to demand side factors, such as lack of motivation or lack of trust in public institutions.<sup>8</sup>

## 2.2 Evolution and regulation of daycare services for children under 3

Day-care services for children under 3 years had been relatively well-developed during the socialist era. In the early 1980s, coverage reached around 15% of children aged between 0 and 2 years, nurseries followed a centrally designed pedagogical programme and detailed rules on hygiene (Szikra 2011)<sup>9</sup>. Coverage declined gradually after 1983, and dropped sharply during the early 1990s, mainly as a result of the abrupt change of the political establishment. During the political transition, the financing of daycare institutions for children was devolved to local governments, who are often unable or unmotivated to maintain such institutions.<sup>10</sup>

The past decade has however shown slow but steady improvement. The share of children aged between 0 and 2 attending a formal day care institution increased from 6 % in 2000 to just below 10% in 2011 (KSH Statat). Some of this improvement may be explained by cautious regulative reforms aiming to expand daycare capacities. These included the introduction of new types of institution and measures to improve the conditions of financing, and administration. The new institutions can be efficiently maintained in small villages: family daycare centres (introduced in 2002) can take children aged 20 weeks to 14 years and with 5 children to a nurse, their per capita

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<sup>7</sup> For example, the family tax allowance was introduced by a Conservative government to favour middle class working families, which was drastically trimmed by the succeeding Socialist government, but compensated by a corresponding rise in the universal child benefit, until the current Conservative government reinstated it at an increased rate while maintaining the universal child benefit. The nominal amount of the universal child benefit has been frozen since 2009, so that its value has been declining in real terms since that.

<sup>8</sup> In 2009, a conditional cash transfer (kindergarten subsidy) was introduced to increase the enrolment of socially disadvantaged children. For an early evaluation of the programme see Kertesi and Kézdi (2012).

<sup>9</sup> For a more detailed description of historical evolution of daycare services in Visegrad countries see Hana Hašková and Dorottya Szikra (2013), How did we get the 'magic 3'? The timing of parental leaves and child care services in the Visegrad-countries

<sup>10</sup> Local governments were set up at the settlement level, so that even the smallest village has their own mayor and independent budget. All municipalities are obliged to maintain a kindergarten (independently or jointly with another municipality), while nurseries are obligatory only for towns of over 10 000 inhabitants.

cost is about the same as in a mid-sized nursery. Integrated nursery-kindergarten (introduced in 2009) can be established in a kindergarten and are allowed to have one mixed-age group admitting children aged 2.<sup>11</sup> Following the British example of Sure Start, the government started to build a network of community centres in 2006, to ensure access to early development and daycare for children in disadvantaged regions and especially villages. A headcount based central government subsidy replaced the earlier ad-hoc financing of nurseries in 1997 and of family-day-care centres in 2003. And lastly, there have been some attempts to reduce the administrative burden in 2009 and 2011 to establish family day care centres.

However, administrative costs and inadequate financing continues to constrain the expansion of daycare services. Central government subsidies on day-care services vary according to the type of service and the service provider. Public nurseries run by municipalities are fully eligible for the headcount-based subsidy, which covers 40-70 % of the running costs.<sup>12</sup> Church-owned nurseries receive 187% of the regular subsidy; other providers are only eligible for 30%. Municipal family-day-care services are eligible for 54% of the regular subsidy per child, which covers about 20-50% of the running costs (Budapest Institute, 2010). Almost 90% of nurseries are managed by municipalities (Hungarian Central Statistical Office, 2010)<sup>13</sup>, which often cannot or choose not to spend on early childhood care. The fixed costs of maintaining nursery are relatively high due to quality requirements, so that small nurseries (below 30 children) are especially expensive to run.<sup>14</sup>

Although the private and non-profit sector is not officially excluded, entering the services market is relatively difficult, due to administrative hurdles and limited access to central government subsidies. Non-governmental providers tend to be more expensive and affordable only to wealthy families.

As a result, access to daycare services continues to be limited and the demand is much higher than the number of available places (Szikra, 2011). Capacities are lacking especially in small villages. On the one hand, this results in long waiting lists implying that parents need to be well informed in order to submit applications in time. On the other hand, nurseries tend to “overbook” their capacities, which may reduce the quality of care services. The number of admitted children tends to exceed officially approved capacities by 10-20% (KSH Statat).

The actual distribution of public daycare provision depends not only on local availability and capacities, but on the admission policy and practice of nurseries and family-daycare-centres. The general rule is that priority should be given to children whose mother works (Makay 2011). In practice, institutions have considerable freedom in applying this rule and also in applying further criteria, as admissions are not regularly monitored by authorities. Makay (2011) reports the results of a recent survey<sup>15</sup> which showed that all or most mothers of children attending nurseries were employed. The regional distribution of responses suggested that institutions give priority to working

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<sup>11</sup> This is allowed in villages and towns of below 10 000 inhabitants where there are free capacities in the kindergarten, and there is no nursery. The number of nursery-age children is limited by the law and there can be only one mixed-ages group in the institution.

<sup>12</sup> The rest must be covered by the municipality as – until very recently - public institutions could only charge parents for meals (a daily 300-500 HUF, i.e. 1-2 EUR).

<sup>13</sup> There are no data on how many of private nurseries function under any kind of agreement with the municipality.

<sup>14</sup> This is another factor explaining the low availability of nurseries in small towns and villages.

<sup>15</sup> The survey was conducted by the Central Statistical office in early 2009 and covered all nurseries (the response rate was 66%).

mothers where vacancies are especially scarce. Non-governmental, non profit providers appeared to be more open to admitting the children of non-working mothers as well. Most institutions reported that mothers already knew where they were going to work at the time of settling their child into the nursery, which also suggests that institutions enforce this criterion relatively strictly. In a small survey conducted in 2010, Reszketó and Scharle (2010) found that few institutions would openly admit concerns about taking disadvantaged children, but most support the view that vacancies should be reserved for working mothers.<sup>16</sup>

### **3. Main findings of the research**

This section presents the main results of the analysis on Hungarian LFFS data. These results are provided in two steps. First, the incidence of child care enrolment is shown according to the main socio-economic characteristics of the mother and of the family. Second, logistics regressions are run to identify the main factors that affect enrolment rates. In each case, the source of the data is the Hungarian Labour Force Survey of 2010, while the unit of analysis is mothers with children aged 0-2 (both for descriptive statistics and multivariate analysis).

#### ***3.1. Descriptive results***

As indicated in the previous part of the paper, child care enrolment in Hungary is extremely low for children aged below 3, but varies greatly by individual and family characteristics, as well as across regions and settlement types. Main results of the analysis are presented in Table A1 of the Annex. We consider two populations among mothers with children: first, all mothers with children aged 0-2, and second, we look at mothers with a child aged 2 years. Enrolment rates are much higher among mothers belonging to the latter group, so that we may expect to find different patterns in the distribution of attendance when compared to the whole group.

According to our estimates based on the Hungarian Labour Force Survey, close to 7% of mothers have at least one child aged 0-2 enrolled in nurseries in Hungary in 2010. The incidence of enrolment is almost twice as high among mothers with children aged 2. Participation rates being so low, one of the main questions for policy makers can be formulated in the following way: 'Who is cared for?', or putting the reverse question: 'Which social groups should be targeted if access is planned to be widened?'. Overlooking the results presented in Table 2, one may easily summarise the main findings: the strongest correlation with enrolment is observed for the working status of mother. Children of employed mothers have the highest chances to make use of public child care services in Hungary. These results are in line with previous expectations, but one may also conclude that other parameters play an important role in explaining enrolment probabilities.

##### **3.1.1. Mother's characteristics.**

The incidence of enrolment in nurseries is highest among employed mothers. In this group over one third of those with a child aged 0-2, and more than half of those with a child aged 2 use public daycare institutions. By contrast, the incidence of enrolment is only 4-6% among unemployed or

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<sup>16</sup> The survey was conducted by the Institute for Welfare and Labour (SZMI) and covered 31 nurseries.

inactive mothers. The employment status of the mothers therefore makes a huge difference when enrolment probabilities are analysed.

Enrolment is also higher than average among mothers aged 31-35 (10%), those married (8%), and those with either upper secondary (9%) or tertiary (12%) education.

The probability of having a child in public child care institutions increases with the level of education: 12% of mothers with tertiary education have their children aged 0-2 cared for in these institutions, which figure is decreasing with education level: 9-, 4- and 3% at upper secondary, lower secondary and primary levels, respectively. Differences are even wider when mothers with children aged 2 are considered: 24% of mothers with tertiary education have their children in public nurseries, while only 5% of those with maximum primary education can tell the same.

The age of the mother plays a similarly important role in shaping enrolment probabilities, as education has, which obviously is related to patterns of demographic behaviour of educated women in Hungary. Mothers aged 31-35 are twice as likely to have their children aged 0-2 in nurseries as those aged 26-30 have, which ratio can be observed even for those with at least one child aged 2 in formal care.

Finally, family status also makes a difference (albeit somewhat smaller than earlier characteristics) when enrolment probabilities are considered. When all children aged 0-2 are taken into account, married women are twice as likely to have the child cared for in a public nursery than those living a cohabitation partnership (8% vs. 4%), while enrolment among single mothers is close to the average (6%). When only mothers with older children (aged 2) are examined, single mothers are in a serious disadvantage: only 4% of them succeed to obtain a place for their children, while similar figures are 15% for married and 9% of cohabiting mothers.

### 3.1.2 Father's characteristics

While the mother's employment is crucial in having the child/children cared for in public nurseries, the labour market position of the father is less important, but some differences can be observed. While 8% of mothers with an employed partner have their children in public daycare, the same figure for separated mothers is still close to average, 6%. The lowest probability is observed when the father is inactive (4%). Among mothers with children aged 2, the absence of the father brings the highest risk, only 4% of them having their children enrolled on child care institutions.

As expected, the probability of enrolment increases as the attained level of education of the father also does: highest rates are observed for mothers living with the father with diploma (12%), while lowest when the father has at most a completed primary education (4%).

### 3.1.3 Family's characteristics

Enrolment probabilities among mothers with at least one child cared for in public nurseries strongly differ not only by her or her partner's characteristics, but also by parameters characterising the family as a whole.

The age of the child is one of the most important differentiating factors: mothers with a child aged 2 are 3-4 times more likely (13% vs. 3-4%) to have them in public nurseries compared to mothers with a younger child.

No such strong differences are observed when the presence of younger siblings is considered. Having a younger child is associated with a slightly higher than average probability of enrolment (9%). The incidence of enrolment is also higher than average for mothers in families with two or three children aged 15 or below (8%), while it is extremely low where the total number of children is 4 or even higher (2%). Also, when a non-employed household member (beside parents) is present, enrolment probabilities are slightly above the average (8%).

The type of the settlement and the geographical region the family lives in also play an important role in shaping differences in the incidence of enrolment. These correlations are mostly due to the uneven distribution of available public child care capacity across settlement size and regions of Hungary. Probabilities are highest among mothers living in Budapest (14%) and Central Hungary (13%), while lowest among mothers living in settlements with no local nursery (4%), as well as in the Northern Hungary and Central Transdanubia (4-4%). One may observe that the presence of local nurseries outside Budapest is also associated with higher than average enrolment rates (10%). The picture changes slightly when only mothers with children aged 2 are analysed. In this case, mothers living outside Budapest, in a settlement with a local child care institution, have higher chances to place their children (20%) compared to their counterparts living in the capital (16%). Also, mothers with older children and living in Western Danubia and Southern Great Plain regions have close probabilities to those living in Central Hungary.

### ***3.2. Findings from multivariate analyses***

Section 3.1 provided main descriptive results on child care enrolment probabilities among children aged 0-2 in Hungary and the role of individual, family and institutional characteristics being associated to these probabilities. We examined factors that are related individually to the mother, to the father, as well as those characterising the whole family, including settlement type, size and the proximity of child care institutions. Maternal employment, the age of the child and the proximity of the service emerged as revealing the strongest correlation with child care enrolment. It is clear however that most of these factors are strongly interrelated; therefore some of these correlations might be spurious. In order to identify independent effects, we run multivariate logistic regressions, with child care enrolment as dependent variable and demographic and labour market characteristics as right-hand variables.

The base models include all mothers with young children (aged 0-2). BM1 represents the default model, while models BM2 and BM3 differ by introducing sequentially employment status of the mother and the availability of child care in the settlement, respectively. Main results are presented in Table 1. These results should be interpreted carefully and their validity is restricted. The main reasons behind this concern come from the endogeneity between enrolment probability and maternal employment. Not only child care enrolment depends on the employment status of the mother (children with working mothers are accepted by public child care institutions at first place), but also maternal employment is often conditioned on the availability of child care services. Accordingly, our interpretation is restricted to refining the above presented descriptive statistics.

#### **3.2.1 Base models**

The main findings of the multivariate analysis using base models are summarised as follows.

*BM1.* Based on the role of child care in general and the specifics of the Hungarian institutional system, one might expect to find a strong correlation between employment status and enrolment. For this reason we run a model without the employment status variable. Results show that – unsurprisingly - the highest attained level of education of the mother plays the most important role in predicting enrolment (together with the age of the child, which is also very strongly related to the main parameters of the institutional system), being a good proxy for the activity status of the mother. In addition, mothers aged 31-35 are most likely to have their children in child care in Hungary. Parameter estimates are insignificant for family status, number of children in the household, presence of younger siblings and also for a non-parent inactive household member.

*BM2.* When employment status is introduced in the model, it strongly predicts enrolment probabilities, the age of child staying still highly significant and strongly negative. The explained variance strongly increases when activity status is introduced. Some other, less significant effects can be also observed

- The mother being aged 26-30 and the presence of a non-parent inactive household member significantly decreases enrolment probabilities, the later indicating the importance of non-institutional alternatives within the existing frame.
- When the mother is low educated (max. primary), her child is less likely to be enrolled in child care, even when we controlled for employment status.

*BM3.* The results of the third model clearly indicate that in Hungary three major observable factors play the most important role in predicting enrolment probabilities: (i) the mother's employment status, (ii) the age of the child, (iii) the availability of the local nursery. Mother's education has no significant effect when availability of child care is controlled for.

### 3.2.2 Estimates for mothers with different social background

Separate models were run for mothers with selected socio-demographic characteristics. The method aims to provide results similar to the effect-coding method. Results of these estimates are shown in Table 2.

First, a condition is put on the mother's employment status to assess which factors explain variation within the group of mothers with the same employment status. Two separate models were run: one for mothers in employment (WM), while another one for inactive mothers (IM).

- *WM: working mothers.* Among working mothers, their age, the age of child and the availability of nurseries are the most important factors that differentiate regarding the probabilities of enrolment. Employed mothers aged 26-30 are significantly less likely to have their child in institutional child care than their 31-35 aged counterparts. On the other hand, if the child is under age 1, his/her probability of being in a nursery is practically non-existent.
- *IM: inactive mothers.* In this group again, younger children are less likely to be in institutional childcare and so are children without a sibling under 15. Living in Budapest however, is positively correlated with enrolment among inactive mothers.

Second, separate models were run according to the categories of attained education level of mother.

- *PE: max. primary education.* Ceteris paribus only inactivity has a significantly negative and strong effect on the probabilities of enrolment.

- *LSE: lower secondary education.* Similar results to PE. In addition, the number of children has a negative effect when '2 or 3 children' is the reference category, while living in Budapest has a weak positive effect.
- *USE: upper secondary education.* The explained total variance increases considerably when turning to this model. All major factors play an important role among mothers with a completed upper secondary education: employment status, the age of child and availability of child care.
- *TE: tertiary education.* Inactivity is an important factor even when mothers with diploma are considered. Beyond this, only the age of child makes a difference among them, while the availability of child care does not have a significant effect (maybe also due to the low number of observations.)

Finally, mothers with a child of age 2 were selected and included in model *ChA23*. This option is supported by the idea that the incidence of being in institutional child care is much higher among these children than among their younger counterparts and therefore one might expect different roles of factors determining enrolment probabilities. Based on this model we may find out that among the mothers with a child aged 2, their employment status is an even stronger differentiating factor when the enrolment probabilities are considered. In this model, the role of non-parent inactive household members is observed: their presence strongly and significantly decreases the probability of enrolment. Also, the availability of nurseries plays an important role among them, the estimated effect being stronger for those living in settlements with a local nursery (but the same as in BM3 for those living in Budapest).

**Table 1 Main factors affecting child care enrolment in Hungary 2010 – base models (odds ratio estimates of logistic regression models)**

	<b>BM1</b>	<b>BM2</b>	<b>BM3</b>
<b>Mother's age</b> (ref. cat.: 31-35)			
-25	0.87 (-0.41)	0.95 (-0.12)	1.04 (0.10)
26-30	0.59 (-1.93)	0.58 (-1.82)	0.64 (-1.48)
36 -	0.67 (-1.24)	0.77 (-0.75)	0.76 (-0.78)
<b>Mother's family status</b> (ref. cat.: married)			
Living together	0.66 (-1.42)	0.76 (-0.88)	0.78 (-0.80)
Single	0.85 (-0.40)	1.00 (-0.01)	0.97 (-0.08)
<b>Mother's highest education</b> (ref. cat.: tertiary)			
Max. primary	<b>0.27</b> (-3.29)	0.49 (-1.70)	0.64 (-1.06)
Lower secondary	<b>0.29</b> (-3.46)	0.55 (-1.55)	0.70 (-0.90)
Upper secondary	0.69 (-1.43)	0.85 (-0.58)	0.91 (-0.34)
<b>Mother's employment status</b> (ref. cat.: working)			
Unemployed or wants to work		<b>0.09</b> (-5.54)	<b>0.09</b> (-5.37)
Inactive		<b>0.09</b> (-9.33)	<b>0.08</b> (-9.48)
<b>Age of the child</b> (ref. cat.: 2 thr 3)			
0 thr 1	<b>0.20</b> (-4.43)	<b>0.21</b> (-3.72)	<b>0.22</b> (-3.59)
1 thr 2	<b>0.28</b> (-4.70)	<b>0.43</b> (-3.13)	<b>0.42</b> (-3.16)
<b>Younger sibling</b> (ref. cat.: no)	0.73 (-0.72)	0.76 (-0.55)	0.80 (-0.43)
<b>Number of children under 15</b> (ref. cat.: 2 or 3)			
1	0.76 (-1.18)	0.76 (-1.08)	0.68 (-1.51)
4+	0.37 (-1.29)	0.35 (-1.32)	0.36 (-1.27)
<b>Non-parent inactive hh member</b> (ref. cat.: no)	0.53 (-1.49)	0.44 (-1.81)	0.51 (-1.48)
<b>Place of residence</b> (ref. cat.: other settl. with no local nursery)			
Budapest			<b>3.44</b> (3.01)
Other settlement with a nursery			<b>2.10</b> (2.70)
Nr of observations	1432	1432	1432
Wald chi2	67.85	147.47	157.1
Degree of freedom	14	16	18
Pseudo R2	0.117	0.239	0.255

Source: own calculations based on the Hungarian LFS 2010.

Note. X – category dropped since predicts failure perfectly. Estimated odds ratios are significant at **0.01**, 0.05 or *0.1* level. Robust z-statistics are provided in parentheses. Unweighted results.

**Table 2 Main factors affecting child care enrolment among mothers with different social backgrounds in Hungary 2010** (odds ratio estimates of logistic regression models)

	Mother's employment status		Mother's highest education				Age of child
	Working	Inactive	Max. primary	Lower secondary	Upper secondary	Tertiary	Aged 2 or 3
	WM	IM	PE	LSE	USE	TE	ChA23
<b>Mother's age</b> (ref. cat.: 31-35)							
-25	0.29 (-1.27)	1.20 (0.35)	0.56 (-0.73)	X	1.26 (0.40)	4.76 (0.93)	1.11 (0.18)
26-30	<u>0.21</u> (-2.37)	0.85 (-0.36)	0.13 (-1.25)	1.49 (0.60)	0.70 (-0.72)	0.44 (-1.39)	0.60 (-1.21)
36 -	0.51 (-0.89)	0.98 (-0.04)	0.14 (-1.52)	0.73 (-0.36)	0.70 (-0.60)	1.65 (0.71)	0.75 (-0.64)
<b>Mother's family status</b> (ref. cat.: married)							
Living together	0.83 (-0.25)	0.72 (-0.82)	0.78 (-0.35)	0.51 (0.43)	0.89 (-0.24)		1.11 (0.26)
Single	1.34 (0.28)	0.74 (-0.53)	0.79 (-0.26)	0.81 (0.82)	1.10 (0.15)	0.90 (-0.09)	0.36 (-1.50)
<b>Mother's highest education</b> (ref. cat.: tertiary)							
Max. primary	0.66 (-0.51)	0.69 (-0.72)					0.73 (-0.60)
Lower secondary	0.48 (-0.89)	0.73 (-0.59)					0.67 (-0.74)
Upper secondary	0.73 (-0.64)	0.74 (-0.69)					0.91 (-0.26)
<b>Mother's employment status</b> (ref. cat.: working)							
Unemployed or wants working			X	0.12 (-1.41)	<b>0.22</b> (-2.60)	X	<b>0.05</b> (-5.00)
Inactive			<b>0.06</b> (-2.71)	<u>0.13</u> (-1.99)	<b>0.07</b> (-6.21)	<b>0.05</b> (-5.05)	<b>0.06</b> (-8.14)
<b>Age of the child</b> (ref. cat.: 2 thr 3)							
0 thr 1	<b>0.02</b> (-3.36)	0.53 (-1.41)	0.64 (-0.46)	0.56 (-0.52)	<u>0.17</u> (-2.50)	<u>0.17</u> (-2.04)	
1 thr 2	0.40 (-1.47)	<u>0.40</u> (-2.33)	0.36 (-1.16)	0.78 (-0.36)	<b>0.32</b> (-2.71)	0.41 (-1.62)	
<b>Younger sibling</b> (ref. cat.: no)	1.22 (0.20)	0.79 (-0.35)	1.09 (0.07)	1.82 (0.53)	0.27 (-1.38)	1.22 (0.18)	1.06 (0.09)
<b>Number of children under 15</b> (ref. cat.: 2 or 3)							
1	1.56 (0.71)	<u>0.51</u> (-1.89)	0.70 (-0.48)	<u>0.24</u> (-1.65)	0.71 (-0.81)	0.95 (-0.10)	0.87 (-0.38)
4+	0.35 (-0.83)	0.29 (-1.11)	0.27 (-1.52)	X	6.76 (1.39)	X	<u>0.19</u> (-1.69)
<b>Non-parent inactive hh member</b> (ref. cat.: no)	0.30 (-1.63)	0.66 (-0.73)	0.93 (-0.07)	X	1.32 (0.43)	X	<b>0.23</b> (-2.15)
<b>Place of residence</b> (ref. cat.: other settl. with no local nursery)							
Budapest	6.53 (1.56)	<u>3.26</u> (2.27)	X	18.32 (1.80)	<u>5.19</u> (2.40)	2.66 (1.17)	3.41 (1.90)
Other settlement with a nursery	<b>3.81</b> (2.59)	1.39 (0.89)	1.11 (0.88)	2.47 (1.37)	<b>3.94</b> (2.65)	1.44 (0.61)	<b>3.48</b> (3.16)
Nr of observations	139	1131	321	223	465	197	552
Wald chi2	40.8	23.74	25.83	16.84	65.71	35.65	110.39
Degree of freedom	16	16	13	12	15	11	16
Pseudo R2	0.335	0.058	0.156	0.126	0.294	0.326	0.325

Source: own calculations based on the Hungarian LFS 2010.

Note. X – category dropped since predicts failure perfectly. Estimated odds ratios are significant at **0.01**, 0.05 or *0.1* level.

Robust z-statistics are provided in parentheses. Unweighted results.

#### 4. Conclusions

According to the Hungarian LFS data, in 2010 about 7% of mothers had their children aged 0-2 in institutional child care. The incidence of enrolment in nurseries is the highest among mothers in employment, with children aged 2 and living in settlements with local nurseries. These factors proved to be highly significant when a multivariate analysis was performed to control for individual effects. Mothers' employment status and availability of early child care institutions are even stronger explanatory factors when only mothers with a child aged 2 are examined. In addition, enrolment is also higher than average among mothers aged 31-35, those married, with upper secondary or tertiary education, with a child aged 2, where the child in the nursery has a younger sibling, where the number of children in the family is 2 or 3, among mothers living in Budapest or in county seats, Central Hungary, and where the father has a tertiary education.

The distribution of access to public daycare for children is highly relevant for policy making since it can potentially alter the impact of public subsidies on female employment, child poverty and early childhood development. In the light of policy making, our results can be interpreted in the following way.

- The empirical results are in line with the main objective of the legislation: child care services are used by children of working mothers.
- Since service supply is scarce, not all mothers in employment have access to these institutions. Among them, their age, the age of child and the availability of nurseries are the most important differentiating factors. Employed mothers aged 31-35, with a child aged 2 and living in settlements with local nursery (including Budapest) are most likely to have their children enrolled in nurseries. How employed mothers manage with their under 3 years kids without the services of a daycare institution can not be deduced from our analysis. Further research is required to find out how alternative solutions are found and whether they are used out of necessity or for other reasons.
- Education does not seem to have a significant individual effect on enrolment probabilities. This suggests that there is no discrimination towards low social status mothers during the enrolment process. However, this result must be interpreted very carefully due to the methodological problems related to the complexity of the selection mechanisms. The bias against low educated parents can work via a composition effect: they are either inactive or live in towns and villages with no local nursery available or both. Further investigation is crucial in this respect to better understand the interrelationship between these factors, how different life-course strategies are chosen by parents in terms of employment and fertility decisions, in the context of policy and institutional settings.
- At the same time it is also clear that there is no positive discrimination towards the low educated parents either. The legally prescribed positive discrimination towards lone mothers does not seem to have a significant impact on the share of their children in the institutions, either. Furthermore, the strong correlation between lack of employment and low status place of residence on the one hand and low education of parents on the other means that socially disadvantaged children remain underrepresented in public nurseries in Hungary. This should certainly be a major concern if promotion of equal opportunities at early age and poverty reduction through increased labour market participation of parents were considered as public policy priorities not only in the case of children over 3 but also at younger ages. If capacities were intended to be increased, different and empirically underpinned options of targeting might be considered to fit these combination of policy goals.

Finally recalling the complex role of day care services in respect with several public policy objectives (early development, parental labour market participation and poverty reduction) and the trade-offs

arising when capacities are scarce, the Hungarian system faces the challenge of widening access to quality daycare services. Without a considerable increase in the available places from the presently low levels, the system may not meet the expectations of reducing the cost of labour market entry for all mothers, of reducing work-life tensions, of promoting equal opportunities by fostering early child development and of contributing to the reduction in child poverty.

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**Table A1 The incidence of child care enrolment by main socio-economic characteristics of the mother, of the child and of the household, Hungary, 2010**

	% of under 3's in nursery	N=	% of aged 2-3 in nursery	N=
<b>Mother's age</b>				
-25	4.8	293	8.7	115
26 – 30	5.4	429	9.7	144
31-35	9.9	467	17.8	191
36 -	6.2	243	8.8	102
<b>Mother's family status</b>				
Married	8.3	878	15.2	343
Living together	3.9	390	8.7	138
Single	6.1	164	4.2	71
<b>Mother's education</b>				
Primary	3.2	372	5.2	155
Lower secondary	4.0	328	5.6	126
Upper secondary	8.6	465	16.8	173
Tertiary	12.4	267	23.5	98
<b>Mother's employment status</b>				
Working	36.0	139	53.3	77
Unemployed or wants to work	4.3	162	5.1	79
Inactive	3.6	1131	5.6	396
<b>Father's employment</b>				
No father in the household	6.1	164	4.2	71
Working	7.8	995	14.9	383
Not working	3.7	273	7.1	98
<b>Father's education</b>				
No father in the household	6.1	164	4.2	71
Primary	3.5	290	7.2	111
Lower secondary	6.8	501	12.7	197
Upper secondary	7.4	299	15.7	115
Tertiary	12.4	178	22.4	58
<b>Age of the child</b>				
0 - 1	2.9	349		
1 - 2	4.0	531		
2 - 3	12.1	552		
<b>Younger sibling</b>				
Yes	8.6	81	10.1	69
No	6.7	1351	12.4	483
<b>Number of children under 15 in the family</b>				
1	6.3	654	13.0	216
2 or 3	8.1	683	12.9	294
4+	2.1	95	2.4	42
<b>Non-employed hh member</b>				
Yes	7.5	214	3.9	78
No	3.3	1218	13.5	474
<b>Place of residence</b>				
Budapest	13.5	96	16.2	37
Other settlement with a nursery	9.7	587	19.7	229
Other settlement with no local nursery	3.7	749	5.6	286
<b>Regions</b>				
Central Hungary	13.3	248	18.2	99
Central Transdanubia	4.2	191	6.4	78
Western Transdanubia	6.9	130	13.7	51
Southern Transdanubia	4.9	164	11.5	52
Northern Hungary	3.8	239	9.3	97
Northern Great Plain	6.3	268	9.3	108
Southern Great Plain	7.3	192	17.9	67

Type / size of settlement				
Budapest	13.5	96	16.2	37
County seat	11.5	148	20.7	58
Other towns	8.3	460	17.0	177
Villages over 5000 inhabitants	10.2	49	11.5	26
Villages with 2-5000 inhabitants	3.1	257	5.8	104
Villages with less than 2000 inhabitants	4.0	422	6.7	150
<b>Total</b>	<b>6.8</b>	<b>1432</b>	<b>12.1</b>	<b>552</b>

Source: own calculations based on the Hungarian LFS 2010.

**Table A2 The relative risk of enrolment in different social groups – heat map, Hungary, 2010**

	% of under 3's in nursery	% of children aged 2-3
<b>Mother's age</b>		
-25	0.71	0.72
26 - 30	0.79	0.80
31-35	1.46	1.47
36 -	0.91	0.73
<b>Mother's family status</b>		
Married	1.22	1.26
Living together	0.57	0.72
Single	0.90	0.35
<b>Mother's education</b>		
Primary	0.47	0.43
Lower secondary	0.59	0.46
Upper secondary	1.26	1.39
Tertiary	1.82	1.94
<b>Mother's employment status</b>		
Working	5.29	4.40
Unemployed or wants to work	0.63	0.42
Inactive	0.53	0.46
<b>Father's employment</b>		
No father in the household	0.90	0.35
Working	1.15	1.23
Not working	0.54	0.59
<b>Father's education</b>		
No father in the household	0.90	0.35
Primary	0.51	0.60
Lower secondary	1.00	1.05
Upper secondary	1.09	1.30
Tertiary	1.82	1.85
<b>Age of the child</b>		
0 thr 1	0.43	
1 thr 2	0.59	
2 thr 3	1.78	
<b>Younger sibling</b>		
Yes	1.26	0.83
No	0.99	1.02
<b>Number of children under 15 in the family</b>		
1	0.93	1.07
2 or 3	1.19	1.07
4+	0.31	0.20
<b>Non-employed hh member</b>		
Yes	1.10	1.12
No	0.49	0.32

<b>Place of residence</b>		
Budapest	1.99	1.34
Other settlement with a nursery	1.43	1.63
Other settlement with no local nursery	0.54	0.46
<b>Regions</b>		
Central Hungary	1.96	1.50
Central Transdanubia	0.62	0.53
Western Transdanubia	1.01	1.13
Southern Transdanubia	0.72	0.95
Northern Hungary	0.56	0.77
Northern Great Plain	0.93	0.77
Southern Great Plain	1.07	1.48
<b>Type /size of settlement</b>		
Budapest	1.99	1.34
Country seat	1.69	1.71
Other towns	1.22	1.40
Villages over 5000 inhabitants	1.50	0.95
Villages with 2-5000 inhabitants	0.46	0.48
Villages with less than 2000 inhabitants	0.59	0.55
<b>Total</b>	<b>1.00</b>	<b>1.00</b>

Source: own calculations based on the Hungarian LFS 2010.