

Equal Access to High Quality Child Care in the Netherlands

**Y. Emre Akgündüz and Janneke Plantenga
Utrecht University School of Economics (USE)**

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**Contact address
J.Plantenga@uu.nl**

I. Introduction

The number of children receiving some form of formal child care has grown rapidly in the Netherlands in the last two decades; in 2012 about 62% of all children in the age category 0-4 made use of child care facilities and among the two and three year old, the percentage is close to 90% (Brancheorganisatie Kinderopvang, 2012a.). The Dutch child care system for young children is essentially a two-tiered system, consisting of private child care centers and public playgroups. Child care centers provide non-parental care for young children whose parents are employed. Although almost all parents make use of these facilities on a part-time basis, the services may be offered up to 11 hours a day, 5 days a week. Playgroups are more child centred, focus only on children in the age category 2 to 4 and cover about 10 hours a week. Because of the difference in focus, children attending playgroups tend to be more from lower income families and from a minority background. In addition, specific programs for disadvantaged children are often organized within the context of playgroups. This concerns the so-called ‘VVE-programs’, focusing on early childhood education and care. The programs might cover approximately 15 hours a week, equivalent to about 3 or 4 morning/afternoons.

High quality child care benefit children’s cognitive and language skills, while low quality care can have a negative effect on development (NICHD Early Child Care Research Network, 2006). Until now, however there is little information on the use of high quality care and the difference between households in that respect. Though price variation between child care facilities in the Netherlands tends to be small, limited availability of high quality child care facilities in low income neighborhoods or difficulties in judging quality may limit access to high quality child care for families of low socioeconomic status. In addition, dual earner families from different cultural backgrounds may be sensitive to child care quality that conforms to their preferences when making child care choices. Thus, whether formal child care is used at all becomes a relevant question in the Dutch context.

In this paper, we investigate the state of equality of access for high quality care in the Netherlands for families of low socioeconomic status and different cultural backgrounds. The results can have implications about whether the two-tiered Dutch child care system with both private day care centres and public playgroups is able to

provide equal quality care across socioeconomic and ethnic groups. For our analysis, the first wave of the Pre-Cool dataset is used, collected in 2010 and 2010. The dataset includes indicators on both structural and process quality in both day care centres and playgroups, data on children's development, and socioeconomic characteristics of the staff and parents. The Pre-Cool data focuses exclusively on two year olds. Though the first wave of the dataset available in 2012 has some missing data issues, the ability to link parents' characteristics, children and formal child care services' attributes make it an ideal dataset to investigate access to high quality child care.

The outline for the paper is as follows; the second section gives a general overview of the system, use and quality of child care in the Netherlands. The third section introduces the Pre-Cool dataset and describes the methodology used in the multivariate analysis in section 4. Section 4 starts by providing an empirical analysis of the determinants of formal care use and the determinants of the type of formal care. The second part of section 4 analyzes the differences in quality of care received by children with different backgrounds.

2. Child Care in the Netherlands: availability, costs and quality

The female labour force participation rate in the Netherlands is relatively high. It was 69.3% in 2010 according to Eurostat data and 10 percentage points above the EU-15 average, though 76.5% of employed women work part-time. Furthermore, the parental leave system is not particularly generous when compared to other northern European countries like Germany or Sweden, with 16 weeks of paid maternity leave and 26 weeks of parental leave, paid at a fairly low level by a fiscal benefit (Plantenga and Remery, 2009). In addition, the take up rate of parental leave is less than 50% among mothers and about 20% among fathers, with quite a large number of young parents taking up parental leave on a part-time basis. The large number of dual-earner households and the limited parental leave imply a substantial need for non-parental child care. High potential demand does not directly translate into a large child care sector, however, since unpaid informal child care is used nearly at the same rate as formal child care (Statistics Netherlands, 2012). The high rate of part-time work

among Dutch women presumably increases both supply and demand for informal care.

Despite the widespread use of informal care, both the demand and supply of formal child care services has increased rapidly over the last decade. Formal child care services in the Netherlands can be roughly divided into four types: home based child care (*gastouderopvang*) in which small group of children are cared for in the private home of the care taker, playgroups (*peuterspeelzaal*), day care centres (*kinderdagverblijf*) and after-school care (*buitenschoolse opvang*). Home based child care, day care centers and afterschool care are all covered under the Child Care Act of 2005. The explicit objective of the Child Care Act is to stimulate the operation of market forces so that child care providers would respond to parental wishes in an efficient way. As a result of the change towards a demand driven financing system, publicly provided day care in the Netherlands disappeared. Instead only private-for-profit (60% of all Dutch child care organizations) or not-for-profit providers (the remaining 40%) are now operating and competing in the child care market (Noailly and Visser 2009). Whereas Child Care Act regulates care services for dual earner households, local authorities are responsible for the playgroups which are targeted towards children in the age category 2-4, independent of the labour market status of their parents. In addition, local authorities may run specific programs for children from a disadvantaged background which most of the time are also part of the playgroup system. As children of dual earner families mostly make use of day care centres, children in playgroups tend to come from lower income groups and/or from a minority background. This specific setting gives the Dutch child care system for young children a two-tiered appearance. Market forces dominate the care services for dual earner households, while lower income or disadvantaged minorities with children aged 2 to 4 have the option of public playgroups.

Until the Dutch Child Care Act of 2005, day care centres in the Netherlands were financed through a government subsidy towards the local provisions and parents' own contributions. The Child Care Act changed the system to one of government reimbursements to parents who would pick and choose their formal care service without any subsidies for the providers. In principle, the current system allows the child care providers to freely set any price, though in practice there is a 'soft cap' due to the maximum price (€6.36 per hour in 2012) that the parents can receive reimbursements for. In 2008, 70% of the surveyed day care centres took into account

the maximum price that the parents can receive their subsidies for (Berden and Kok, 2009). Similarly, results from the Pre-Cool survey done in 2011 show that about 84% of the institutions that provided price information had an hourly child care price in the range of 6 to 7 euro. Thus, though the government regulation on price is not direct, it limits the variation in prices between day care centres by limiting how far above the maximum subsidized price hourly prices can be raised.

The net price that parents have to pay for child care services that are covered by the Child Care Act has a large range. Point of departure is that the financing is on a tripartite basis, with employers paying one third of the actual child care costs. Parents' share of the child care costs then ranges between 3.5% for low and 66.6% for high income households (Plantenga, 2012). The parental contribution is set at a national level and thus standardized. In contrast, the prices of playgroup services are set by the local authorities and may differ between municipalities. Usually parents pay a contribution depending on income. As playgroups are not targeted at working parents, there is no contribution by the employer.

A straightforward application of economic theory would hypothesize an increase in responsiveness by providers to parents' preferences as a result of the 2005 Child Care Act. The concern in the Dutch child care market and policy has for some time been the lacking supply and availability; lacking supply subjects parents to waiting times and more distance between their homes and formal child care service. Since 2005 the available number of child care places has in fact increased; available day care places have risen from 111,000 in 2004 to 159,000 in 2008 (Statistics Netherlands, 2012). The rapid increase in child care places continued until 2011 with demand and supply being now more or less in equilibrium with small waiting lists (Centraal Planbureau, 2011).

While the switch to demand side subsidies and increased responsiveness to parental preferences may improve supply and flexibility in day care centres, it is not clear to what extent quality of child care will improve. There can be information asymmetry problems in child care markets, since parents may be unaware of the quality they buy from their child care provider (Mocan, 2007). Parents may also be rather unresponsive to quality changes because of high switching costs. A 2008 survey in the Netherlands asked parents when they would consider switching their child care provider and only 7% responded that higher quality might be a reason to switch (Plantenga, 2012). If quality is considered to be exogenously given by the

parents and plays little role in their child care provider choice or if they are unable to distinguish between high and low quality care, parents' preferences will not drive child care quality higher under the new demand side subsidy system. In addition, there may be differences in the quality between playgroups and child care services as they are regulated in different ways.

Measuring quality

Considering the growing use of formal child care services in the Netherlands and the importance of these formative years for human capital accumulation and future earnings, the value of ensuring high quality care is high (Kamerman, 2000; Heckman, 2006). The 2005 Child Care Act does not stipulate any quality standards with regards to child / staff ratios beyond verbal encouragement, allowing instead for self-regulation through the quality standards agreed upon by the (representatives of) the child care providers and parental organizations (OECD, 2006; Bracheorganisatie Kinderopvang, 2012b). The stipulated quality standards provide a benchmark for local government, which is charged with registration and inspection. Unlike the day care regulations, the quality in playgroups is regulated directly by the state through the 'Law for Child Care and Quality Requirements for Playgroups' (WKO). The most significant difference between the content of the regulations for day care and playgroups is in the child to staff ratios. The child to staff ratio in playgroups is at eight to one while the requirement for 2 year olds in day care centres is six to one.

A fundamental problem in ensuring high quality child care is the measurement and definition of quality. Development psychologists often see the regulated 'structural quality' factors like the education level of caregivers or child to staff ratios as determinants of child care quality rather than measures of it (Blau, 1997). A child's development is instead hypothesized to be affected by the more abstract 'process quality' measures (Howes et al., 2008). Process quality is measured through observations made within the child care setting, with attention paid to the extent and time devoted to activities that cultivate social, intellectual or emotional development. Though there is some evidence that structural quality measures have a positive correlation with process quality (Burchinal et al., 1996), other studies find insignificant effects (Blau, 1997). Nevertheless, even if their casual effect on process quality is shown to be limited once centre location and region are controlled for, Blau (1997) finds indicators such as the child staff ratio to be highly correlated to process

quality measures. If parents can observe structural quality, they can at least get a good signal of the underlying process quality as well.

Pedagogical research in the Netherlands has been tracking the process quality of child care facilities for some time. Dutch child care quality has been followed by the successive projects of Dutch Consortium for Child Care Research (NCKO) since 1995. The measurements by NCKO have focused exclusively on day care centres. The initial results from the 1995 wave found the quality of Dutch child care in day care centres to be above levels found in UK and USA (Van Ijzendoorn et al., 1998). A follow-up study from 2001 using a similar methodology in the same project found declines in quality, with some day care centres scoring particularly low on process quality measures (Gevers Deynoot-Schaub and Riksen-Walraven, 2005). The two more recent follow-ups in 2005 and 2008 similarly found declines in process quality. The overall process quality scale which ranges from a maximum of seven to a minimum of one, decreased from about five in 1995 to three in 2008. This translates into devolution from above average quality child care in Dutch day care centres to below average quality. Already in 2005, the researchers involved in the project concluded that the Netherlands could no longer be ranked among countries with high quality child care (Vermeer et al., 2008).

A more recent measurement of process quality of child care in the Netherlands is being done within the Pre-Cool project, which focuses on children aged 2. Unlike the previous projects by NCKO, Pre-Cool collects data on process and structural quality of both day care centres and playgroups, allowing for a more complete picture of the overall quality of formal child care services in the Netherlands. For our analysis, the first wave of this survey collected in 2010 and 2011 is used. The process quality is measured using the CLASS (Classroom Assessment Scoring System) through multiple 20 to 30 minute observations of classrooms. There are several groups measured in a total of 164 formal child care services in the current wave. Among these 164, 93 are playgroups and 70 are day care centres. While groups within the centres are observed individually, for the purposes of this study, multiple measurements of each group are averaged to create an average score for each formal child care service. CLASS is made up of three dimensions that are assumed to be measuring different aspects of care quality: emotional support, classroom organization and instructional support. Each dimension is measured through multiple factors on a

scale from 1 to 7. Values of 6 and 7 are considered to be high, the range between 3 to 5 average and below 3 poor.

Beyond observing the CLASS scores, the observers from Pre-Cool made a count of staff and children in the classrooms. While the structural factors like the child to staff ratio is regulated by the agreement between child care providers and parental organizations, there is still some variation in the child to staff ratios within groups. Not all groups in day care centres adhere to the expected 1 to 6 ratio for 2 year olds at all times. Therefore we use the child to staff ratio averaged across the day care centre or playgroup as an indicator of structural quality. Playgroup regulations in law allow for slightly higher child to staff ratios.

Table 1 shows the means and standard deviations for all the available process quality measures for day care centres and playgroups. Negative atmosphere is somewhat unique, since the ideal value is 1 rather than 7. Overall, Dutch formal child care services have above average quality according to the CLASS scale in the emotional factor measures. This is also the case for instructional support, which scores around 5 for both child care and playgroups. For the cognitive development measures, the reverse is true as all three measures are either slightly above or below 3. The gap between the scores for emotional and cognitive support is in line with previous measures of Dutch day care centres' quality that use different measurements (Vermeer et al., 2008; NCKO, 2010). As for the structural factor available, child to staff ratio, the observed average is below the prescribed ratio of 1 caregiver to 6 children for 2 year olds. The standard deviation is large however, meaning that not all day care centres match this criterion in practice. Finally, any difference between day care centres and playgroups is socially important given the over-representation of low income and minority children within playgroups. On average, there is no clear difference in quality between playgroups and day care centres. If anything, playgroups have slightly higher average scores for cognitive development. Apparently, the two-tiered system in the Netherlands works well in ensuring that formal child care services are available to all without generating any inherent gaps in the quality of child care accessible to different groups.

Table 1: Averages and Standard Deviations of Structural and Process Quality in Dutch Day Care Centres and Playgroups

Child Care Quality Measures	All Centres	Day care	Playgroups
<i>Emotional Support</i>			
Positive Atmosphere	5.42 (0.88)	5.41 (0.93)	5.43 (0.84)
Negative Atmosphere	1.17 (0.26)	1.84 (0.26)	1.16 (0.26)
Teacher Sensitivity	5.28 (0.73)	5.29 (0.68)	5.29 (0.76)
Regard for Child Perspectives	4.22 (0.80)	4.34 (0.73)	4.15 (0.83)
<i>Instructional Support</i>			
Behavior Management	5.00 (0.76)	4.96 (0.71)	5.05 (0.76)
<i>Cognitive Development</i>			
Concept development	3.75 (0.86)	3.58 (0.74)	3.88 (0.92)
Quality of Feedback	2.93 (0.78)	2.58 (0.75)	3.04 (0.78)
Language Stimulation	3.22 (0.98)	3.05 (0.92)	3.36 (1.01)
<i>Structural Factors</i>			
Child to staff ratio	5.11 (1.53)	5.25 (1.05)	5.03 (1.80)

Source: Pre-Cool 2012

*Standard deviations in parentheses

Compared to a recent study using CLASS to measure child care quality in Finland (Pakarinen et al., 2010), the scores found show similar patterns. The mean scores for emotional factors are generally higher than the mean scores for cognitive development. However, the means for cognitive development in the Pre-Cool sample appear to be lower than the findings for Finland. This may be due to exceptional quality in Finnish child care centres rather than a particularly poor level in Dutch centres. The mean measures in table 1 appear to be equal to or in some cases higher than those found for the United States (Howes et al., 2008), although this is not very encouraging given the concerns about the possible adverse effects on child development of using child care in the U.S (Herbst and Tekin, 2010).

3. Data

Micro level analysis in section 4 attempts to determine whether there are differences by socioeconomic status and background with respect to formal care use and quality. The first part of section 4 presents a multivariate analysis of the differences in the use and type of formal child care. Afterwards, the determinants of the quality of child care received are analyzed. In this section, we describe the data that is used in section 4 for the regression analysis.

Apart from data on child care quality, the Pre-Cool dataset includes data on parents' characteristics of children aged 2, collected from a survey questionnaire sent to the parents. The selection of the child care institutions is not completely random but is rather representative across regions. Children were selected based on the playgroups and day care centres that are being surveyed. There is some bias towards children from minority backgrounds and playgroups to ensure their sufficient representation. The dataset on children in day care centres and playgroups is complemented by a cohort of children who do not receive care from a formal child care service or make use of child care services that are not observed for process quality. As such, the full sample is made up of two subsamples; one fully and the other partially observed without process quality or child development information. It is worth noting that the data on children in the partially observed subsample include some missing values since it is based on the parental questionnaires rather than centre surveys.

Table 2: Children, aged 2, in Pre-Cool Sample

	Total	In Formal Care	Day care	Playgroups
Full Sample	1235	1108	726	425
Fully Observed	495	495	275	220
Partially Observed	740	613	433	199

Table 2 provides information on the sample make-up. We limit the analysis to parents who are currently residing with a partner. Decision making process for single

parents is more constrained since one partner staying at home to take care of the child is not an option. 77 children attend both day care and playgroup in the full sample, and for 34 of the 77 there is no child development or centre quality information. Although there are more individual playgroups than day care centres observed as a part of Pre-Cool, there are more children in day care centres that we have information about..

Table 3: Summary Statistics of Independent Variables

	Full Sample	Observed in Day care	Observed in Playgroups
<i>Mother's Education</i>			
College	16.76%	16.00%	4.09%
HBO	31.34%	37.82%	15.91%
<i>Father's Education</i>			
College	16.60%	14.91%	4.09%
HBO	23.81%	30.91%	17.73%
<i>Demographics</i>			
Dutch Mother	82.67%	90.18%	77.27%
Dutch Father	82.02%	86.91%	74.55%
<i>Father's Income in Euros</i>			
1000-2000	40.61%	38.55%	43.18%
2000-3000	28.89%	35.27%	20.91%
3000-4000	5.05%	5.45%	4.55%
>4000	4.44%	4.73%	4.09%

The control variables of interest are straightforward. Two higher level education dummies, college and high level vocational training (HBO), are used for both men and women. For ethnic background, indicator variables are included for Dutch mothers, fathers, and families with both parents from the Netherlands and grandmothers' nationality. Additional controls are added for household characteristics like the number of younger and older siblings and father's income. Mother's income is not controlled for due to both multicollinearity and endogeneity issues. Mother's income is likely to be highly correlated with the socioeconomic background variables already in the analysis. Additionally, mother's decision to work is more likely to be jointly taken with the decision to use child care and may be influenced by child care

quality. Table 3 presents the percentages of parents in the socioeconomic and ethnic categories of interest. Unsurprisingly, there are significant differences between the socioeconomic characteristics and ethnicities of children in day care centres and playgroups as seen in table 3. Children in day care centres tend to be from more affluent and well-educated Dutch families

Summary statistics of the dependent variables used in the analysis are shown in table 4. The dependent variables for the use of child care services and type of service regressions are binary variables. In the former, a question from the parental questionnaire is used, with 0 being the value when formal care is used and 1 otherwise. Due to the large number of missing data in the parental questionnaire on playgroup and day care choices, the sample is limited to children observed at their child care institutions for the type of care regression. The variable in this case is 1 if the child was observed in a day care centre and 0 if observed in a playgroup. The choice for dependent variables in estimating the effects on quality of care received is more complicated. Four dependent variables are used to measure access to quality. Even though there are multiple factors affecting each domain in the CLASS measures, our interest is more general than the effects on each individual factor. To summarize the domains into fewer indicators and reduce the number of dependent variables, a factor analysis is performed using the principal component factors (PCF) method. This allows us to extract summary variables for “emotional support” and “cognitive development” domains that capture most of the variations in the measurements under these domains in the quality of formal child care services. Since PCF involves standardizing the variables, the values for the dependent variables used for emotional support and cognitive development have a mean of about 0 and variance of 1. Higher values continue to indicate higher quality. For institutional support, there is only one measure and behavior management is used directly as a dependent variable. Similarly, staff to child ratio is the only structural quality indicator used. There is not a large difference in any of the quality measurements between day care centres and playgroups. Day care centres appear to have a slightly higher average score in emotional support while the reverse is true for cognitive development where playgroups have a higher average score.

Table 4: Summary Statistics of Dependent Variables¹

Dependent variables	Full Sample	Day care	Playgroups
<i>Child Care Use and Type</i>			
Formal Child Care Used	0.89 (0.31)		
Child Care Type is Day care	0.56 (0.50)		
<i>Quality Variables</i>			
Child to Staff Ratio	5.38 (1.36)	5.55 (1.09)	5.19 (1.62)
Emotional Support Factor	0.02 (0.99)	0.13 (1.01)	-0.10 (0.92)
Cognitive Development Factor	0.02 (1.00)	-0.09 (1.00)	0.15 (0.98)
Behavior Management	4.98 (0.68)	4.99 (0.68)	5.00 (0.66)

*Standard deviations in parentheses

4. Analysis

Use of Formal Child Care

Table 5 presents the results from a probit model for the use of formal child care services in the full sample. A second probit model is fit for the choice between playgroup and day care, with the sample limited to children in at least one type of formal care from the fully observed dataset. As such, the children in the sample of the second probit regression differ in whether they have been observed in a playgroup or day care.

The results of model 1 are similar to what would be expected. Parents with college education tend to be more likely to use formal care once income is controlled for. The coefficients are not very large however. A college degree for the father increases the probability to use formal care by 6%. Surprisingly, father's income has a

¹ Table 4 gives the summary statistics for the dependent variables used in the regressions where children are the unit of observation. Factor analysis is performed with the children as the unit of observation. The values presented in table 1 for the average quality in Dutch day care centres and playgroups are based on the sample of child care institutions rather than the children attending them. Additionally, complete information on the parental characteristics of children from 144 institutions is available while quality information available is from 163 institutions.

negative effect though it is only significant in the category of those earning between 1000 and 2000 euros. This may be due to higher use of paid child minders among the high income levels. Alternatively, it may be due to the bias in the sample towards the observation of child care quality of parents with lower income levels.

Table 5: Marginal Effects on Formal Child Care Use for 2 Year Olds

Model #	(1)	(2)
	Formal Care Use	Day care
<i>Mother's education</i>		
College	0.038 (0.023)	0.322*** (0.062)
HBO	-0.005 (0.020)	0.267*** (0.050)
<i>Father's education</i>		
College	0.063*** (0.020)	0.200** (0.085)
HBO	0.026 (0.019)	0.132** (0.058)
<i>Demographics</i>		
Dutch mother	0.025 (0.031)	0.030 (0.100)
Dutch father	0.037 (0.044)	-0.042 (0.106)
Both partners Dutch	0.050 (0.032)	0.274*** (0.086)
One Dutch grandmother	-0.046 (0.032)	-0.043 (0.119)
Both grandmothers Dutch	-0.022 (0.028)	0.008 (0.091)
<i>Father's income</i>		
1000-2000 Euro	-0.057** (0.028)	0.074 (0.065)
2000-3000 Euro	-0.031 (0.031)	0.145** (0.067)
3000-4000 Euro	-0.089 (0.059)	0.055 (0.125)
<4000 Euro	-0.016 (0.061)	-0.022 (0.133)
<i>Household characteristics</i>		
# of Younger Siblings	-0.014 (0.022)	-0.083 (0.061)
# of Older Siblings	-0.037*** (0.009)	-0.101*** (0.030)
<i>Child Health</i>		
Underweight	0.002 (0.027)	0.011 (0.077)
Observations	1214	495

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses

Model 2 shows that the effects are much stronger if we restrict the analysis to whether day care centres are used rather than playgroups. Since day care centres are used by dual earner families, children from lower socioeconomic and minority backgrounds are much more likely to use playgroups. The divide between the type of child care chosen by single earner and dual earner families leads to a selection effect, with high income parents using day care centres. While there may not be a large gap in participation in formal care, the total hours of formal child care may be very different since playgroups tend to be used for shorter hours.

Quality of Child Care

The main purpose of the analysis in this section is to see whether all children have access to similar quality child care. When interpreting the results within the two-tiered Dutch child care system, any differences between socioeconomic groups or ethnicities in terms of the quality of care can be attributed to two different reasons. First, quality of care within the day care market or among playgroups may diverge across socioeconomic groups due to differences in neighborhoods, information levels or demand for high quality child care. Second, any effects of lower socioeconomic or minority statuses may be the result of inherently lower quality in available playgroups which are used more often by lower income and minority groups.

A maximum likelihood selection model is used based on Heckman (1979) in estimating the quality of the formal child care service used. The model estimates two equations simultaneously, a selection equation for whether child care quality is observed and another equation for with the child care quality measure as the dependent variable. There are two concurrent selection processes in our data. A more straightforward ordinary least squares regression on the subsample of children with an observed formal child care service quality would be biased if parents use formal care based on the quality of care they can get or if there was sample selection in the data collection procedure for the CLASS observations. The key issue in estimating a selection model is the identification of the selection equation through exclusion restrictions to avoid multicollinearity in the quality regression (Puhani, 2000). For our analysis, the number of younger and older siblings and whether the child was underweight at birth are used as exclusion restrictions and are only included in the selection equation. The reasoning is that parents with more children or a child with

health problems may be less likely to use formal care, while these factors are unlikely to affect the quality of the formal child care services chosen.

Table 6: Access to Quality Child Care for 2 Year Olds

Model #	(1)	(2)	(3)	(4)
	Child/Staff Ratio	Emotional Support	Instructional Support	Behavior Management
<i>Mother's education</i>				
College	-0.094 (0.187)	0.538*** (0.186)	-0.135 (0.165)	0.250** (0.126)
HBO	0.021 (0.134)	0.312** (0.130)	-0.055 (0.111)	0.109 (0.086)
<i>Father's education</i>				
College	0.246 (0.185)	0.186 (0.202)	-0.246 (0.179)	0.055 (0.131)
HBO	0.136 (0.146)	-0.132 (0.136)	-0.267** (0.112)	-0.012 (0.090)
<i>Demographics</i>				
Dutch mother	-0.050 (0.249)	-0.419* (0.229)	-0.134 (0.185)	-0.016 (0.141)
Dutch father	0.050 (0.243)	-0.017 (0.244)	0.313 (0.198)	0.050 (0.146)
Both partners Dutch	0.229 (0.292)	-0.133 (0.197)	-0.123 (0.171)	-0.251* (0.129)
One Dutch grandmother	-0.025 (0.343)	0.510* (0.275)	0.056 (0.237)	0.198 (0.167)
Both grandmothers Dutch	0.225 (0.238)	0.120 (0.197)	-0.005 (0.158)	0.100 (0.125)
<i>Father's income</i>				
1000-2000 Euro	-0.127 (0.183)	0.519*** (0.158)	-0.124 (0.130)	0.146 (0.106)
2000-3000 Euro	-0.182 (0.175)	0.528*** (0.169)	0.002 (0.139)	0.237** (0.104)
3000-4000 Euro	0.282 (0.403)	0.651*** (0.247)	-0.048 (0.225)	0.342** (0.163)
>4000 Euro	-0.149 (0.308)	0.279 (0.314)	-0.379 (0.293)	0.138 (0.211)
Constant	5.242*** (0.260)	0.740*** (0.200)	0.365* (0.211)	5.319*** (0.125)
Observations	1235	1235	1235	1235
Quality observations	495	495	495	495

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

of younger siblings, # of older siblings and underweight at birth used as exclusion restrictions.

Table 6 shows the effects of family backgrounds on the quality of formal child care services received in both playgroups and day care centres. The same regressions are fitted in a subsample that excludes children in playgroups and are presented in appendix 1, even though excluding children in playgroups diminishes the variation of

the quality measures in the sample. In all cases the selection equations are omitted. At least one of the exclusion restrictions used have significant effects on the selection equation in models 2 and 4 and are nearly significant in model 3. In models 2 and 4, the independence of selection and quality equations is rejected and the Heckman model seems appropriate. The coefficient signs do not change when OLS regressions are fitted in models 1 and 3 though some of the variables become more significant.

The results suggest that children of parents with higher education and income receive formal child care with higher quality emotional support and better behavior management. The results do not seem to be the result of an inherent difference in the quality of playgroups and day care centres. Though children from lower socioeconomic backgrounds do use playgroups more, the average quality in playgroups is either equal to or better than the day care centres. Furthermore, the regressions fitted in a subsample excluding playgroups in Appendix 1 show that father's income continues to be significantly correlated with quality of emotional support and behavior management. Instead, a better judgment of care quality, willingness to pay prices above the government cap for child care subsidies, flexibility in choosing care centres further away from home could all contribute to this apparent inequality in the use of child care quality. Alternatively, children from lower socioeconomic backgrounds may be limited in their options the centres available in lower income neighborhoods are of lower quality.

A surprising finding is the negative coefficients on the controls for Dutch parents, which are significant at the 10% level for emotional support and behavior management. Taken together with the results on the use of child care, these results suggest that Dutch parents use more child care but the centres they use tend to be of lower quality. The statistical significance of this result is diminished for the subsample of children in day care, though the coefficients are still negative.

Table 6 shows almost no significant effects from any of the factors for the child to staff ratio and instructional support measures. Children with highly educated fathers seem to even get slightly lower quality care in terms of instructional support. The variation by socioeconomic background is thus mostly in terms of emotional support and behavior management measures. The emphasis on behavior and regulation is in line with research by development psychologists about what Dutch parents care the most about when caring for their children (Harkness et al., 2007). Additionally, factors influencing emotional support such as a positive atmosphere in

the classroom may simply be more visible to parents, allowing parents with higher socioeconomic backgrounds to either choose better formal child care services or demand their provide to supply higher quality care.

5. Conclusion and Discussion

The Dutch child care system is essentially two-tiered. Child care subsidies in the day care market are given directly to parents, meaning that the market should be dominated by demand side considerations and consumer preferences. In fact, the switch to a demand side subsidy in 2005 appears to have been successful in terms of improving on the availability of day care. Although there are still some waiting lists, the market was able to respond to the rise in demand during the last decade, as a result of which the number of children in day care has increased dramatically. On the other hand, playgroups continue to be second major form of formal care, especially among the 2 and 3 year olds. The challenge for the Dutch child care sector is to ensure that the day care market responds to parents' preferences in quality, and that the playgroups at least match the level of child care quality provided in day care centres.

The equality of quality of care in playgroups and day care centres has largely been achieved according to Pre-Cool data. Playgroups appear to do at least as well as day care centres in most measures and even score higher in cognitive development measures. As such, the two-tiered system in the Netherlands works well in ensuring that formal child care services are available to all without generating any inherent gaps in the quality of child care accessible to different groups.

Despite the similar levels of child care quality in day cares and playgroups, there remain differences in the quality of child care that children with different socioeconomic backgrounds receive. Children of parents with more income and higher education levels appear to attend formal child care services with higher quality of emotional support and behavior management. There is no significant difference in the cognitive development measure, but these are low across all child care services anyhow. The switch to a more demand driven system in the day care market in 2005 may have raised availability and flexibility, but demand side pressures may have contributed to inequality of child care quality if higher quality child care is being demanded by parents with high income. Allowing for parents' preferences to be better

represented through the market also allows for the differences in preferences and information asymmetries to be more visible.

The regulatory attempts on the structural quality in both day care centres and playgroups do not seem to have succeeded in keeping child care quality in the Netherlands high or equal across socioeconomic groups. The large rise in the availability of day care centres shows the dramatic effect that consumer preferences can have on a sector. Following the same reasoning, the quality of formal child care services might increase if only there was a demand for more quality. This presumes however, that parents have information on the quality of child care services. This, however, is hardly the case. Given the difficulty parents have in judging quality, the market would function better if information on day care centres' quality was publicly available. In fact, a similar strategy was successful in raising quality in Dutch secondary schools (Koning and van der Wiel, 2010). The challenge continues to be in identifying factors that determine or are indicators of process quality which are easily measurable.

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Appendix 1: Quality Effects Excluding Playgroups

Model #	(1)	(2)	(3)	(4)
	Child/Staff Ratio	Emotional Support	Instructional Support	Behavior Management
<i>Mother's education</i>				
College	-0.436* (0.252)	0.341 (0.227)	-0.306 (0.213)	0.234 (0.164)
HBO	0.009 (0.197)	0.006 (0.178)	-0.273* (0.143)	0.032 (0.118)
<i>Father's education</i>				
College	-0.169 (0.264)	0.098 (0.242)	-0.128 (0.226)	0.047 (0.159)
HBO	0.264 (0.206)	-0.176 (0.187)	-0.109 (0.157)	-0.066 (0.126)
<i>Demographics</i>				
Dutch mother	0.419 (0.349)	-0.502 (0.353)	-0.184 (0.256)	-0.084 (0.243)
Dutch father	0.060 (0.387)	-0.005 (0.333)	0.155 (0.221)	0.224 (0.197)
Both partners Dutch	0.164 (0.335)	-0.288 (0.317)	0.149 (0.248)	-0.343* (0.192)
One Dutch grandmother	-1.056** (0.415)	0.851** (0.390)	0.416 (0.345)	0.285 (0.235)
Both grandmothers Dutch	0.453 (0.312)	-0.018 (0.274)	-0.020 (0.206)	0.006 (0.182)
<i>Father's income</i>				
1000-2000 Euro	-0.225 (0.256)	0.512** (0.244)	0.055 (0.212)	0.127 (0.153)
2000-3000 Euro	-0.253 (0.256)	0.528** (0.247)	0.074 (0.192)	0.260* (0.155)
3000-4000 Euro	-0.165 (0.397)	0.672* (0.357)	-0.146 (0.337)	0.419* (0.232)
>4000 Euro	-0.233 (0.444)	0.583 (0.459)	-0.141 (0.439)	0.382 (0.327)
Constant	3.932*** (0.374)	1.258*** (0.319)	-0.162 (0.620)	5.601*** (0.253)
Observations	816	816	816	816
Quality observations	276	276	276	276

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

of younger siblings, # of older siblings and underweight at birth used as exclusion restrictions.