



Public school availability for two-year olds and mothers' labour supply

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ABSTRACT

French children start public school either the year they turn two or the year they turn three. We evaluate the impact of this unique schooling policy on maternal labour supply. Using a Regression–Discontinuity design, we show that early school availability has a significant employment effect on lone mothers, but no effect on two-parent families. Also we show that the effect grows larger as the child grows older and as the family loses eligibility for child benefits. Finally, we provide some new evidence that school enrolment at the age of two has no adverse effect on children's subsequent educational outcomes.

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Given many recent policy proposals to extend preschool programs across developed countries, it is important to understand what the consequences of these policies will be. The first expected outcome of such policies is to enhance child development and improve their subsequent adaptation to elementary school. Another expected outcome is to provide families with free childcare and to make it easier for parents with young children to participate in the labour market.

Several recent studies have explored the effect of preschool availability for five-year olds or even four-year olds¹, but little is known about what the effect of expanding eligibility to three-year or two-year olds would be. In particular, it is not known whether it would really contribute to increase the participation in the labour market of mothers, especially lone mothers, and help reducing poverty.

Within this context, France represents a very interesting case since it introduced universal pre-elementary school for three-year olds in the mid nineties. About one third of French children start public school even earlier, at the age of two.² French pre-elementary schools are a genuine part of the primary school system. The curriculum is defined at the national level and teachers are certified primary school teachers. The program consists of 28 h per week during the same academic year as elementary schools. The state expenditure per pupil is about 4700 euros in 1999. This system provides a unique opportunity to study the causal effects of public school availability on families with children aged two or three.

To identify the effect on labour market participation, we make use of the highly discontinuous relationships between children's exact date of birth and pre-elementary school eligibility. French academic year begins in September and children can start school either in September of the year they turn three (normal start) or September of the year they turn two (early start, one third of a birth cohort). This regulation generates very significant discontinuities in early school enrolment between children born in December and children born at the beginning of January of the following year, both within the group of two-year olds and within the group of three-year olds. For example, according to the census conducted in 1999, almost all children born in late December 1996 started school at the beginning of academic year 1998/1999, against only about 75% of those born in early January 1997.

Given this fact, the first basic question is whether we observe similar discontinuities in the relationship between mothers' labour market participation and their children's exact date of birth, which would suggest a causal relationship between access to preschool and mother's labour force participation. Interestingly, we find no discontinuities for two-parent families, but significant ones for single mothers. According to the 1999 census, there exists a significant variation in the participation rate between lone mothers whose youngest child was born just before the 1st January of 1996 and lone mothers whose youngest child was born just after this date. Further investigations reveal that this effect varies a lot across sub-populations of single mothers. For example, the estimated effect of pre-elementary school is much more significant for less educated than for more educated mothers, one possible reason being that the former have less access to alternative childcare arrangements than the later. Also, the estimated effect of preschool availability is more significant when the child is three years old than when she is only two years old. This finding is consistent with the fact that non-working mothers lose their eligibility to family benefits when their child turns three. French mothers of two-year olds are still eligible to a benefit of about half the minimum wage

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¹ See for example, Baker, Gruber and Milligan (2008), Cascio (2009a), Fitzpatrick (2008a), Berlinski and Galiani (2007), and Schlosser (2005).

² According to the European Commission (1995), France and Belgium are the only countries where children can start school as early.

and it is one plausible reason for why they are less affected by free pre-elementary school availability.

Overall, public pre-elementary school represents a mode of childcare which is not more costly for the government than subsidized alternatives,³ but has a positive effect (even though modest) on the ability to work of mothers, especially the most disadvantaged ones. Given these results, further expansion of free pre-elementary schools (compared to subsidized alternatives) could be cost-effective provided that it has no adverse effect on children's subsequent outcomes. The question of whether children can start school as early as at the age of two is highly controversial and it is beyond the scope of this paper to address this issue in detail. Building on the specificities of the French pre-elementary admission rules, we provide nevertheless some new simple evidence suggesting that, if any, the effect of substituting pre-elementary school for parental care on two-year olds' subsequent outcomes is very weak. In particular, we show that official regulations generate very significant variation across the month of birth in the difference in early school enrolment across French regions, but no variation at all in the difference in children's subsequent educational outcomes.

The paper is organized as follows. The first section provides an overlook of the related literature. The institutional context and the data used are presented in the second section. We use the full census records which makes it possible to identify variations in the relationship between children's exact date of birth and families' outcomes just before and after the cut-off dates for early entry into school. The empirical analysis of the effect of early enrolment is developed in Sections 3 and 4. The last section provides additional evidence on the effect of early enrolment on educational outcomes.

1. Related literature

Several recent studies exploit variations in the presence of public preschools across geographic areas over time in order to identify the effect of these programs on maternal employment. For example, Cascio (2009a) argues that the introduction of kindergartens for children aged five in the US public schools during the 1960s and 1970s raised very significantly the labour supply of single mothers with eligible children, but had no effect on other mothers. In a related paper, Baker et al. (2008) show that the extension of full-time kindergartens to all five-year olds (and the provision of childcare at a price of 5 dollars per day to all children aged 4 or less) in the Canadian province of Quebec in the late nineties coincides with an increase in maternal labour supply and a decline in children's outcomes in this province (compared with the rest of Canada). One issue with this evaluation is that there were several other changes to the benefits paid to families, both in the province of Quebec and the rest of Canada in the late 1990s (as well as other specific reforms in other provinces).

Berlinski and Galiani (2007) analyse the impact of a program of construction of pre-elementary schools in Argentina. Using the difference in the timing of construction across regions, they find a significant effect of the program on both preschool enrolment and maternal employment. According to Berlinski, Galiani and Gertler (2009), this program also had a positive effect on pupils' outcomes. Schlosser (2005) evaluates the impact of a reform conducted in 1999 in Israel which increased the availability of free preschool for children aged 3 and 4 in the poorest towns of the country. Building on the difference in the timing of the reform across municipalities, she finds that free preschool availability increased both preschool attendance and maternal labour supply in Arab municipalities.

³ For example, the public aids given to parents who stay at home with children aged 3 or less represent about 5000 euros per child and per year, which is very close to the cost of pre-elementary schools.

In a very different contribution, Gelbach (2002) shows that the quarter of birth of five-year olds affects maternal employment and children's preschool attendance in a parallel way. Using quarter of birth as an instrument, his analysis suggests that preschool availability has a significant effect on maternal employment. It is not clear, however, whether the effect of quarter of birth on mothers' behaviour is due to free childcare availability only. Children born later in the year are also younger at each point of time, which may, as such, be an explanation for the lower participation of their mother in the labour market. Finally, the recent paper of Fitzpatrick (2008a) examines how universal pre-kindergarten availability for 4-year olds affects mothers' labour supply in Georgia and Oklahoma. Comparing children born just before and just after the eligibility cut-off (i.e., September 1st), she does not find any robust impact on mothers' behaviour, except some minor changes in rural areas.⁴

To the best of our knowledge, our paper is the first to address whether the availability of formal classroom-based learning environment for 2-year and 3-year olds affects families' outcomes.

2. French institutional context and data

French academic year begins in September and children start school either in September of the year they turn three (normal start) or in September of the year they turn two (early start). They attend pre-elementary school until September of the year they turn six, date at which they enter into elementary school, where they spend five years.

Pre-elementary schools and elementary schools belong to the same public system of primary education. The curricula of both pre-elementary and elementary schools are defined at the national level by the same administration.⁵ Teachers (*professeurs des écoles*) are the same in both types of schools. They are civil servants who passed a specific examination (taken after three years at university) and who received a specific (two years) training in specific universities (*Instituts Universitaires de Formation des Maîtres*). Any given *professeur des écoles* can teach either in pre-elementary or in elementary schools and move from one type of school to the other.

Pre-elementary school is not compulsory, but official regulations stipulate that schools have to admit children in September of the year they turn three whenever parents ask for such an admission. Within the limits of availability of places, French schools can also admit children in September of the year they turn two. In case of over-subscription, regulations ask to give a priority to two-year olds who are the oldest and most mature of their year group by the start of the academic year (i.e., to those born earlier in the year). In the late nineties, about one third of a birth cohort actually starts school in September of the year they turn two and about two thirds start school in September of the year they turn three. Virtually all French children start school at age three or before. Note that children who start school in the year they turn two spend four years in pre-elementary school from year 1 (called *Très Petite Section*) to year 4 (called *Grande Section*). The other children spend only three years in pre-elementary school from year 2 (*Petite Section*) to year 4.

French pre-elementary school is free, available to all families (regardless of income). It runs four days a week (plus Saturday

⁴ Given our focus on very young children, we should also mention the related literature showing that reforms extending parental leave tend to increase fertility and reduce maternal participation in the labour market. See e.g. Lalive and Zweimüller (2009), Schönberg and Ludsteck (2008) or Dustman and Schönberg (2009).

⁵ The most recent version of this curriculum is published in the Official Bulletin No. 3, June 2008 and available on line at http://www.education.gouv.fr/bo/2008/hs3/programme_maternelle.htm. The main objectives of pre-elementary school programs are to improve pupils' language practise, to help them develop their social skills and to prepare them for entry into elementary school.

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