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World of Labor
Evidence-based policy making

Maternity leave versus early childcare—What are the long-term consequences for children?

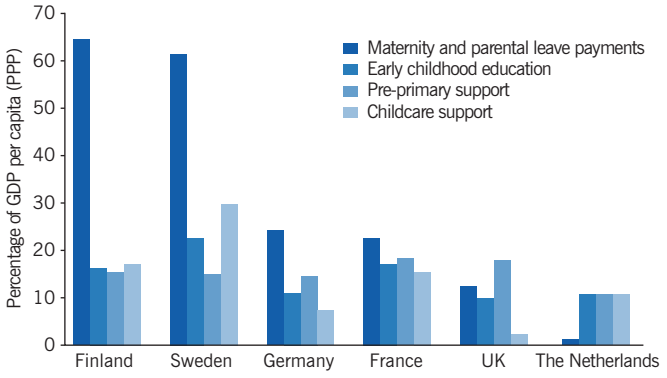
Despite increasingly generous parental leave schemes their advantages over subsidized childcare remain unclear

Keywords: publicly subsidized childcare, maternity leave schemes, long-term outcomes

ELEVATOR PITCH

Most OECD countries spend substantially more on maternity leave schemes than on early childcare. However, given high tax burdens and rapidly aging populations, female labor force participation is critically needed. Moreover, it is important to know whether the main beneficiaries, the children themselves, reap more benefits from one or the other in the long term. The first cohorts exposed to the introduction or extension of maternity/paternity leave schemes and subsidized childcare programs have now completed education and entered the labor market, allowing an investigation of these programs' long-term economic effects.

Spending per child on parental leave schemes, childcare, and pre-primary education, 2013



Source: Based on Figure 1.

KEY FINDINGS

Pros

- Expansions of universal formal childcare generate positive long-term effects on child outcomes.
- Effects seem to be strongest for cognitive outcomes, in particular language skills.
- Children from low socio-economic backgrounds seem to benefit most, while those from high socio-economic backgrounds do not gain as much but are not hurt either.
- High-quality childcare, which brings together children from diverse backgrounds at an early age, enhances intergenerational mobility.

Cons

- Extensions of maternity leave beyond the first few months generate few positive long-term effects on child outcomes, especially when the alternative care quality is high.
- Not all childcare expansions are successful; they need to be of high quality and have widespread societal support.
- Children's non-cognitive outcomes suffer when childcare is of poor quality or if weekly hours spent in care are high.
- Not all children benefit equally from childcare, and varying effects have been found by gender and family income.

AUTHOR'S MAIN MESSAGE

Governments should subsidize universal formal childcare, both to meet labor demands in aging societies, and to help develop important skills during the critical early years of a child's life. Such investments generate substantial long-term returns in educational and employment outcomes, but are most apparent for children from low and middle socio-economic backgrounds. However, care must be taken to counter any deterioration in non-cognitive skills associated with increased time in childcare, and broad-based societal acceptance and support are necessary to ensure that childcare provision is of sufficiently high quality.

MOTIVATION

The African proverb "It takes a village to raise a child" implies a shared responsibility of the parents, the community, and society for developing a child's full potential. To optimally support a child, one needs to pool the expertise of several actors/caregivers, not just the child's parents. Such resource pooling balances out the impacts of having less-able parents. Yet many countries choose to invest mainly in supporting parental leave schemes rather than public childcare during early childhood. These leave schemes are taken up mainly by mothers, implying a single caregiver model. Such a model entails greater risk and a more limited learning environment, especially if the mother is low-educated, and could potentially lead to insufficient investment during a child's early years. On the other hand, a period of infant–mother attachment is essential for establishing and sustaining breastfeeding and for developing a strong socio-emotional foundation.

Excellent earlier reviews of this now maturing literature are available (see [1] among others). By examining a wide number of studies on the long-term effects of maternity leave schemes and childcare expansion and contributing some original results, this article sheds light on the long-term effects on children of alternative care arrangements in early childhood.

DISCUSSION OF PROS AND CONS

Background and differences between countries

In theory, investments in formal, high-quality early childhood care and education (ECCE) should produce substantial long-term benefits. First, because the receptivity of the brain is at its highest during infancy, and, second, because skill acquisition has been shown to be a dynamic, self-productive, and cumulative process. The evidence on the long-term benefits of ECCE mainly originates from programs targeted toward children from disadvantaged backgrounds, and the long-term returns include decreased crime and increased earnings as adults. There is skepticism, however, as to whether universal formal childcare programs available to all children will yield high returns because they involve providing costly (potentially unnecessary) subsidies to middle- and high-income families. On the positive side, there would likely be broad popular support for such a program. Also, peer effects arising within a universal program may be quite different from those in a targeted program (e.g. positive spillover effects of having peers from better backgrounds).

An alternative to providing subsidized childcare is to pay parents to stay at home as caregivers. Over time, countries have expanded both maternity and, increasingly, paternity leave schemes, and some have even adopted cash-for-care policies. For instance, in 2008 Sweden adopted a cash-for-care policy under which municipalities compensated parents of children between the ages of one and three for not using public childcare. This policy was discontinued in 2016 because of negative effects on female employment, particularly in rural areas. Cash-for-care policies have also been instituted in Finland (since 1985) and Norway (since 1998) and still exist today. Generally, the payment is a flat rate and rather low, and therefore the take-up is mainly by low-educated mothers.

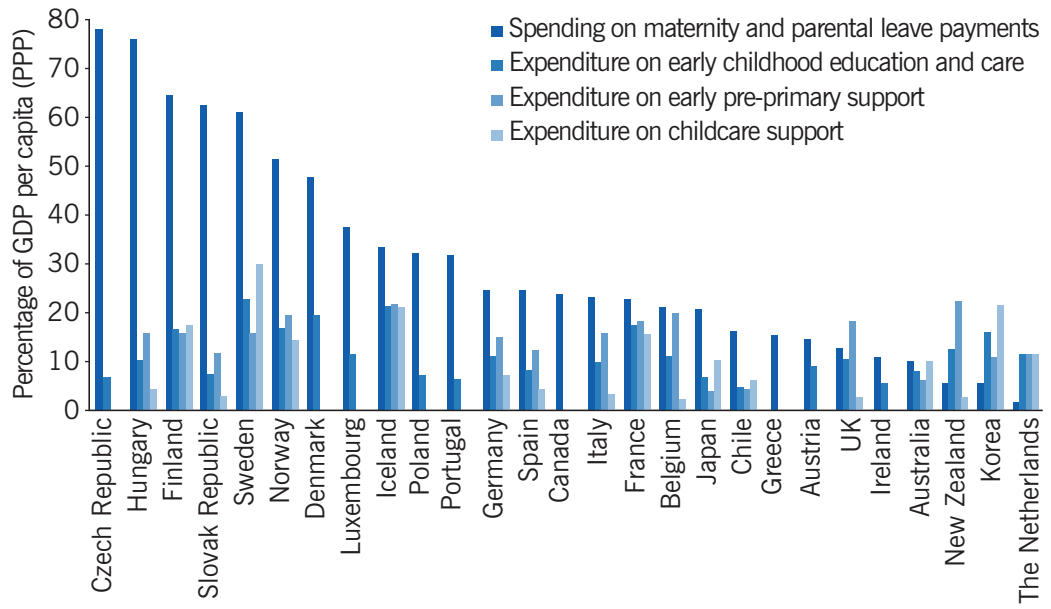
In many cases, reliable evidence on both types of policies originates from Scandinavia because of their early adoption of these programs and due to the availability of population

register data that follows entire cohorts of children and their families over decades. In fact, the Scandinavian countries have for years been expanding and financing universal childcare *and* supporting long and generous maternity leave schemes. The correlation between spending on leave schemes and spending on childcare (based on the data in Figure 1) is negative when excluding the Nordic countries (−0.06) and strongly positive (0.49) when including them. Thus, apart from the Nordics, most OECD countries make a trade-off of investing in parents (mainly mothers) as childminders versus investing in public childcare.

Long-term effects of maternity leave expansions

In 1984, the Danish government increased birth-related leave by almost 50%, from 14 to 20 weeks. A study from Denmark compares outcomes of children born two months before and two months after this reform [2]. Results show no significant differences in reading scores, the probability of high school enrollment, or high school grade point average between these groups. Additionally, maternal career outcomes 10–15 years later are either unaffected or slightly positively affected. The article discusses some reasons for the non-findings: (i) the counterfactual type of care to parental care in Denmark is high-quality childcare; (ii) less pressure on the daycare system may have meant better conditions for those attending it; and (iii) parents make compensating investments—for instance giving more of their time (by cutting down on leisure time, say) or effort ("quality time") or even more purchased goods to a child who attends daycare, so that child outcomes are the same regardless of care type.

Figure 1. Spending per child on parental leave schemes, childcare, and pre-primary education



Note: Data on maternity and parental leave spending are from 2013 (2011 for Canada and Japan and 2012 for Greece and Poland). Data on childcare and pre-primary education spending are from 2013.

Source: For maternity and parental leave: OECD Social and Expenditures database, Chart PF1.6.D. Online at: https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf; for all other series: OECD Social and Expenditures database 2016, Chart PF3.1.A. Online at: https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf

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Similar, though short term, evidence can be found in a study that exploits a change in maternity leave benefit entitlements in Canada, which impacted children at the sensitive ages of six months to a year [3]. It finds (at best) weak effects of the reform on child health and development up to two years later. Another Danish study investigates the impact of an increase in maternity leave on child and family health one and three years after birth for children born within a 60-day window around a reform that extended maternity leave entitlement with full pay from 24 to 46 weeks [4]. Overall, it finds little evidence that the leave expansion reduced either child hospitalizations or diagnoses of maternal depression.

While the above findings indicate rather minimal effects of increased maternity leave, could there be more pronounced effects resulting from different leave lengths? Three major maternity leave policy changes were enacted in Germany in 1979, 1986, and 1992, which increased the length of leave from 2 to 6 months, from 6 to 10 months and, later, from 18 to 36 months (successive increases from 10 to 18 months took place in between). A study evaluating these three reforms estimates difference-in-differences models comparing children born shortly before and shortly after the reform, in years in which the reforms took place, and further with those born in years when no reforms took place [5]. In no case (not even with the first reform) does it find significant positive effects on children's long-term outcomes in terms of choice of school track, the probability of completing high school, wages, or years of employment. In fact, the third reform actually showed detrimental effects on children in terms of educational attainment. The study further brings time-use evidence from the German Time Use Survey (GTUS), indicating that when mothers work during a child's infancy they do not reduce the time spent caring for children; instead, they reduce their leisure and household activities.

On the other hand, contrasting evidence comes from a maternity leave expansion from the 1970s that introduced paid maternity leave for the first time in Norway (paid leave increased from 0 to 4 months and unpaid leave rose from 3 to 12 months) [6]. The study finds a reduction in the dropout rate from high school and a 5% increase in wages at age 30 among the affected children. These effects are stronger for children whose mothers had fewer than ten years of education. Importantly, maternal income remained the same while maternal time spent with the child increased. It should be noted, however, that these positive effects are found at a time when the counterfactual quality of care was largely informal arrangements such as friends, relatives, or unlicensed caregivers.

Thus, most of the evidence points to weak or zero effects of increasing maternity leave on children's educational or health outcomes in the medium to long term, especially when the counterfactual care is of high quality. In part, zero effects may arise because parents tend to make compensating investments of time (i.e. they take time away from other activities to spend more time with their children).

Long-term effects of childcare expansions

Few studies on the longer-term effects of childcare expansions estimate direct treatment effects rather than intent-to-treat effects, i.e. most estimate the effects of having had *access* to childcare, but not whether or not the childcare was actually used. One such study

from Denmark investigates the effects of enrollment in different types of non-parental childcare on academic achievement in the final school-leaving year [7]. It does so by linking daycare registers to educational registers. It uses entire birth cohorts of ethnic Danish children, enrolled in either formal center-based daycare or the more informal family daycare at age two, and exploits the right to guaranteed access to preschool in some municipalities. In Denmark, both types of care are regulated with respect to safety, nutritional guidelines, playing facilities, health, and hygiene. However, while staff at centers hold a pedagogical degree (15–16 years of education), family daycare providers typically have either a vocational degree, a high school education, or fewer years of education. The family carers are almost exclusively female, and typically provide the care in their own homes to groups of four or five children. The results show that center-based daycare improves grades in the Danish language in the final year of compulsory school by 0.2 standard deviations. They also show some positive results for mathematics but these are not statistically significant. In terms of parental socio-economic status (SES), the results show that effects are strongest among children of low-SES backgrounds, but even children of high-SES backgrounds benefit from attending formal center-based care rather than informal family daycare. Additionally, boys gain consistently more than girls.

Over an even longer horizon, a study from Norway focuses on a period of rapid childcare expansion in the mid-to-late 1970s [8]. Since most Norwegian mothers post-WWII were already employed, the effect of the considerably greater provision of childcare over this period resulted in a substitution of informal care arrangements by formal care. Using a difference-in-differences design for comparing the long-term outcomes (approximately 30 years later) of three- to six-year-olds before and after 1975, the study finds significant and substantial improvements in education (measured by years of education, high school completion, and college attendance) and earnings and reductions in welfare dependency after the expansion. The increases in education were achieved mainly by children of low-educated mothers, while the higher earnings were reaped mostly by girls.

Although preschool education is not universalized in the US, two states, Georgia and Oklahoma, rolled out high-quality publicly funded preschool programs starting in the mid-1990s. One study compares outcomes of four-year-olds and their families in Georgia and Oklahoma to four-year-olds in other states both before and after the roll-out, and also to an age-ineligible comparison group in a triple-difference framework [9]. It too finds that impacts on children and families differ according to where on the income distribution they happen to be. For children of low-SES households, access to high-quality preschool led to an improvement in mathematics scores which were sustained through eighth grade. For high-SES children, no such increase in achievement was seen. Part of the mechanism for low-SES kids is that they seemed to spend more quality time with their mothers after the reform, although less total time, and also that their mothers were more likely to become employed. For high-SES children, these programs merely tend to crowd-out more expensive private care arrangements.

Putting this evidence together, it appears that when preschool substitutes for informal arrangements, the long-term effects are positive. When it substitutes for more formal arrangements (as it may do for high-SES children), preschool does not seem to have lasting effects.

Universal childcare does not always produce positive outcomes

Most studies focus on how preschool might enhance children's cognitive skills. However, "soft" skills have also been shown to be important predictors of later success, and may even causally produce such success. A study from Denmark finds that child behavior at age seven (as measured along the Strengths and Difficulties scale) resulting from experiencing high-quality center-based daycare at age three is neutral compared to maternal care, while children experiencing informal daycare display worse behavior than those in maternal care [10]. This result is driven by boys and children of low-educated mothers. The Canadian study described earlier finds that a large-scale formal childcare expansion in Quebec caused mothers of preschool children to enter the labor market in large numbers, which in turn led to increases in hyperactivity, in particular among boys, as well as greater marital instability and lower family well-being [3]. In a follow-up paper, the authors revisited the Quebec universal daycare experiment and found negative and even larger long-term effects on non-cognitive skills, i.e. increases in anxiety and aggression and reductions in prosocial behavior during teenage years. This was driven mainly by boys, for whom they saw increased criminal behavior and worsened self-reported health, which increased with the "dosage" received—i.e. the number of years of exposure to the childcare program [11]. The study, however, does not report different long-term effects for parents with different SES.

The experience in Quebec differs from other examples in a number of ways. First, the Quebec reform had a substantial effect on maternal labor supply, particularly among post-secondary educated mothers. This contrasts with the Scandinavian and US expansions, where most mothers were already in the labor market. The hours spent in childcare also increased substantially for children in Quebec compared to the rest of Canada. Furthermore, the quality of care offered at the beginning of the program, in particular to low-income families, was not optimal, especially in terms of educational activities.

Subsidized childcare need not necessarily have a detrimental impact on children in all instances where mothers enter the labor force in large numbers. One study looks back at the Lanham Act of 1940 in the US, under which a subsidized, near-universal childcare program was rolled out during WWII [12]. The study finds that employment of mothers increased substantially and that employment and long-term earnings of treated children were higher and their rates of cash assistance (a form of social support) lower. Unlike the Quebec case, the childcare quality under the Lanham Act, though variable, was on average found to be fairly satisfactory by parents. Effects were largest for economically disadvantaged families and none or even negative effects on earnings were found for the most advantaged.

Thus, many studies find that the long-term positive effects of attending early formal childcare are mainly seen for children from low- or medium-SES backgrounds, and that although children from high-SES backgrounds do not gain much, they are not hurt either. Furthermore, results are not always negative when mothers enter the labor force in large numbers. While the Quebec experiment led to long-term behavioral deficits for affected cohorts of children compared to the cohorts not affected, the Lanham Act led to positive effects on employment and earnings, and lowered welfare dependence for the children exposed to the program compared to those not exposed to it. The evidence therefore seems to suggest that the quality of the childcare program being offered matters substantially.

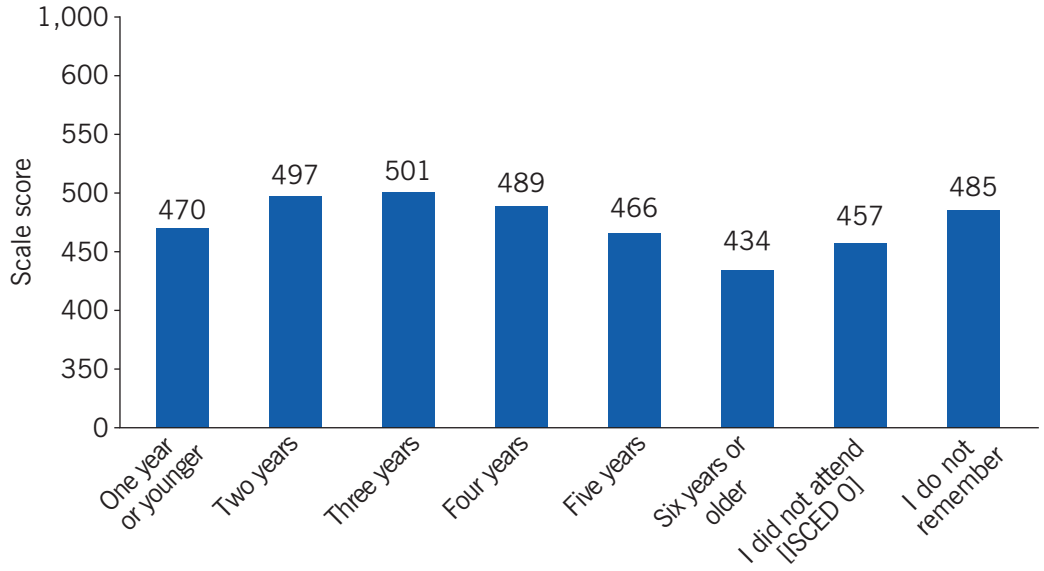
When should children enter childcare?

Few studies have investigated the issue of the optimal starting age of ECCE. One convincing study exploits childcare assignment lotteries in Norway to determine the effect of an earlier starting age (15 vs 19 months) on children's cognitive achievement at age seven [13]. Its estimates show significant gains associated with starting childcare at the younger age, but evidence on longer-term outcomes of the childcare starting age is lacking. It is of interest, therefore, to provide some original results on this question.

Cross-country data on (self-reported) ECCE starting ages and child cognitive (mathematics and reading test scores) and non-cognitive (achievement motivation—"I want to be the best, whatever I do") outcomes at age 15 are available from PISA (the Programme for International Student Assessment, coordinated by the OECD). Figures 2 and 3 show the PISA mathematics and reading scales by ECCE starting age, respectively. Compared to not attending ECCE or attending it at six years or older, attending at ages one to five produces higher PISA scores, with a maximum impact seen for those starting at ages two to three. However, these are just the raw correlations.

To establish more robust results, original cross-country regressions have been estimated using data from 30 countries. The results indicate that starting ECCE at any age from zero to five is associated with higher test scores compared to not starting at all or starting at the age of six or later, even within similar country groups. For both reading and mathematics, starting at ages one to two or two to three is associated with the largest gain in scores compared to not starting or starting at age six or later. The gains are on the order of 1.8 standard deviations in mathematics and 1.9 standard deviations in reading. Whereas for achievement motivation, starting at age zero to one is associated with the largest gain of 0.27 standard deviations, compared to not starting or starting at age six or later (results available from author).

Figure 2. Comparative mathematics scores when starting childcare at different ages



Note: Some apparent differences between estimates may not be statistically significant. Subjects are age 15 at time of study.

Source: OECD, Program for International Student Assessment (PISA), 2015. Online at: http://www.oecd.org/pisa/data/

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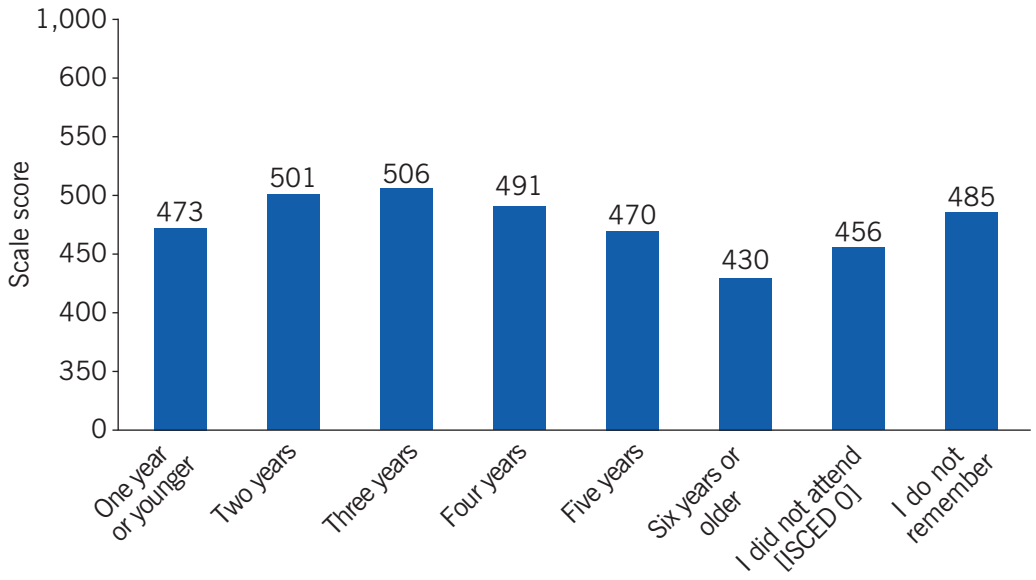
Figure 3. Comparative reading scores when starting childcare at different ages



Source: OECD, Program for International Student Assessment (PISA), 2015. Online at: http://www.oecd.org/pisa/data/

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LIMITATIONS AND GAPS

While evidence on the long-term effects of early childcare (formal or more informal) versus maternal care is emerging from a variety of settings, hardly any study is able to examine policy changes that affect each type of care within the same context and using multiple treatment analysis methods. Examining each type of policy intervention and the interactions between them in the same setting remains a fruitful avenue for future research.

Additionally, not much is known about the effect of the intensity of childcare. Naturally, some hours are necessary in order to reap the beneficial effects on learning outcomes and to get a chance to bond with the caregiver, be it the mother or a non-family caregiver. On the other hand, spending many hours in out-of-home care has been shown to have certain negative consequences for children, such as higher stress levels.

In terms of other outcomes, only scant evidence exists on the effects of alternative care arrangements on children's socio-emotional development and the development of soft skills, as well as on children's health and physical development in the long term. Furthermore, while most studies concentrate on whether or not children attend a certain type of care in early childhood, few closely examine the quality of that care. Causal studies on both structural characteristics (such as staff-to-child ratios, group sizes, physical space, caregiver training, and educational activities) and process quality (the quality of the day-to-day experiences of the child and its interaction with caregivers) are needed.

Moreover, it may not be the quality of preschool itself but rather the quality of the child's peers that determines long-term outcomes. Similarly, when children are looked after at home by their parents, they may tend only to be exposed to other children from

the same neighborhood and SES level. Universal programs change the composition of a child's peers and encourage interactions between low-SES children and those from higher SES backgrounds, leading to more positive spillovers than with targeted programs. More results are needed from experiments that can change the peer group composition while keeping the program content fixed to be able to tease apart which feature is more important for long-term outcomes.

Finally, rather than looking at the overall effect of these interventions as a one-size-fits-all approach, much more needs to be known about the potential heterogeneous impacts of universal childcare. For instance, many studies report substantial variation by family income and gender, and while there is agreement on the former (i.e. low-income families show the strongest effects), the results relating to gender are mixed, depending on the quality of out-of-home care and the outcome being studied.

SUMMARY AND POLICY ADVICE

OECD countries are currently spending on average US$12,300 per child on parental leave schemes. The average duration of paid parental leave in the euro area is 43.8 weeks, and the average duration of total leave is 65.6 weeks. OECD countries are also currently spending an average of US$4,300 in purchasing power parity (PPP) terms per child below the age of five on formal center-based daycare services, formal family daycare, and pre-primary education services. However, the Scandinavian countries (and Luxembourg) spend close to US$9,000 PPP on ECCE in addition to having comparatively generous parental leave schemes.

The Scandinavian countries have for decades invested in publicly subsidized, high-quality universal childcare programs offering formal center-based care. Evaluations of the types of programs discussed here show that they achieve significant long-term gains for the exposed/enrolled children's academic performance, college attendance, labor market participation, and wages. Furthermore, several studies have shown that universal childcare provision reduces SES differences and enhances intergenerational mobility and can better equip children for starting school.

Can these results be extrapolated to settings where the predominant form of care is currently maternal care? Several reasons point to this being possible: When the care is of high quality, a universal program may have significant long-term benefits for children from disadvantaged backgrounds, and may be at least equal to maternal care for children from advantaged backgrounds. However, an essential ingredient seems to be widespread societal acceptance of such a model, so that public financing for a high-quality offering can be assured.

As female labor force participation continues to rise (and is critically needed in aging societies), the predominant type of care for small children is increasingly becoming non-parental care. Furthermore, as many countries face growing challenges related to immigration, children from ethnic or low-SES backgrounds could benefit substantially from high-quality early childcare, which has been shown to promote good language skills at an early age, thereby leading to a narrowing of achievement gaps. This may help contribute to improved intergenerational mobility among the most vulnerable population segments in many societies.

A final aspect to mention is that although children of highly-educated parents may benefit just as much in terms of their cognitive development by staying at home with a parent as from attending high-quality childcare, a universal care system can better equip them for handling diversity later in life. All factors considered, the recommendation for policymakers is thus to invest more in universal, high-quality, subsidized childcare for all children, rather than extending maternity leave schemes.

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Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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Further reading

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