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The Québec's Experiment of \$5 per Day per Child Childcare Policy and Mother's Labour Supply: Evidence Based on the Five Cycles of the NLSCY*

Pierre Lefebvre[†], Philip Merrigan[‡]

Résumé / Abstract

Le 1^{er} septembre 1997, le gouvernement du Québec instaurait une nouvelle politique de subvention aux services de garde. Les milieux de garde reconnus par le ministère de la Famille et de l'Enfance ont commencé à offrir des places à contribution réduite (5 \$/jour) pour les enfants qui avaient atteint l'âge de 4 ans au 30 septembre. En outre, le gouvernement s'engageait à réduire progressivement (chaque année) l'âge d'admissibilité de ces places et à augmenter leur nombre dans le réseau des services de garde subventionnés. En septembre 2000, la politique s'est appliquée à tous les enfants âgés de 0 à 59 mois (non en maternelle) et le nombre de places partiellement subventionnées est passé de 77 000 en 1998 à 163 000 à la fin de 2002, alors que le nombre d'enfants âgés de 0 à 4 ans a baissé de 428 000 à 369 000 sur la même période.

Cette étude, qui s'appuie sur les données de l'Enquête nationale longitudinale sur les enfants et les jeunes, conduite par Statistique Canada, estime les effets de la politique sur l'offre de travail des mères québécoises qui ont au moins un enfant âgé entre 0 et 5 ans. Deux indicateurs du comportement de travail sont analysés, soit la participation au marché du travail et le nombre annuel de semaines travaillées. L'analyse adopte une approche « quasi expérimentale », c'est-à-dire que les différences entre les mères québécoises (groupe traitement) et les mères des autres provinces (groupe de contrôle) sont comparées avant et après la mise en place du régime de subventions aux services de garde. Nos résultats sont conformes à l'hypothèse que le programme de soutien aux services de garde mis en place par le gouvernement du Québec, simultanément avec la maternelle cinq ans gratuite et à temps plein, ont eu un impact important et statistiquement significatif sur l'offre de travail des mères avec des enfants de 5 ans ou moins. Les résultats économétriques soutiennent aussi, quoique de façon moins convaincante, que l'ampleur de l'effet a augmenté simultanément avec l'augmentation du nombre de places à contribution réduite de 1998 à 2002.

Mots clés : offre de travail des mères, enfants d'âge préscolaire, politique de garde, expérience quasi naturelle

* This analysis is based on Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY) restrictedaccess Microdata Files, which contain anonymized data collected in the NLSCY and are available at the Quebec Interuniversity Centre for Social Statistics (QICSS), one of the Canadian Research Data Centres network. All computations on these microdata were prepared by Pierre Lefebvre and Philip Merrigan. The responsibility for the use and interpretation of these data is entirely that of the authors. This research was funded by the Social Sciences and Humanities Research Council of Canada, the Fonds québécois de la recherche sur la société et la culture and CIRANO.

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On September 1st, 1997, a new childcare policy was initiated by the provincial government of Quebec, the second most populous province in Canada. Childcare services licensed by the Ministry of the Family (not-for-profit centres, family-based childcare, and for-profit centres under the agreement) began offering day care spaces at the reduced parental contribution of \$5 per day per child for children aged 4 years. In successive years, the government reduced the age requirement and engaged in a plan to create new childcare facilities and pay for the cost of additional \$5 per day childcare spaces. By September 2000, the low-fee policy applied to all children aged 0 to 59 months (not in kindergarten) and the number of partly subsidized spaces increased from 77,000 in 1998 to 163,000 spaces, totally subsidized by the end of year 2002, while the number of eligible children, zero to four years old, declined from 428,000 to 369,000 over the same period.

Using data drawn from Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY), this study attempts to estimate the effect of the policy on the labour supply behavior of Quebec mothers with pre-school children, aged from 0 to 5 years old. The analysis examines the impact of the policy on the following outcomes: labour force participation and annual number of weeks at work. A non-experimental evaluation framework based on multiple pre- and post-treatment periods is used to estimate the effect of the childcare regime.

The econometric results support the hypothesis that the childcare policy, together with the transformation of public kindergarten from a part-time to a full-time basis, had a large and statistically significant impact on the labour supply of Quebec's mothers with pre-school children. The estimates also suggest, though less convincingly, that the size of the impact increased concurrently with the positive growth in the number of low-fee spaces.

Keywords: *mother's labour supply, preschool children, childcare subsidy, quasi-natural experiment*

Codes JEL : H42, J21, J22

On September 1st 1997, the government of of Quebec implemented a new policy of day care subsidies. From that day on, accredited childcare facilities offered subsidized day care (the \$5 per child per full-day fee policy) for children who were 4 years of age on September 30th 1997. The government also promised to progressively decrease (every year) the age requirement for subsidies and increase the number of subsidized day care spaces, targeting a number of 200,000 for 2006 (compared to 79,000 available in late 1997).

This new policy was integrated within major changes in family policy including a new unified child tax benefit contingent on family income (replacing universal child allowances) harmonized with the federal child tax benefit of the government of Canada, full-time publicly-provided kindergarten in a school setting (in place of half-day kindergarten), and \$5 per day before- and after-school day care for kindergarten-age and grade school children.

The policy pursued three major objectives: to fight poverty, to increase mothers' participation in the labour market, and to enhance child development and equality of opportunity for children. These goals are not particular to Québec and have been observed in several countries since the eighties as early childhood education and day care public policies have spearheaded family policy.¹

Despite the large amount of public funds dedicated to this program – direct public subsidies to childcare services increased from \$209 million in fiscal year 1995-96 to \$1.4 billion in year 2002-03 – there is not one study that examines whether the objectives pursued by this policy have been reasonably met. Because the federal government of Canada is ready to transfer \$5 billion to provinces and Territories over the next five years for the creation of day care spaces at affordable fees, it is important to use the Quebec experiment as a beacon to form expectations about the impact of the policy as well as anticipate the problems that could emerge once it is effective across Canada.

Using data from the first five waves of Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY), this study contributes to filling this gap by analyzing the effect of the policy on the labour supply behaviour of Quebec's mothers with pre-school children (zero to 5 years of age). It complements an earlier paper on the same topic (Lefebvre and Merrigan 2005a), based on Statistics Canada Longitudinal Survey on Income Dynamics (SLID), that found substantial positive effects of the policy on the labour supply of mothers with children aged 0 to 5 years. Given the potential sources of errors with non-experimental data, it is important to replicate studies with multiple sources of data.

¹ The approach is similar to the ones adopted by several European countries. See OECD (2001) for a review of early childhood education and care policies, and Blau and Currie (2004) for a larger discussion and a presentation of American initiatives in that domain.

The analysis examines the impact of the policy on the following labour supply outcomes: labour force participation and annual number of weeks at work. A non-experimental evaluation framework based on multiple pre- and post-treatment periods is used to estimate the policy effects. Québec's mothers, the treatment group, are compared with mothers having children of similar ages in the other provinces, the control group, over several years.

The econometric results support the hypothesis that the childcare policy together with the transformation of public kindergarten from a part-time to a full-time basis had a large and statistically significant impact on the labour supply of Québec's mothers with pre-school children.

The rest of the paper proceeds as follows: Section 1 presents public policy pertaining to childcare across Canada and traces the unique evolution of Québec in this regard. Section 2 identifies the conceptual issues and lays the framework for the econometric analysis. Section 3 describes the data set used to perform the analysis and presents descriptive statistics. Section 4 contains the empirical results which are discussed in section 5 with their policy implications. Section 6 identifies extensions for future research on this topic.

1. Childcare policy in Québec and across Canada

There are a substantial number of studies showing that young children have a strong negative impact on their mother's labour supply. The pioneering work of James Heckman (1974) was the first to show that an increase in childcare costs reduces the mother's labour supply and the number of hours worked (conditional on employment).² Several measures can be used to reduce the burden of childcare expenditures and encourage the labour market participation of mothers with young children. In Canada, two major policy instruments have been implemented over the last 15 years: (1) at the federal and provincial level, a tax deduction for day care expenses; (2) at the provincial level, childcare fee subsidies that depend on family income and are geared to low-income families. In some provinces, small subsidies are directed to licensed centres and regulated day care providers and are based on start-up costs, capital costs of providing childcare and operating costs that vary with the number of children. The last approach, directing subsidies to providers was favoured by the government in Québec for the implementation of its low-fee policy.

Since 1972 at the federal level and in all provinces, the tax deduction for childcare expenses has subsidized childcare expenses. Currently, up to \$7,000 of childcare expenditures per child less than 7

² For a review of the empirical literature which is mostly American, see Blau and Currie (2004), and Blau (2003). For results in the Canadian context, see Cleveland, Gunderson and Hyatt (1996), Powell (1997, 2002), and Michalopoulos and Robins (2000, 2002). Choné *et al.* (2004) summarize the findings for France.

years of age and up to \$4,000 for other children less than 17 can be deducted from taxable income.³ Since 1983, the deduction can be claimed only by the spouse with the lowest income, and provides assistance only for individuals who would pay taxes without the deduction. In 1994, the government of Quebec, which had its own provincial deduction, converted it into a refundable tax credit for childcare expenses which is more generous as family income decreases, compensating families for 26 to 75 percent of childcare expenses.⁴

The 1966 cost-sharing arrangements between federal and provincial governments (to finance social assistance and the provision of welfare services) provided provincial governments with funds to finance day care for low-income families. Since childcare is an area of provincial jurisdiction in Canada, each province was free to set its own financial and social criteria for eligibility to subsidized care. Table A1, taken from Doherty *et al.* (2003), shows the fee-subsidy policy of each province for the year 2001. Policy in provinces other than Quebec remained largely unchanged during the nineties (although fee subsidy eligibility levels and rates have been raised modestly in some provinces⁵) and the number of children in subsidized day care remains very low.⁶ The constancy of subsidy policy in the rest of Canada is relevant, given our estimation methodology.

The “National Children’s Agenda” is another noteworthy policy initiative. In 1998, the federal government modified its child tax benefit (targeted to low income families) making it more generous (and increasing the benefit over the following years). Most provinces either reduced basic welfare benefit rates by the amount of the federal child tax benefits or achieved the same results by treating them as non-exempt income for the purposes of calculating welfare payments (welfare is a provincial responsibility). In return for their welfare savings, provinces agreed “to invest” more than the savings in new cash transfers or services directed to all low-income families with children (to provide incentives for families to move from social assistance to employment by assisting them with the cost of raising their children, making it easier for low-income parents to support their families through employment; and promoting attachment of families to the work force). This initiative gave birth to a host of provincial programs some seeking to increase day care subsidies and make work

³ In 1992, the maximum deductions were respectively \$5,000 and \$3,000; in 1998 they were increased to \$7,000 and \$4,000. The provision is formulated in such a way that expenditures for day camp and summer camp may be considered as childcare expenses.

⁴ The maximum amounts for the federal deduction and the Quebec tax credit are the same. However, the \$5/day parental contribution paid to licensed and regulated providers can not be claimed as an expense for Quebec’s refundable tax credit but can be claimed at the federal level as childcare expenses for the deduction.

⁵ Friendly *et al.* (2003) present a tentative estimate of the number of children in these day care programs in 2001.

⁶ Cleveland and Hyatt (1998) present the fee-subsidy policy of each province for the year 1995.

pay for parents with low earnings potential.⁷ However, the amount of spending in licensed and regulated day care by provinces other than Québec, in the context of this initiative, has been very modest⁸.

The implementation of Québec's child care policy (1997-2004)

Table 1 presents an overview of public policy measures related to childcare and kindergarten for pre-school children in Québec and other provinces for the time period of this analysis. The first part of the Table shows how the \$5 per day childcare policy was implemented from year to year. Table 2 presents the evolution of the number of spaces partly or totally subsidized by the government from 1993-1994 to 2004-2005 by type of childcare setting as well as the total number of Québec's children in different age groups by year.

Before September 1997, in Québec, some subsidies partially covering fixed costs were directed to all licensed and regulated childcare arrangements, and low-income families received a fee subsidy according to eligibility criteria (see Table 7 for the amount of public funds dedicated to childcare). The fees charged by the providers were not regulated. It was on September 1st 1997 that the maximum fee of \$5 per day for children aged 4 was introduced for providers receiving public subsidies. It should be noticed that it is only since September 2000 that all children under 5 have had access to publicly supported day care for the maximum fee of \$5 per day. The first phase concerned primarily children who were three or four years old. It is possible that most of the mothers of these children were already in the labour market when the policy was implemented and that they were the first to benefit from the subsidies. Hence, the labour supply effect should be weaker for the first years of the program. The rate of growth of subsidized spaces increased in the third year of the program (childcare facilities and spaces are created throughout the year).

Since the introduction of the policy, it is well known that the program has not been able to satisfy all of the increased demand for low-fee spaces. Table 2 shows that in 2000, at most 29% of all children aged 0 to 4 years had access to a subsidized space or 35% of all children aged 1-4 years (according to number of spaces in March 2000). It is difficult to obtain data on the number of children on waiting lists with no access to a subsidized space. It is possible however that some mothers may have joined the labour market anticipating the opening of a space for their child. This hypothesis however will be more difficult to test given the data at hand.

⁷ See Lefebvre and Merrigan (2003) for an analysis of this plan and the official presentation at the web site <http://socialunion.gc.ca>

⁸ Friendly *et al.* (2003) estimate (Table 15) that approximately 7% of the \$535 million spent by provinces (excluding Quebec) in 2000-2001 for this initiative went to regulated childcare.

Table 3 shows the distribution of the number of children for each age group in subsidized day care for the years 2000 to 2003.⁹ The largest increases in spaces used are for children who are 1 or 2 years old. The share of children 3 or 4 years old, despite being the largest, has decreased since 2000. Only 20% of children less than one are in subsidized day care in 2003 compared to 57% for the 3 or 4 years. The recently enhanced federal maternity- and parental benefits program (available in all provinces) has tempered the need for day care during the child's first year of life.¹⁰

We cannot trace a similarly elaborate picture of the evolution of childcare services for other provinces in Canada, but the number of children in subsidized-fee day care is small relative to Québec.¹¹

Childcare use in Canada: how much and what are the arrangements?

It is also difficult to obtain a larger picture of childcare utilization, arrangements and reasons for the use of day care across Canada. The last national survey on childcare use was conducted in 1988. Other than licensed centres and family-based regulated day care, parents can choose unregulated day care in their own home or in someone else's home by a relative or by a non-relative. Provincial and federal policies provide tax relief for childcare spending as long as receipts are presented to income tax authorities.

Table 4A presents the number of taxpayers benefiting from the federal tax deduction for childcare expenses from 1996 to 2002, the average amount of the deduction per taxpayer, as well as the aggregate amount of these deductions at the federal level for Québec, Ontario, and Canada without Québec. Table 4B shows the tax expenditure for the federal government due to these deductions. For the last few years, since 2000, approximately 1 million taxpayers deducted 2.8 billion dollars from their taxable income representing around 600 million dollars in tax savings. There is a remarkable progression in the number of Québec taxpayers using the federal deduction because it is available (the 5\$ per day expenses) to users of Québec's subsidized day care. From 1998 to 2002, 80,000 more taxpayers used this provision in comparison to 16,000 for the rest of Canada. However, the average deduction in Québec is approximately 50% less than in the rest of Canada, reflecting the significant decrease in the price of day care.

⁹ Such detailed numbers are unavailable before 2000.

¹⁰ According to a Statistics Canada study (Corak, 1999), in 1998 approximately half of families with a newborn received benefits. The statistics of the Employment Insurance Commission (2004) show that 60 percent of families with a newborn received benefits in 2002. The Commission estimates that parents are using at least 85.2% of the full-year (the entire 50 weeks) available to them. Before 2001, approximately 70 percent of mothers with benefits returned to work seven or eight months after giving birth. In 2001 and 2002, more than 70 percent of mothers with benefits had a leave of absence for at least 11 months.

¹¹ For some partial and tentative estimates, see Friendly *et al.* (2003) and Doherty *et al.* (2003). The OECD (2004) study on Canadian childcare deplors the state of patchy day care statistics in Canada.

Two annual Statistics Canada surveys offer information on spending for childcare. The Survey of Labour and Income Dynamics (SLID), since 1999, reports spending on childcare by parents for the purpose of work or schooling. Table 5 presents spending for childcare in Québec and the other provinces, as well as the number of families that report such spending. The statistics indicate that the number of families in Québec with such expenditures increased significantly in comparison to the other provinces and that the average amount of spending is 37% lower than in other provinces. The Survey on Household Spending asks all households (presumably not just those who are working or studying) how much they spend annually on childcare. The statistics, not shown here, presents a slightly different picture of the level and evolution of spending patterns, although the number of households/families with such expenditures is broadly similar in the two surveys: Québec households have reduced their total spending in this area. The average amount of spending is 49% lower than in other provinces.

The Canadian National Longitudinal Survey of Children and Youth (NLSCY) is conducted every two years since the year 1994-1995 and five cycles of data are now available, the last one covering years 2002-2003. This survey asks parents if they use childcare services for the purpose of studying or work. Table 6 presents for Québec and the other provinces the principal care arrangement used by parents for children younger than 6 years and for the 5 cycles.¹² From the third wave of the survey, it appears that a larger percentage of children in Québec are in day care than in other provinces. Family-based day care outside of the child's own home is the most widely used mode of day care across Canada. Day care is growing rapidly in Québec relative to other provinces since 1998. Day care in the household by non-relatives is slightly higher outside of Québec. Centre-based care, including before- and after-school care increases strongly in Québec compared to the other provinces where this arrangement ranks third.¹³

Kindergarten as day care

Publicly provided kindergarten for five year old children implies an implicit subsidy for day care. Gelbach (2002) analyses the impact of such an in-kind subsidy to parents (which makes more expensive child care services unnecessary for that part of the day and assists families who wish to work) on a sample of single mothers with a youngest child of 5 years old taken from the 1980 census.¹⁴ He estimates that access to free publicly provided kindergarten increases the probability of being employed by 5% on the date of the interview as well as increasing other labour supply measures.

¹² Unfortunately, the classification of arrangements has changed from cycles 1-2 to cycles 3-4.

¹³ Lack of inclusion of full-day kindergarten as a mode of care probably distorts the changes observed. Most five year olds and eligible four year olds attend kindergarten and it is their main mode of care. If they are not in before- and after school programs, they will be recorded as "no care arrangement used" in all likelihood, or perhaps care in own home by a relative (see the increase for this type of care by a relative shown in Table 6).

¹⁴ The study exploits the fact that the month-of-birth requirement for entry to kindergarten changes from one state to another.

All provinces offer publicly provided free kindergarten for 5-year-old children in a school setting under the auspices of the Ministry of education.¹⁵ All programs are for a half-day (2 hours and 30 minutes) during the school year, except in Québec (which is for a full day, since the fall of 1997), New-Brunswick and Nova-Scotia. In most provinces parents are free to register their child in kindergarten, as it is not a legal requirement (a large majority of eligible children do attend kindergarten). In Ontario, most school boards offer a half-day of junior kindergarten for four-year old children. Again, most eligible children attend these kindergartens. Finally, several provinces, including Québec, offer a limited number of junior kindergarten spaces for handicapped and underprivileged children of age 4.¹⁶ Since the fall of 1997, almost all 5 year old children in Quebec attend full-time kindergarten while a large number stay after school in subsidized day care settings.

We conclude that the only major change in kindergarten policy for 5 year old children from 1994-1995 to 2000-2001 occurred in Québec justifying their inclusion in the empirical analysis of the effect of the change in the childcare policy of 1997.

2. Analytical framework and econometric modeling

Conceptual issues

Before the introduction of the low-fee policy, the main policy instrument in Québec for childcare assistance was the refundable tax credit for child care expenses, more generous for low-income households, making the net price for families paying for childcare services (if they provided receipts for childcare expenses in their tax return) contingent on family income. Therefore, as a result of the \$5 per day policy, high income families experienced a larger reduction in net childcare prices than low-income families, all other things equal. Families with the lowest incomes that had used the refundable tax credit saw virtually no change in the net price of day care.

The simplest way to illustrate the incentive effects introduced by childcare subsidies is the model presented by Blau (2003). Suppose the mother is responsible for one child; day care services are of homogenous quality and cost p dollars per hour; there are no informal day care services; for each hour worked an hour of day care is required; there are no fixed costs to work, and w is the wage rate. The mother's budget constraint is given by: $c = I = y + (w-p)h$, where c is consumption, I is income net of day care expenses, y is non-labour income and h are hours worked. The normalized time constraint is: $h + l = 1$, where l is leisure and utility is $u(c, l)$. The hourly wage net of the hourly day care price ($w-p$) is the slope of the budget constraint in figure 1. The slope of this budget constraint is higher in absolute

¹⁵ See Friendly *et al.* (2003) for characteristics of kindergarten programs in each province.

¹⁶ The parents of these children are welfare recipients and engaged in a welfare-to-work or training program.

value when childcare services are free. The higher the childcare costs, then the higher will be the reservation wage and the probability of not working ($h=0$). A linear subsidy of s dollars per hour modifies the budget constraint such that: $c = y + (w-p+s)h$, increasing the net wage and the slope of the budget constraint and the probability of working. However, conditional on work the effect of the subsidy is ambiguous because of income and substitution effects.

In Québec, before September 1997, the subsidy for childcare expenses operated through a provincial refundable tax credit based on family income. The federal tax deduction for childcare expenses also lowered the price of childcare. In short, both levels of government subsidized and still subsidize day care with these policy instruments. However, this type of *subsidy is non-linear*. Figure 1 displays the non-linear budget constraint with kinks at hours where the subsidy rate is modified. The subsidy rate decreases from s_1 to s_2 at $h^\#$ hours. This type of subsidy is an incentive for women not participating to participate, however the effects conditional on work are more complicated but the effect on hours of work remains ambiguous.

The \$5 fee for day care can be considered as a fixed cost of work for a fixed number of hours of day care. Figure 1 adds a generic case with a fixed cost per day, f , for a maximum of h^* of day care per day. Therefore, rather than decreasing the mother's net salary, the new day care policy is implemented as a very low fixed cost f of going to work. Furthermore, her net wage (abstracting from income taxes) is not affected by day care use until she reaches h^* , an amount consumed by very few parents. We can compare the case of an hourly subsidy, in a non-linear case with the fixed costs model. The ordinate becomes $y-f$, and the slope is w up until h^* . The budget line crosses the budget constraint with an hourly subsidy at point $h^\#$. Because f is so small, it is expected that the new subsidy will have a positive impact on participation. Since the refundable tax credit is still available, mothers have the choice to be in either regime. Again f is so small that only mothers with very little day care needs would choose to remain with the refundable tax credit. In fact, the point where a mother would be indifferent between both regimes would not be at $h^\#$ but at a point lower than $h^\#$. In most other cases, the impact of the new subsidy on hours worked will depend on income and substitution effects.

Moreover, the price of day care for families who do benefit from a subsidized space that usually offers 11 to 12 hours of day care per day, 5 days per week is not only low but is also independent of the mother's labour status, hours of labour supply and family income.¹⁷ For mothers working full-time,

¹⁷ In the low-fee childcare centers (including the school-based ones), services are usually provided from 7h30 to 18h; in family-based childcare the operating hours must be for a maximum of 10 hours. These services must be offered for a maximum of 20 days per four weeks and no more than 261 days per year. Since most of the spaces must be occupied full-time, a family must pay for the 261 days (\$1,305) on a yearly basis to maintain its access to a space, even if the child is absent from the childcare service (due to sickness or for family vacations).

taking into account work time, commuting time between the home, the day care facility and workplace (let us say 9 hours), the hourly cost of day care is less than \$0.60 per hour.

As discussed earlier, the net price of day care varied with family income before the fixed-fee policy. In addition, several families did not receive the tax subsidies, as receipts were not supplied to tax authorities, the informal arrangement with their childcare provider being superior to an arrangement with receipts. Baril *et al.* (2000) estimated that in 1997 the net price of center-based regulated day care (with receipts provided and after federal and provincial personal taxation) before the \$5 per day fee policy, ranged from \$5/day for a very low-income family to \$15/day for a high-income family. However, low-income families could be liquidity-constrained and have problems accessing reliable day care, so that the policy could have important effects on this group as well. Also, parents using free day care provided by a relative could prefer a subsidized space because of the long hours that are available in these settings. Finally, the \$5 per day childcare providers could be seen as more reliable than a person at home as the service is available every day of the week, as well as being licensed and regulated.

Note that the impact of the policy could have appeared earlier on hours worked, weeks worked and earnings than on participation as the first to benefit from the program were mothers already using the registered and regulated day care services. However, the sign of the effect of the program on hours is ambiguous in this case.

Empirical model

Our econometric approach is based on a difference-in-differences (DD) procedure which is now well established in labour economics (Card, 1990; Angrist et Krueger, 1999; Meyer and Rosenbaum, 2001; Bertrand *et al.*, 2004). We observe mothers with young children in Québec, where the policy is implemented, before and after the policy change. Our control group will be mothers with children of the same age in the rest of Canada, where no important reform occurred during the same time period. The years 1998-1999 will be considered as the first year of the program even though it was originally implemented in late 1997. The first year would simply accommodate mothers who were already in the labour market and barely any new spaces were available before 1999.

Suppose Y_1 is the value of the outcome of interest for an individual after the introduction of the program, Y_0 is the value before the program, and $\Delta = Y_1 - Y_0$. The standard DD estimator is written as:

$$DD \equiv E(\Delta | Q = 1) = \{E(Y_1 | Q = 1) - E(Y_0 | Q = 1)\} - \{E(Y_1 | Q = 0) - E(Y_0 | Q = 0)\} \quad (1).$$

Where E is the mathematical expectation operator and $Q=1$ if the mother lives in Québec, and 0 otherwise. The identification conditions for this estimator are spelled out in Heckman, Lalonde and Smith (1999). More generally, it can be written, as:

$$DD \equiv [E(Y_{s-1+k} | Q = 1) - E(Y_{s-1-k^*} | Q = 1)] - [E(Y_{s-1+k} | Q = 0) - E(Y_{s-1-k^*} | Q = 0)] \quad (1a).$$

Where s is the period of regime change while $s-1+k$ and $s-1-k^*$ (with $k>0$ and $k^*\geq 0$) represent respectively the periods after and before the regime change. The question is how to choose k and k^* in a context where the policy is implemented over several years.

The same estimate can be obtained with a regression analysis using the following model:

$$Y_{it} = \alpha + \theta Q_i + \gamma A_i + \beta A_i Q_i + \varepsilon_{it} \quad (2).$$

Where i represents mothers, Q_i is a dummy variable taking the value of 1 if the mother lives in Québec and 0 otherwise, A_i takes the value of 1 if the period is after the policy change and 0 otherwise, $A_i Q_i$ is an interaction term between A_i et Q_i , ε_{it} is an error term (with $E(\varepsilon_{it} | Q, t=0)$), and $\beta, \gamma, \theta, \alpha$ are parameters to be estimated. The DD estimator is equivalent to the least squares estimator of β . We could not find any reason to believe this policy to be endogenous in the sense of being correlated with unobservable variables specific to Québec, leading to a spurious regression. In fact, the policy was totally unexpected when it was announced to the general population. A more important consideration is the possibility that differential pre-period trends could bias the results (Meyer 1995). If Québec mothers' labour supply was increasing at a faster rate than in the rest of Canada before the program, the DD estimator will be biased upwards and we will attribute to the policy effects that are due to other factors.

To handle this issue, we turn to a more general specification presented by Francesconi and Van der Klaauw (2004).¹⁸ They make two major modifications to equation (1). First they introduce specific pre-policy trends for the treatment and control group, in our case for Québec and the rest of Canada. The model can be written as:

$$Y_{it} = \alpha + \theta Q_i + (\gamma_{11} + \gamma_{12} Q_i) t + \gamma_2 I(t \geq s) + \beta Q_i I(t \geq s) + \varepsilon_{it} \quad (3).$$

where t is a time trend, $I(w)$ is an indicator function specifying whether the period is a post- or pre-policy period. In our case, post-policy periods start in 1999 when a substantial number of new places are created. The parameter γ_{11} is the effect of the aggregate trend while γ_{12} is the effect of the specific trend in Québec, γ_2 is the aggregate post-policy effect, and β remains the policy effect. In a three period model, they show conditions such that the OLS estimator of β in specification 3 is identical to a difference-in-differences-in-differences estimator (DDD):

$$DDD \equiv \{[E(Y_{s-1+k} | Q = 1) - E(Y_{s-1} | Q = 1)] - [E(Y_{s-1} | Q = 1) - E(Y_{s-1-k^*} | Q = 1)]\} - \\ \{[E(Y_{s-1+k} | Q = 0) - E(Y_{s-1} | Q = 0)] - [E(Y_{s-1} | Q = 0) - E(Y_{s-1-k^*} | Q = 0)]\} \quad (4).$$

If the true model is given by specification (4), DD estimates $(\beta + \gamma_{12}(k+k^*))$. If γ_{12} is not equal to 0, then the DD estimator is biased. Second, they also introduce a common change in trend after the policy is

¹⁸ They evaluate the effect of the British Working Families' tax credit on lone mothers work behaviour.

implemented. Therefore, the post-period trends remain specific to each region, but can change (not in a specific fashion) relative to their pre-policy values. Hence, a more general specification than (3) is given by:

$$Y_{it} = \alpha + \theta Q_i + (\gamma_{11} + \gamma_{12} Q_i) t + [\gamma_{21} + \gamma_{22}(t-s)] I(t \geq s) + \beta Q_i I(t \geq s) + \varepsilon_{it} \quad (5).$$

In addition to pre-policy specific trends, γ_{22} represents the effect of the post-policy aggregate (common to both regions) change in the specific trends. Equation (5) admits both common aggregate intercept and trend changes for the periods after the policy change. If the true model is (5), DD estimates $\beta + \gamma_{12}(k + k^*) + \gamma_{22} k - 1$, while DDD estimates $\beta + \gamma_{12}(k - k^*) + \gamma_{22}(k - 1)$,¹⁹ and DDD correctly estimates β only if $k=1$. The main identification condition for the estimation of the policy effect in this model is that, other than the introduction of the region specific childcare policy, there are no contemporaneous shocks that affect the *relative* outcomes of the treatment and control groups. Since the policy change was included within a more general reform in public policy our estimated effects could be corrupted by other aspects of the policy. However in previous work (Lefebvre and Merrigan, 2003) we show the other labour supply incentives incorporated in the policy were not very strong.

Specification (5) can be enriched in two ways. First, it is possible to add a number of controls to the regression analysis such as the age of the mother and her level of education as well as several other “exogenous” explanatory variables. Second, the effect of the gradual increase in the number of places from cycle 3 (1998-1999) to cycle 5 (2002-2003) can be represented by a series of year-specific dummies from cycle 3 to cycle 5. These additions to (5) give:

$$Y_{it} = \alpha + \theta Q_i + (\gamma_{11} + \gamma_{12} Q_i) t + [\gamma_{21} + \gamma_{22}(t-s)] I(t \geq s) + \sum_{t=cycle3}^{cycle5} \beta_t Q_{it} + \Phi' X_{it} + \varepsilon_{it} \quad (6).$$

Where β_t represents a time-specific effect of the policy, X_{it} is a vector of socioeconomic control variables and Φ is a vector of parameters. Specification (6) is the final specification with Y_{it} representing different labour market outcomes.

3. Data set

The data used for our empirical analysis are provided by Statistics Canada’s National Longitudinal Survey of Children and Youth (NLSCY) which is a probability survey designed to provide information about children and youth in Canada. The survey covers a comprehensive range of topics including childcare, information on their physical development, learning and behaviour as well as data on their social environment (family, friends, schools and communities). The NLSCY began in 1994-

¹⁹ If the length of the time-periods is the same for the pre- and post-difference terms, then $k=k^*$ and differences in the time evolution of the outcome variable between treatment and control groups do not contribute to the bias.

1995 and data collection occurs at two-year intervals. The unit of analysis for the NLSCY is the child or youth. Since the NLSCY objectives are to produce longitudinal and cross sectional estimates as well, several populations are targeted.

In Cycle 1 (1994-1995), a sample of children aged 0 to 11 was selected in each of the 10 provinces. A total of 22,831 responding children made up the longitudinal sample. Then, in cycle 2, to reduce the response burden on families with several eligible children, the number of children selected was limited to two per family. Some children were dropped from the sample (16,903 children remained in the longitudinal sample). In Cycle 2 (1996-1997), a new initiative was introduced to the main survey – ‘Understanding the Early Years’ (UEY) - which focussed on a sample of children, aged 0 to 11 months and 1 to be followed until the age of 5. A total of 4,153 children were included in the second longitudinal cohort (about 2,000 children each of age 0 and 1 year) and also the new siblings of Cycle 1 longitudinal children who were already in the sample. In Cycle 3 (1998-1999), a new cohort of children aged 0 and 1 year was created, repeating the UEY initiative. The initiative was also interested in “the readiness to learn” aspect of children entering the school system. It was determined that a large sample of 5 year-olds was required to meet these analytical goals. Simultaneously, it was decided that a larger sample of 1 year old children selected in Cycle 3 would meet those objectives once they were 5 years-old in Cycle 6. About 2,000 children aged 0 to 11 months, 7,944 one-year-olds children and an extra sample of 7,052 5 year –olds children were added. In Cycle 4 (2000-2001), the longitudinal children introduced in Cycle 2 are now 4 and 5 years old, it is the last contact cycle for these children. A new cohort of children aged 0 to 11 months (2,358) and 1 year (2,673) were chosen. As in the previous cycle, there were not enough five-year-olds (introduced in Cycle 2) to meet the analytical goals of the “readiness to learn” aspect of 5 year-olds entering the school system. Again, a supplemental sample of 4,399 children was selected. In Cycle 5 (2002-2003), a new longitudinal cohort of children aged 0 and 1 was also selected. About 2,000 children aged 0 and 2,500 children aged 1 were selected.

The analysis is based on the 0 to 5 years children without taking into account whether some children are purely cross-sectional and others are purely longitudinal. Table A identifies the cycles and the cohorts by age of the children. About 25 percent of the children are from Québec.

Table A : Cycles of the NLSCY survey, longitudinal cohorts and number of children by age

Cycles	Age of children, cohorts and number of children (0 to 5 years)				
C1-1994-1995	0-11 years				22,831 (12,333)
C2-1996-1997	0-1 year	2-13 years			20,025 (10,948)
C3-1998-1999	0-1 year	2-3 years	4-15 years		31,194 (20,679)
C4-2000-2001	0-1 year	2-3 years	4-5 years	6-17 years	
C5-2002-2003	0-1 year	2-3 years	4-5 years		8-19 years
					30,611 (15,448)

Source: Microdata User Guide, Cycle 5, September 2002 to May 2003, Statistics Canada.

The colour of cells differentiates the longitudinal cohorts. A black cell indicates the end of the follow-up for a cohort.

General sample and sub-samples

First, from the data sets of the 5 cycles, we sampled all children aged 0 to 5 years and then, if these children had a mother living with them, have selected one mother (biological, adoptive or step) per family. Children living in foster families are excluded as well as mothers with missing information relatively to the socioeconomics control variables (e.g. age, education). Finally, we separated our sample by the level of education of the mothers (with a high school education or less, with more than high school education and with a postsecondary diploma). Two labour market variables (identical across the cycles) were chosen to analyze labour market behaviour:

1. Labour market participation at the time of the survey (which is administered over two civil years, during the autumn and till late spring), constructed using a derived variable in the survey (coded LFPD25).
2. Number of weeks worked during the year constructed from the following question: “During the past 12 months, how many weeks did you at a job or business? Include weeks on paid vacation leave, paid maternity or parental leave, paid sick leave” (the variable is coded LFPBQ03).

For the NLSCY, the unit of sampling is the child, and weights (cross-sectional and longitudinal) are designed for the child, not the parents nor the household. It is possible that certain mothers have more than one child in the data set for a particular cycle. However, she will appear only once in our sample for that particular year. Since we are using mothers as the unit of analysis, all means and regression results are unweighted.

A descriptive analysis

Figure 2 contains graphs tracing the time series evolution of the two labour market variables for the five cycles of the NLSCY (1994-1995 to 2002-2003) for mothers in Québec and the Rest of Canada (ROC). Graphs 2(a) and 2(b) present the percentage of all mothers, with at least one child who is 0 to 5, 1 to 4 and 1 to 5, who report working at the time of the survey. Graphs 2(c) and 2(d) present the same time series but for annual average weeks at work during the past 12 months of the survey for all mothers with at least a child aged 0 to 5, aged 1 to 4 and aged 0 to 5. And Graphs 2(e) and 2(f) trace the patterns for single mothers.

The graphs in Figure 2 are very revealing. For all age groups and samples, the participation rates and average weeks worked per year start off considerably lower in Quebec in cycle 1 and then catch up with the ROC, while eventually overtaking ROC rates in cycle 5 (except for single mothers). We observe that from cycle 2 to cycle 3, the leap in labour supply is much stronger in Québec than in the ROC, both

measures of labour supply increase at approximately the same rate between cycles 3 and 4, but between 4 and 5, there is a slight dip for the rest of Canada, while the Quebec labour supply measures continue to grow. Hence, a preliminary analysis points to a strong positive effect of the policy on the labour supply of mothers with children aged less than 6 years. The econometric analysis will corroborate this conclusion.

Table 8 shows that mothers are very similar in both regions. Mean age is practically the same for all cycles. In cycle 1, in Quebec, a slightly larger proportion of women had a high school education or less (.34 versus .31). In cycle 5, this proportion is almost the same (.22 versus .21). The main difference is mothers with a university degree. Both groups start at the same level but cycle 5 shows a difference of .07 in favor of mothers residing outside Quebec. Proportion of single mothers is always slightly higher in the ROC but by never more than 2.2 percentage points. Mean number of children are almost the same in all cycles. There is a substantially larger proportion of immigrants outside Quebec but they remain a small proportion of the sample in both regions. A large majority of mothers in both regions live in urban areas and spouses have very high participation rates. Therefore, mothers from outside Quebec are an excellent control group for Québec mothers with children less than 6 years.

4. Econometric results

The econometric results are found in Tables 9 to 11. Besides the main sample of all mothers with at least one children aged 0 to 5, six other sub-samples were created on the basis of the children's ages and three on the basis of the mother's education. Because on the one hand, a large proportion of mothers stay at home in the first year of a child's life and fewer subsidized day care spaces are available when the child is less than one, and on the other hand, a very large proportion of children aged 5 years are in kindergarten, we estimate models in families where there is at least one child aged less than 1, aged 1 to 5, aged 1 to 4, aged 0 and 1, aged 1 and 2, aged 3 and 4. We also split the sample between mothers with a high school education or less and a post-secondary diploma. The former would be in lower-income families and are more likely liquidity-constrained. A smaller size sub-sample of the subsidiary education category composed of mothers with some post-secondary education was also used. For space consideration and because the results are similar to those of the lower education sample, they are not presented here. Finally, a sub-sample of single mothers was created.

Each table corresponds to a particular dependent variable. Table 9 presents the results for labour force participation. We find in Tables 9A and 9B the corresponding estimates for two levels of

education. Tables 10, 10A and 10B concern annual weeks worked. The Tables present only the parameters estimates relevant to the policy change. Complete results are available from the authors.

The control variables used in the estimations are: mother's age, mother's age squared, years of education, years of education squared, a dummy variable for mother being born in a foreign country, a dummy variable for single-mother households, the number of younger, older and same age siblings, a dummy variable for a family living in an urban area, and the annual labour force participation of men aged 24 to 44 in each province (averaged over the two years of the five surveys).

Three specifications were estimated for each sample: (i) assumes a constant treatment effect for the years 1998-1999 to 2002-2003 ($\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}$) and no pre-program trends ($\alpha_{31}=\alpha_{32}=0$); (ii) assumes pre-program regional specific trends but keeps constant yearly program effects; (iii) assumes pre-program regional specific trends as well as non constant program effects. The p-values presented below the coefficients for each specification are computed for the following nulls: (i) ($\alpha_{31}=\alpha_{32}=0$); (ii) ($\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}$); and (iii) ($\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=0$).

Labour Force Participation

Table 9 shows that for all age groups, model 1 with no pre-policy trends and constant effects is not rejected, except the very young and the full sample of mothers with at least one child less than 6 (barely in this case). The smallest effect, 0.04, which is 4 percentage points, is for the mothers with at least one child aged 3 or 4 years. The effect is higher for mothers with very young children. In general, model 3 shows that the effect increases from cycle 3 to 4 reflecting the subsidisation of new places but remains stable between cycles 4 and 5 for most age groups except the very young for which the effect decreases substantially between cycles 4 and 5. This could be due to the new more generous parental leave federal policy introduced after cycle 4 (from December 2000). The results are consistent with the hypothesis of a positive effect of the policy on participation of mothers with children less than six. There is also evidence that this effect has been increasing over time.

It is surprising that the strongest effect is for mothers with very young children as the policy included children less than one by September 2000. In fact, model 3 shows that even for cycle 3, before year 2000, the policy has the strongest effect on mothers with very young children (0.091). Since the policy provided spaces for the less than one year old children in 2000, we expected a smaller effect for this group in cycle 3. It is possible that parents knew that caregivers could eventually provide a subsidized place when the child got older and simply rushed into the labour market after the birth of the child to be in a position to eventually obtain a subsidized space. The fact that new subsidized spaces would eventually open up was well advertised by the government in the early years of the program. The

government also publicized the need to get a child in a subsidized day care setting as early as possible.²⁰ There was a very strong incentive to assure a place early on to reap benefits from the policy for as many years as possible. This incentive was lower for mothers with children of four or five as the benefits of the new policy lasted for a much shorter time.

Tables 9A and 9B present the results for samples based on years of education. The first sample considers mothers with at least one post-secondary diploma. Model 1 is rejected twice, barely, for the 3-4 years group, and soundly ($p=.029$) for less than one year old children. The estimated impacts in model 1 are all larger than for the full sample. For mothers with a child less than one, the estimated effect is .174. The smallest effect is for 3 and 4 year olds and is of the order of .05. The pattern of effects increasing over time is more striking with this sample except for the very young. Cycle 5 effects are very strong for most of the samples.

In Table 9B, we observe that the policy had a positive but smaller effect on mothers with less than a high school diploma or less for model 1. For this sample, the presence of the pre-trends and differentiated effects by cycle makes a substantial difference in the results. For several groups in Table 9B, model 1 is not rejected. The estimated effects are considerably smaller than for the more educated in Table 11A, .012 vs. .048, for the 3-4 years, .035 vs. .082 for the 1-2 years, 0.077 vs. 0.13 for 0-1, and .131 vs. .174 for the less than one year old group. For the larger groups, model 3 is preferred and effects as large as in table 9A are found. Therefore, a pattern of positive effects of the policy is also found for the less educated, but it is difficult to ascertain whether the effects are smaller or larger than for the better educated.

Weeks worked

Table 10 presents the results for weeks worked. It shows that for all age groups we reject the hypothesis of no pre-trends and equal effects. Model 3 is thus preferred. For all age groups, there is a sustained increase of policy effects from cycle 3 to cycle 5. For the full sample of mothers with children less than 6, the effect goes from 1.85 weeks in cycle 3 to 7.07 weeks in cycle 5. The strongest effects are for mothers with very young children mirroring the effects for participation. However, the effects in cycle 3 show that the participation effects were not translated into effects on weeks. It is

²⁰ The web site of the Department in charge of family policy offers the following advice: "First of all, you must decide whether you want childcare in a facility (childcare centre) or in a home environment. Then find out which childcare establishments are located near your home or place of work. In order to have a wide choice, it is best to start looking ahead of time, even as much as a year in advance. Otherwise, there may not be room in the childcare establishment that suits you best when you need it. If you put your child on a waiting list, it is more likely that she/he will be accepted when the time comes for you to use childcare. Establishments regulated by the Ministère de l'Emploi, de la Solidarité sociale et de la Famille generally fill up quickly. This is explained by the establishment's good reputation and the possibility of obtaining places for a reduced monetary contribution or with other forms of financial assistance."

probable that some income effects reduced work weeks for mothers already in the work force when the policy was implemented. The strongest effects are for the very young as the estimated policy effects are 6.88 weeks in cycle 4 and 12.3 weeks in cycle 5.

Turning to higher educated mothers we observe that once again model 3 is not rejected. The effects in cycle 5 are larger than for the full sample except for the very young. For the 0 to 5 years group, the effect increases from 3.39 weeks for cycle 3 to 6.71 in cycle 4, and 10.7 in cycle 5. The effect on the 3-4 age group is negligible. This can be explained by the fact that for highly educated women weeks worked were already quite high in both regions before the policy began so that mothers not participating in this group had very high reservation wages and basically made the choice of staying at home and bring up the children. For this group, the overall effect is driven by behaviour of mothers with children less than 3. For mothers with a high school diploma or less, the policy also has positive effects but smaller than for the well educated and support for model 3 is not as strong for the smaller sub-groups. For the 0 to 5 years group, the effect increases from 3.20 weeks for cycle 3 to 8.64 in cycle 4, and 7.93 in cycle 5. In contrast with the well educated, we observe a strong effect of 8.07 for cycle 5 in the 3-4 years group.

In general, we find strong positive effects on weeks worked for both education groups and in general stronger for the well educated group. This is consistent with the fact that the net price decrease was higher for these women, being from higher income groups. We also find positive and considerably strong effects for mothers with a low level of education and thus from lower income families showing that liquidity constraints could have played a part in stopping them from joining the labour market despite the Québec's generous tax credits for child care expenses before the new policy was implemented.

Single mothers

Table 11 presents the results for single mothers and larger age groups. A similar pattern of effects for these mothers are found. However, large standard errors characterize the estimates due to smaller samples of mothers in the province of Quebec. A clear picture does not emerge for this group.

5. Discussion and policy implications

Discussion

Our estimates are very similar to those in Lefebvre and Merrigan (2005a) found with the 1993 to 2002 SLID data set. With yearly data, we find the participation effect for children aged 0-5 year in 2002 to be .1094 while we find .101 for cycle 5 the closest corresponding period in the NLSCY. For the same age group and year, we find an effect of 5.23 weeks with the SLID and 7.07 with the NLSCY. The main

difference between both studies regards effects based on education. We find stronger effects for the less educated in the SLID study. However, strong effects are found in all cases. Effects by age group cannot be compared because of the much smaller SLID sample. Hence, our study corroborates the results in Lefebvre and Merrigan (2005a) showing a strong positive effect of the child care policy on labour supply.

Figure 3 presents some compelling corroborative evidence that merits a paper of its own. It presents weighted mean weekly hours spent by children in their primary child care arrangement by age group and by cycle of the NLSCY for Quebec and the ROC.²¹ The figures on hours are not conditional on using day care (zero hour of care is attributed to the child if parents answer that they do not use childcare).

We observe for all age groups from 2 to 4 important systematic increases in primary care starting from cycle 2 to 3 for 2, 3 and 4 year old children, continuing from 3 to 4 and 4 to 5. For these 3 groups, mean hours are respectively 13, 13.1 and 14 in cycle 1 growing to 23.3, 22.2 and 21.0 hours, differences of 10.3, 9.1 and 7. The same differences for the ROC are 1.1, 1.7, and 2.7. For children aged 2 or less the growth in hours start in cycle 3 in Quebec reflecting the later availability of spaces for these age groups. Only slight growth is observed during the same period for the very young in the ROC. For 5 year old children, the policy meant more time in school and not in day care so the differences between cycle 1 and 5 are practically the same in Quebec and the ROC. The same patterns are observed for all care arrangements. It is reasonable to believe that most of this extra time spent in day care by children is used by mothers to spend more time in a paying job, the main conclusion of our econometric study.

Policy implications

What are the implications for public policy concerning only labour supply? To answer this we must consider the costs of the program. Table 11 indicates that the average yearly subsidy to registered day care providers increased on average from \$3,888 for 1996-1997 to \$7,379 per year in 2002-2003. This average masks important differences across modes of day care. For year 2003, according to the Quebec's Department of the Family (Théberge, 2003), without taking into account the age of children which affects the amount paid to providers, the public subsidy per day per space is: \$40 in a not-for-profit center, \$30 in a for-profit-center (under-agreement), \$22 in the family-based regulated setting, which on a yearly basis translates to respective amounts of \$10,500, \$7,900, and \$5,800.²² The

²¹ The questions asked to create this variable are "While you (and your spouse/partner) are at work or studying, do you currently use child care such as ... and how many hours per week?"

²² The subsidy per day differs mainly according to the setting and the age group of the child, and the amount paid to a child care service is calculated per space, per day (on the basis of 261 days per year) and takes into account the cost of the premises, general expenses, optimization (all subsidized spaces must be occupied but children can be absent 15

Department of the Family estimates that before the policy the daily subsidy per child was respectively \$11 per day (not-for-profit centre), \$1 per day (for-profit centre), and \$4 per day (family-based).

The monetary allotments used to support this policy appear therefore to be relatively high if their only advantage is to increase labour supply. A large wedge has been created between what is actually paid for by the parents (since January 2004, \$7 per day) and the actual cost of day care (closer to \$40 per day). This pricing policy coupled with the constraint of utilizing these services five days per week creates strong distortions related to the optimal choice of day care services. The dynamics of the regime imposed by the government²³ have basically negated other types of policy interventions to support families with young children. For example, if families had a choice between a day care subsidy and a lump-sum amount of the same value (a policy pursued in Norway and Denmark for children aged less than 3 years), several families with children under three years of age would probably choose the lump sum.²⁴ However, given that this would generate job losses in the publicly funded system, unions could react strongly to such a policy and disrupt services. In other words, major policy changes surrounding child care policy become impossible to implement, and it becomes an irreversible policy. The \$2 per day rise in 2004 was badly received by public opinion and the government decided that the fee would not increase in 2005 and 2006.

percent of the time on an annual basis), childcare and educational expenses. For 2002-2003, a not-for-profit centre with 60 spaces (a typical organization), received approximately \$60 per day for each child aged less than 18 months and \$40 per day for a child aged 18 to 59 months. On an annual basis, the value of the subsidy thus ranges from \$11,500 to \$15,700, depending on the age of the child. The other types of childcare services receive lower subsidies: about \$30-\$45 per day per child in a for-profit centre and a little less than \$23 per day per child in a family-based setting (one adult cannot care for more than 6 children including his child; of these children no more than two may be under the age of 18 months).

²³ In parallel with the creation of new places, the wages provided to educators and all types of employees in childcare centres were steeply increased and regulated after negotiations with the main unions representing the employees. According to wage schedules published by the ministère de l'Emploi, de la Solidarité sociale et de la Famille, in 2004, educators with recognized training in childcare are paid between \$13,86 and \$18,36 an hour according to their experience (from one to ten years, defined as job-based in the education or social sectors). For educators with no specific training, more years of experience compensate for training. For a person in a management job in a centre, the wage schedule starts at \$37,000 and goes up to \$49,000 for 13 years of experience. The usual social benefits are attached to childcare jobs. The government has also agreed to pay a special 50 million \$ contribution over four years toward a retirement fund. The increase in the number of spaces and the improvements brought to the working conditions of childcare providers explain the rapid increases in the public subsidy (from \$209 million in 1995 to \$1.3 billion for fiscal year 2003-04). Moreover, these numbers could well go up. Indeed, most of the employees in centres are unionized with either one of the two main federations representing workers in the education sector. Union leaders maintain that educators are underpaid and that their wages do not respect gender equity (since almost all educators are women). They also consider that family-based childcare providers affiliated and supervised by a not-for-profit centre (currently considered self-employed persons) should be considered employees of the centres. The current government has re-enacted and passed a labour-law initiated by the preceding government stating that family-based childcare providers are not employees but self-employed workers.

²⁴ See Schone (2004) for an analysis of the effect of the Norwegian cash-for-care policy on mother's labour supply.

Taking into account the high level of labour force participation of Québec's mothers with young children (69% in 2002), it is not clear that if the government would have maintain the \$5 fee for child care services it would have driven more mothers to work. The creation of more low-fee spaces (the objective is 25,000 more by the end of year 2006) raises the question of the "efficiency" of the policy to induce more mothers to join the labour force and work full-time who otherwise would choose other modes of work (e.g. part-time) and child care for their young children.

Furthermore, families with young children who choose to care for their children themselves or do not use non-parental child care, even though they are employed part-time or full-time (parents who coordinate their shifts to provide exclusively parental care), are not treated equally in terms of public family support. The value of the subsidies attached to in-kind child care is not matched by the other forms of family support for families caring for and educating their children or using other types of childcare, such as part time or full-time home-based care. Even though there is a generous provincial refundable tax credit based on family income for childcare expenses, it is not sufficient to match the in-kind subsidies offered to families using the \$5 per day child care service (now \$7 per day).

There is also a "one size fits all issue". The Quebec model of childcare services implemented during the last seven years is "one-dimensional," in the sense that it serves well the needs of parents working full-time, five days a week with a rather standard – 8a.m. /9a.m. to 4p.m./5p.m. – working schedule. Parents working part-time or with non-standard hours and those with intermittent employment are excluded from the system. Political pressures to make the labour market less flexible and more in line with child care schedules can be costly to firms and produce layoffs. There are the long run aspects of the program. First, the government, with this policy has moved the child care industry towards a more monopolistic type of market. Unions reacted to this policy by organizing labour particularly in day care centers. The bargaining power of the day care workers is very strong as strikes can be very costly to parents and therefore for the governments in power who can see their popularity erode quite quickly if the strike is prolonged. On the other hand, they can also see their popularity fade if they give in to unions and finance the higher wages to day care workers with higher fees for daily services. This new bargaining power is partly responsible for the large increase (100%) in daily subsidies per space since 1998 onwards. Subsidies now cover costs for unemployment insurance, pension funds and other non pecuniary benefits. Second, the government is now closely scrutinized with respect to the quality of day care. One major study (ISQ, 2004) has shown that on average the quality in all types of subsidized childcare is "fair" (of satisfactory quality, but not good or very good). This is putting more pressure on the government to increase the quality of care by hiring better trained personnel which also is much more costly to attract. Finally, once the final tally is in, by 2006, more than 200,000 children will be in

subsidized day care involving more than 150,000 parents pressuring the government to yield even more to union demands.

6. Concluding remarks and directions for further research

To summarize, this paper shows that the substantial decrease in the price of day care in the province of Québec caused by a policy of generous subsidisation of day care providers had a substantial positive effect on labour supply (participation and annual weeks worked). A modified DDD approach proposed by Francesconi and Van der Klaauw (2004) was used to estimate the effects controlling for pre and post policy trends as well as a host of socioeconomic controls. The size of the effects which from cycle 1 to cycle 5 corroborate the strong positive effects found with the SLID in Lefebvre and Merrigan (2005a).

Several avenues of research are promising given the results found in this paper. One type of analysis is a more structural type of modeling of the labour supply and child care decisions (Ribar 1995). Only the NLSCY provides information on both types of decisions. The data on wages necessary for structural modeling are much less reliable than in the SLID and data on the price of childcare is unavailable. The SLID data sets offer a large diversity of labour market information on the families (mothers and their spouse if present) and child care annual expenses (since 1999 only), but without any detail on child care modes or types. Therefore, the hurdles to realise such a project are difficult to overcome.

A second type of analysis concerns the developmental outcomes of children and the disparities in attainment of children from different socioeconomic backgrounds. There are a large number of studies that study the impact of early experiences, particularly in day care, on the development of children.²⁵ In most cases, instrumental variables methods or panel data are used to identify the effects of the type of day care on child development. The Quebec experiment provides some exogenous variation in childcare settings that could be used to identify the effect of different types of childcare on development. The NLSCY would be the proper data set to perform this analysis. Since there is a panel dimension to the NLSCY, it would also be possible to estimate the effects of childcare settings on schooling achievements (which is tracked in the survey). Questions surrounding the issue of the intensity of childcare use on development, particularly for children at an early age, can also be addressed with the NLSCY since parents are asked the normal weekly hours in childcare for all settings.^{26,27}

²⁵ For example, see the survey of Waldfogel (2002).

²⁶ Figure 5 shows that the number of hours young Quebec's children spend in childcare increased largely compared to childcare hours in the other provinces for cycles 3, 4 and 5.

Another important aspect of the regime concerns distributional issues. Given that mothers bear a larger cost of raising children than men, notably by temporarily leaving the labour market, the policy seeks to lessen this particular burden. We must then ask how benefits are distributed across mothers on the basis of attachment to the labour market, labour force participation, and conjugal status. Discussions surrounding issues of horizontal and vertical equity should be considered for a thorough analysis of the policy. Finally, given the important impact of the program on mothers' labour supply, the labour supply of fathers should also be considered empirically.

²⁷ Studies using panel data show that non-parental care during a child first year of life, if substantial, has negative effects for the child and the parent (see, for example, Waldfogel *et al.*, 2002).

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Table 1: Main policy measures related to childcare services and pre-school education in Canada

Quebec
Childcare services
<ul style="list-style-type: none">● On September 1st 1997, licensed and regulated childcare facilities under agreement with Quebec's Department of the Family (not-for-profit centres, family-based day care and for-profit day care centres) were offering spaces at the reduced contribution of \$5 per day per child, for children aged 4 on September 30th.● On September 1st 1998, the 3 year-olds (on September 30th) were eligible for the low-fee spaces.● On September 1st 1999, the 2 year-olds (on September 30th) were eligible for the low-fee spaces.● On September 1st 2000, all children aged 5 years or less (and the 5 year-olds not having the month-of-birth requirement to be admitted in kindergarten) were eligible for the low-fee spaces.
Kindergarten
<ul style="list-style-type: none">▶ For children aged 5 on September 30th 1997, full-day instead of part-day kindergarten was offered by all School Boards (some private schools already offered this option). Kindergarten is not compulsory but if a child is enrolled in a public school, he or she must attend class for the full school-day and school-week.▶ In urban centres, School boards may offer junior kindergarten spaces for 4 year-olds on a part-day part-week basis for handicapped children and children whose parent(s) is (are) welfare recipient(s) and is (are) engaged in schooling or training activities.
Before- and after-school childcare
<ul style="list-style-type: none">▶ On September 1998, the Department of Education began subsidizing before- and after-school day care. The School boards must offer these services on the school premises at the reduced contribution of \$5 per day per child for the children at (pre)kindergarten and grade school ages. For a family to benefit from this low-fee day care service, a child must attend the school day care centre for at least 2½ hours per day and for a minimum of three days per week.
Other Provinces
Childcare services
<ul style="list-style-type: none">● All provinces have a childcare fee subsidy program. Amount of subsidy depends on family income and is geared to low-income families.● Some provinces (BC, AB, MN, ON, NB, PE, NF) have supplementary programs (e.g. «Enhanced Childcare Subsidy» or «Employment Support») to lower the cost of childcare for families who have low earned incomes to « make work pay».
Kindergarten
<ul style="list-style-type: none">▶ In Ontario, most School boards offer a part-day junior kindergarten (21/2 hours per day) for children aged 4 and a large majority of the children of this age are enrolled.▶ All provinces have part-day (21/2 hours per day) free kindergarten in the public school system, except New-Brunswick and Nova-Scotia where kindergarten is full-day (in Ontario, the French School boards offer kindergarten for the full-day). Enrolment in kindergarten is compulsory in British Columbia, New Brunswick and Nova Scotia. In general the age eligibility for kindergarten is 5 years of age (the month-of-birth requirement for entry in kindergarten varies from one province to another).
Before- and after-school childcare
<ul style="list-style-type: none">▶ Some School boards in some provinces have supported the development of childcare services in a school setting for children attending kindergarten or primary school. But, to our knowledge, there is no general initiative from the provincial Departments of Education (like in Quebec) to insure that all schools offer before- and after-school childcare services.

Table 2: Number of childcare spaces and subsidized¹ spaces for preschool children on March 31st by setting and number of children aged less than one year, 0 to 4 years and 5 years on July 1st, Quebec, 1994-2005

Year	Spaces in not-for-profit network ¹		Spaces in for-profit centre ² under agreement (without an agreement and not subsidized) ³	Total number of spaces at a reduced fee ⁴	Total number of children [less than 1 year], ⁵ 0-4 years and (5) years
	Centre	Family-based			
1993-1994	33,452	15,253	(15,665)	64,370	[90,417] 480,098 (90,603)
1994-1995	34,545	17,871	(18,366)	70,782	[87,258] 473,113 (96,973)
1995-1996	36,708	19,479	(19,842)	76,029	[85,130] 460,657 (99,415)
1996-1997	36,101	20,328	17,629 (4,806)	74,058	[79,724] 445,143 (98,853)
1997-1998	36,977	21,761	17,979 (5,587)	76,715 ⁶	[75,674] 428,297 (94,674)
1998-1999	39,436	32,816	23,861 (585)	96,113 ⁶	[73,599] 412,161 (91,453)
1999-2000	45,793	44,882	23,270 (1,208)	113,545 ⁶	[72,070] 397,971 (89,358)
2000-2001	51,988	55,979	24,578 (705)	132,545	[73,699] 381,522 (87,111)
2001-2002	58,525	62,193	24,629 (976)	145,624	[72,200] 373,264 (83,582)
2002-2003	63,339	75,355	24,740 (1,620)	163,434	[73,600] 368,920 (79,015)
2003-2004	68,274	82,044	27,530 (1,907)	177,848	[74,370] 371,028 (76,105)
2004-2005	72,059	87,192	30,131 (2,695)	189,380	N.A.

Sources: Ministère de l'Emploi, de la Solidarité sociale et de la Famille (2003) for number of spaces; Institut de la statistique du Québec for number of children by age.

1. This designation applies more strictly from September 1997.

2. From 1999 to 2003, the government froze the number of for-profit childcare centres under agreement which also offer spaces at the \$5 per day fee; few new spaces were added for this arrangement during this period.

3. The figures in parenthesis represent spaces in daycare centres without an "agreement," that are not subsidized but are licensed and regulated. These centres fix themselves their day fee.

4. The reduced parental contribution program (\$5 per day fee) began on September 1997 for the children aged 4 years by September. Before September 1997, licensed centres received some subsidies for their operating costs and families received a fee-subsidy according to eligibility and family income (see Table 11).

5. The figure is number of newborns (preliminary estimation for 2003 and 2004).

6. The \$5 per day fee policy began with the 4 year-olds and was extended to the 3 year-olds on September 1998, the 2 year-olds on September 1999 and to children of all ages not in kindergarten on September 2000.

Table 3: Breakdown of children attending \$5 per day day care by age and setting on September 30th, 2000 and 2003

Age of children		Non-profit Centre	Family-based	For-profit Day care centre	Total
		Number (%)	Number (%)	Number (%)	Number (%) ¹
<1	2000	3,698 (30)	7,303 (60)	1,227 (10)	12,228 (9)
	2003	4,360 (30)	9,160 (63)	1,110 (7)	14,630 (9)
1	2000	7,029 (36)	9,927 (51)	2,423 (13)	19,379 (14)
	2003	9,335 (34)	14,820 (55)	2,950 (11)	27,105 (16)
2	2000	11,059 (39)	12,121 (43)	5,249 (18)	28,519 (21)
	2003	14,355 (39)	16,510 (44)	6,235 (17)	37,100 (23)
3	2000	14,895 (41)	14,159 (39)	7,378 (20)	36,432 (26)
	2003	17,815 (43)	15,590 (38)	7,985 (19)	41,390 (25)
4	2000	17,681 (48)	12,111 (32)	7,496 (20)	37,790 (27)
	2003	20,080 (48)	13,010 (32)	8,500 (20)	41,590 (25)
5 ²	2000	656 (20)	2,504 (75)	163 (5)	3,323 (2)
	2003	1,010 (37)	1,470 (54)	260 (9)	2,740 (2)
Total	2000	54,918 (40)	58,215 (42)	24,528 (18)	137,661 (100)
	2003	66,955 (41)	70,560 (43)	27,040 (16)	164,455 (100)

Source: "Situation des centre de la petite enfance et des garderies au Quebec" Ministère de l'Emploi, de la Solidarité sociale et de la Famille, different years.

1. Percentage of total children.

2. About seven hundred 6 years old kindergarten children are included; and about half of the 5 years old children are not in kindergarten.

Table 4A: Number of taxpayers with a federal tax deduction for childcare expenses¹, total deduction in millions of dollars and average deduction per taxpayer in dollars, Quebec, Ontario and Canada without Quebec, 1996-2002

Year	1996	1997	1998	1999	2000	2001	2002
Quebec							
Number	254,190	276,910	304,710	328,096	351,180	373,860	382,740
Deduction	570	564	575	585	588	588	593
Average	2,242	2,037	1,887	1,783	1,674	1,573	1,549
Ontario							
Number	308,740	334,550	354,520	361,500	368,910	389,660	373,090
Deduction	929	1,014	1,194	1,260	1,329	1,478	1,377
Average	3,009	3,031	3,368	3,485	3,603	3,793	3,691
Canada total without Quebec							
Number	614,270	640,000	668,600	708,174	685,280	707,050	684,270
Deduction	1,680	1,777	2,024	2,104	2,198	2,383	2,245
Average	2,735	2,778	3,027	2,971	3,207	3,370	3,281

Source: Taxation statistics, annual report, Canada Revenue Agency.

1. For children of all ages.

Table 4B: Federal tax expenditure for the childcare expense deduction in million \$, 1996-2004

Year	1996	1997	1998	1999	2000	2001 ¹	2002 ¹	2003 ¹	2004 ¹
Amount	420	480	510	550	595	555	560	560	560

Source: Fiscal expenditures – 2003 edition, Department of Finance Canada.

1. Estimate.

2. This is the amount of lost government revenue as opposed to the amount of expenses claimed.

Table 5: Number of all economic families with children and childcare expenses incurred in order to hold a paid job, expenses in millions of dollars, and average expenses per family, Quebec and other provinces, 1999-2002¹

Year	Quebec			Other Provinces		
	Number	Expenditures	Average	Number	Expenditures	Average
1999	358,596	895	2,496	980,105	3,640	3,714
2000	398,729	921	2,310	1,054,040	4,070	3,861
2001	427,891	935	2,185	1,038,025	4,470	4,306
2002	461,648	1,100	2,383	1,012,337	4,230	4,178

Source: Author's calculation from the annual SLID data set.

1. Not available before 1999.

Table 6: Primary care arrangement used for the 1-5 year-olds to allow parent(s) to work or study and number (percentage) of children, Quebec and other Provinces, 1994-1995 to 2002-2003¹

Arrangement	1994-1995	1996-1997	1998-1999	2000-2001	2002-2003
Quebec					
1 Someone else's home by non-relative, regulated	21,412 (4)	23,352 (4)			
2 Someone else's home by non-relative, not-regulated	74,111 (13)	60,664 (11)			
3 Someone else's home by a relative	34,212 (6)	25,250 (5)			
1A Someone else's home by a non-relative			83,681 (16)	85,024 (18)	67,463 (15)
3A Someone else's home by a relative			36,490 (7)	30,470 (6)	24,030 (5)
4 Own home by brother or sister	0 (0)	7,149 (1)	1,563 (0)	1,983 (0)	2,481 (0)
5 Own home by other relative	9,660 (2)	11,258 (2)	18,166 (4)	17,528 (4)	16,310 (4)
6 Own home non-relative	29,537 (5)	22,178 (4)	31,917 (6)	17,227 (4)	15,635 (4)
7 Daycare centre	56,453 (10)	63,176 (11)	74,324 (15)	100,604 (21)	135,345 (31)
8 Before or after pre/school program	3,496 (1)	3,769 (1)	11,671 (2)	20,409 (4)	36,446 (8)
9 Own care	0 (0)	0 (0)	141 (0)	0 (0)	0 (0)
10 Other arrangement	1,639 (0)	1,332 (0)	1,244 (0)	246 (0)	118 (0)
11 No care arrangement used ²	253,333 (45)	264,720 (48)	246,876 (48)	204,111 (43)	154,512 (35)
12 Neither PMK nor spouse work or study ³	77,255 (14)	64,154 (12)			
13 Don't know/refusal/not stated	6,248 (1)	3,159 (1)	4,158 (1)	235 (0)	510 (0)
All children	567,356	550,161	510,231	477,947	442,119
Other Provinces					
1 Someone else's home by non-relative, regulated	59,701 (3)	74,643 (4)			
2 Someone else's home by non-relative, not-regulated	237,464 (13)	232,945 (13)			
3 Someone else's home by a relative	95,657 (5)	115,314 (6)			
1A Someone else's home by a non-relative			281,252 (16)	267,801 (16)	251,385 (16)
3A Someone else's home by a relative			141,939 (8)	146,682 (9)	141,668 (10)
4 Own home by brother or sister	3,248 (0)	18,618 (1)	11,511 (1)	10,121 (1)	9,511 (1)
5 Own home by other relative	62,697 (3)	86,125 (5)	123,293 (7)	122,242 (7)	118,390 (7)
6 Own home non-relative	99,305 (5)	99,082 (6)	88,079 (5)	83,436 (5)	66,190 (45)
7 Daycare centre	122,758 (7)	110,541 (6)	143,826 (8)	159,937 (10)	158,332 (10)
8 Before or after pre/school program	5,545 (0)	6,742 (0)	9,192 (0)	10,592 (1)	23,911 (1)
9 Own care	0 (0)	0 (0)	1,570 (0)	0 (0)	0 (0)
10 Other arrangement	6,081 (0)	8,594 (0)	1,398 (0)	1,560 (0)	291 (0)
11 No care arrangement used ²	884,967 (49)	855,750 (48)	885,789 (52)	849,288 (51)	809,137 (51)
12 Neither PMK nor spouse work or study ³	203,330 (11)	157,752 (9)			
13 Don't know/refusal/not stated	36,821 (2)	22,992 (1)	26,395 (2)	4,500 (0)	568 (0)
All children	1,817,574	1,789,098	1,714,264	1,656,158	1,581,766

Source: Author's compilation (with transversal weights) from NLSCY Micro Data Files, cycles 1-5.

1. The survey is conducted in the autumn and the winter. 2. One or both parents may work or study. 3. For a two-parent family both parents do not work or study. For a single-parent family the parent does not work or study. PMK is the person most knowledgeable about the child, most of the time the mother.

Table 7: Quebec's budgetary credits for the childcare program in million of dollars, 1996-1997 to 2004-2005

Fiscal year	Not-for-profit network	For-profit centre	Parent fee-subsidy for day care and special grants in millions of \$	Total subsidy ¹	Subsidy per space in \$
	Centre and family child care				
1996-1997	160	6	122	288	3,888
1997-1998	150	5	129	294	3,832
1998-1999	334	56	80	470	4,890
1999-2000	505	110	27	642	5,654
2000-2001	695	138	11	844	6,376
2001-2002	872	148	1	1,020	7,004
2002-2003	1,019	187	≈ 0	1,206	7,379
2003-2004 ²	1,099	211	≈ 0	1,310	7,366
2004-2005 ²	1,162	224	≈ 0	1,386	7,319

Source: For total subsidy, Expenditure Budget, annual, Quebec's Treasury Board; for number of spaces, Table 1.

1. The funding includes one-time grants (e.g. start-up), recurring operating grants to centres (and regulated family childcare and agency administration fee), special needs funding, and other grants.

2. Including interest and capital charges for not-for-profit centres and government contributions to retirement plan of employees in all centres. Since January 1st, the fee per day has been fixed at \$7 instead of \$5.

Table 8: Characteristics of the mothers¹ with at least one child aged 0 to 5 years, Quebec and other provinces, cycle 1-4

Characteristics	Cycle 1 1994-1995	Cycle 2 1996-1997	Cycle 3 1998-1999	Cycle 4 2000-2001	Cycle 5 2002-2003
Quebec					
In labour force	50.4%	50.3%	61.6%	64.7%	65.5%
Number of weeks worked	26.5 (23.8)	24.8 (22.9)	27.7 (23.4)	30.0 (23.2)	31.5 (23.2)
Mother age	30.1 (5.2)	30.4 (5.3)	31.5 (5.3)	31.4 (5.4)	31.8 (5.4)
Highest level of education					
Secondary school degree or less	34%	30%	29%	30%	21%
Beyond high school	27%	27%	26%	21%	21%
College or university degree	39%	43%	45%	49%	45%
Single parent	13.4%	13.4%	13.2%	12.2%	10.0%
Number of older siblings	0.5 (0.7)	0.7 (0.9)	0.7 (0.9)	0.7 (0.9)	0.8 (0.9)
Number of younger siblings	0.2 (0.5)	0.2 (0.4)	0.3 (0.5)	0.3 (0.5)	0.3 (0.5)
Number of children	1.85	1.84	2.03	2.03	2.06
Number of-siblings	0.8	0.9	1.0	1.0	1.1
Not born in Canada	5.0%	4.5%	9.5%	8.8%	9.0%
Living in urban area	76.9%	80.1%	83.6%	80.0%	81.8%
Men labour force participation ²	89.8%	90.2%	90.9%	91.1%	92.1%
Number of mothers	1,371	1,416	3,571	2,549	2,052
Other provinces					
In labour force	55.6% (56.8%	63.7%	66.3%	64.9%
Number of weeks worked	28.0 (22.6)	28.0 (22.7)	29.7 (22.9)	31.5 (22.8)	30.2 (23.2)
Mother age	30.6 (5.4)	30.6 (5.4)	31.5 (5.6)	31.8 (5.6)	32.4 (5.6)
Highest level of schooling					
Secondary school degree or less	31%	31%	30%	32%	22%
Beyond high school	29%	29%	27%	22%	14%
College or university degree	40%	40%	43%	46%	52%
Single parent	15.1%	14.2%	13.6%	13.6%	12.2%
Number of older siblings	0.5 (0.9)	0.7 (0.9)	0.8 (1.0)	0.8 (0.9)	0.8 (1.0)
Number of younger siblings	0.3 (0.5)	0.2 (0.4)	0.3 (0.5)	0.3 (0.5)	0.3 (0.1)
Number of children	1.77	1.93	2.08	2.12	2.15
Number of-siblings	0.8	0.9	1.1	1.1	1.15
Not born in Canada	11.5%	11.1%	14.8%	12.6%	13.8%
Living in urban area	72.8%	79.5%	82.6%	80.8%	82.0%
Men labour force participation ²	91.4%	91.1%	91.9%	91.6%	92.1%
Number of mothers	5,699	5,950	14,023	13,931	9,977

Source: Authors' compilation from the NLSCY Micro Data Files, cycles 1-5 and Labour force survey estimates (Cansim Table 282-002) for men labour force participation.

1. Un-weighted

2. Labour force participation rate of men aged 25-44 years (in each province) averaged over the two years of each survey.

Table 9: Impacts of Quebec’s childcare policy on mother’s labour force participation in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=\beta]$	$[\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=$ $\beta_{\text{cycle5}}=\beta]$	β_{cycle3}	β_{cycle4}	β_{cycle5}
0-5 years (62,671)	0.051 (0.01)*	0.026 (0.02)	0.054(0.03)***	0.095 (0.47)**	0.101 (0.66)
<i>F-test (p-value)</i>	0.087	0.131	0.108		
1-5 years (55,785)	0.042 (0.01)*	0.015 (0.02)	0.032 (0.03)	0.057 (0.05)	0.063 (0.07)
<i>F-test (p-value)</i>	0.272	0.510	0.587		
1-4 years (40,109)	0.049 (0.01)*	0.027 (0.02)	0.034 (0.03)	0.068 (0.05)	0.055 (0.07)
<i>F-test (p-value)</i>	0.309	0.204	0.200		
3-4 years (19,626)	0.040 (0.02)**	0.013 (0.03)	0.019 (0.05)	0.050 (0.07)	0.043 (0.10)
<i>F-test (p-value)</i>	0.691	0.579	0.747		
1-2 years (22,757)	0.054 (0.02)*	0.020 (0.03)	0.040 (0.04)	0.081 (0.07)	0.074 (0.09)
<i>F-test (p-value)</i>	0.288	0.438	0.502		
0-1 years (22,563)	0.087 (0.02)*	0.056 (0.03)***	0.083(0.04)***	0.141 (0.07)**	0.136 (0.09)
<i>F-test (p-value)</i>	0.142	0.165	0.069		
<1 year (8,585)	0.115 (0.03)*	0.098 (0.05)***	0.091 (0.06)*	0.172 (0.10)***	0.121 (0.13)
<i>F-test (p-value)</i>	0.005	0.132	0.159		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 9A: Impacts of Quebec’s childcare policy on mothers (with a postsecondary diploma or more education), labour force participation in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=\beta]$	$[\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=$ $\beta_{\text{cycle5}}=\beta]$	β_{cycle3}	β_{cycle4}	β_{cycle5}
0-5 years (27,868)	0.078 (0.02)***	0.046 (0.03)*	0.078 (0.053)*	0.094 (0.07)**	0.128 (0.10)
<i>F-test (p-value)</i>	0.340	0.598	0.267		
1-5 years (24,723)	0.067 (0.02)***	0.032 (0.03)	0.076 (0.05)	0.091 (0.08)	0.144 (0.11)
<i>F-test (p-value)</i>	0.206	0.265	0.274		
1-4 years (17,874)	0.074 (0.02)***	0.026 (0.03)	0.071 (0.05)	0.099 (0.08)	0.147 (0.11)
<i>F-test (p-value)</i>	0.212	0.454	0.547		
3-4 years (8,652)	0.048 (0.03)*	-0.050 (0.05)	-0.015 (0.07)	-0.017 (0.11)	0.034 (0.16)
<i>F-test (p-value)</i>	0.081	0.485	0.437		
1-2 years (10,215)	0.082 (0.02)***	0.063 (0.04)	0.141 (0.07)**	0.215 (0.10)**	0.283(0.14)**
<i>F-test (p-value)</i>	0.424	0.247	0.193		
0-1 years (10,105)	0.130 (0.02)***	0.104 (0.04)**	0.129 (0.07)*	0.189 (0.11)*	0.180 (0.15)
<i>F-test (p-value)</i>	0.158	0.359	0.053		
<1 year (3,861)	0.174 (0.04)***	0.164 (0.08)**	0.086 (0.10)	0.075 (0.16)	-0.047 (0.22)
<i>F-test (p-value)</i>	0.029	0.307	0.078		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 9B: Impacts of Quebec’s childcare policy on mothers (with a secondary school diploma or less education) labour force participation in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle}3}=\beta_{\text{cycle}4}=\beta_{\text{cycle}5}=\beta]$	$[\beta_{\text{cycle}3}=\beta_{\text{cycle}4}=\beta_{\text{cycle}5}=\beta]$	$\beta_{\text{cycle}3}$	$\beta_{\text{cycle}4}$	$\beta_{\text{cycle}5}$
0-5 years (19,684)	0.039 (0.02)**	0.055 (0.03)*	0.092 (0.05)*	0.200 (0.08)**	0.170 (0.11)
<i>F-test (p-value)</i>	0.009	0.002	0.001		
1-5 years (17,639)	0.022 (0.02)	0.041 (0.04)	0.068 (0.06)	0.165 (0.09)*	0.128 (0.12)
<i>F-test (p-value)</i>	0.028	0.006	0.009		
1-4 years (12,608)	0.026 (0.02)	0.081 (0.04)*	0.090 (0.06)	0.190 (0.09)**	0.138 (0.13)
<i>F-test (p-value)</i>	0.021	0.011	0.006		
3-4 years (6,289)	0.012 (0.03)	0.102 (0.07)	0.072 (0.09)	0.162 (0.13)	0.093 (0.18)
<i>F-test (p-value)</i>	0.133	0.098	0.078		
1-2 years (6,983)	0.035 (0.03)	0.052 (0.06)	0.109 (0.08)	0.231 (0.12)*	0.220 (0.17)
<i>F-test (p-value)</i>	0.169	0.100	0.135		
0-1 years (6,789)	0.077 (0.03)***	0.049 (0.06)	0.108 (0.07)	0.219 (0.11)*	0.221 (0.16)
<i>F-test (p-value)</i>	0.316	0.186	0.231		
<1 year (2,572)	0.131 (0.05)***	0.125 (0.10)	0.141 (0.10)	0.296 (0.15)*	0.242 (0.21)
<i>F-test (p-value)</i>	0.515	0.207	0.153		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 10: Impacts of Quebec’s childcare policy on mother’s weeks at work in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle}3}=\beta_{\text{cycle}4}=\beta_{\text{cycle}5}=\beta]$	$[\beta_{\text{cycle}3}=\beta_{\text{cycle}4}=\beta_{\text{cycle}5}=\beta]$	$\beta_{\text{cycle}3}$	$\beta_{\text{cycle}4}$	$\beta_{\text{cycle}5}$
0-5 years (62,703)	1.83 (0.55)*	-1.23 (0.85)	1.85 (1.37)	5.20 (2.18)**	7.07 (3.01)**
<i>F-test (p-value)</i>	0.000	0.004	0.005		
1-5 years (55,835)	1.57 (0.53)*	-0.81 (0.90)	1.20 (1.50)	3.74 (2.37)	4.59 (3.27)
<i>F-test (p-value)</i>	0.000	0.056	0.089		
1-4 years (40,150)	2.00 (0.19)*	-0.77 (1.07)	0.75 (1.60)	3.68 (2.50)	3.86 (3.45)
<i>F-test (p-value)</i>	0.000	0.028	0.054		
3-4 years (19,688)	1.19 (0.83)	-1.48 (1.62)	-0.30 (2.29)	1.72 (3.51)	2.34 (4.84)
<i>F-test (p-value)</i>	0.005	0.495	0.5247		
1-2 years (22,741)	2.44 (0.75)*	-0.98 (1.37)	1.29 (2.01)	4.99 (3.17)	5.56 (4.36)
<i>F-test (p-value)</i>	0.000	0.051	0.092		
0-1 years (22,516)	3.90 (0.74)*	-2.13 (1.34)	2.08 (1.86)	6.56 (3.00)**	10.0 (4.12)**
<i>F-test (p-value)</i>	0.000	0.006	0.006		
<1 year (8,567)	4.14 (1.14)*	-0.52 (0.77)	-0.28 (2.74)	6.88 (4.16)***	12.3 (5.74)**
<i>F-test (p-value)</i>	0.000	0.003	0.001		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 10A: Impacts of Quebec’s childcare policy on mothers (with a postsecondary diploma or more education), weeks at work in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=\beta]$	$[\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=$ $\beta_{\text{cycle5}}=\beta]$	β_{cycle3}	β_{cycle4}	β_{cycle5}
0-5 years (27,885)	2.72 (0.77)***	-1.10 (1.26)	3.39 (2.16)	6.71 (3.45)**	10.7 (4.77)**
<i>F-test (p-value)</i>	0.000	0.035	0.056		
1-5 years (24,741)	2.46 (0.82)***	-0.59 (1.33)	4.30 (2.33)*	7.57 (3.71)**	12.1 (5.12)**
<i>F-test (p-value)</i>	0.000	0.028	0.060		
1-4 years (17,890)	2.87 (0.89)***	-1.14 (1.56)	3.94 (2.47)	8.16 (3.89)**	12.8 (5.39)**
<i>F-test (p-value)</i>	0.000	0.025	0.045		
3-4 years (8,675)	1.55 (1.25)	-4.89 (2.31)	-2.88 (3.47)	-2.73 (5.41)	0.09 (7.49)
<i>F-test (p-value)</i>	0.004	0.451	0.097		
1-2 years (10,209)	3.52 (1.14)***	0.99 (2.00)	8.96 (3.09)***	16.7 (4.88)***	23.4(6.73)***
<i>F-test (p-value)</i>	0.000	0.002	0.004		
0-1 years (10,094)	5.31 (1.14)***	-1.33 (2.02)	4.31 (3.01)	11.2 (4.79)**	14.8 (6.61)**
<i>F-test (p-value)</i>	0.000	0.013	0.028		
<1 year (3,860)	5.87 (1.76)***	-3.77 (3.56)	-1.16 (4.50)	4.60 (6.82)	5.97 (9.39)
<i>F-test (p-value)</i>	0.000	0.003	0.001		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 10B: Impacts of Quebec’s childcare policy on mothers (with a secondary school diploma or less education), weeks at work in reference year by age of children¹

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=\beta]$	$[\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=$ $\beta_{\text{cycle5}}=\beta]$	β_{cycle3}	β_{cycle4}	β_{cycle5}
0-5 years (19,682)	1.05 (0.86)	0.76 (1.52)	3.20 (2.34)	8.64 (3.70)**	7.93 (5.09)
<i>F-test (p-value)</i>	0.000	0.001	0.004		
1-5 years (17,647)	0.66 (0.92)	1.23 (1.62)	2.96 (2.58)	8.18 (4.07)**	6.50 (5.59)
<i>F-test (p-value)</i>	0.001	0.001	0.003		
1-4 years (12,616)	0.91 (1.03)	1.90 (1.95)	2.81 (2.77)	7.74 (4.30)*	5.85 (5.90)
<i>F-test (p-value)</i>	0.015	0.012	0.021		
3-4 years (6,308)	-0.14 (1.49)	2.34 (3.04)	3.37 (4.13)	8.81 (6.25)	8.07 (8.56)
<i>F-test (p-value)</i>	0.181	0.126	0.200		
1-2 years (6,974)	1.28 (1.32)	0.64 (2.49)	2.40 (3.42)	7.77 (5.38)	5.88 (7.40)
<i>F-test (p-value)</i>	0.136	0.077	0.157		
0-1 years (6,768)	2.55 (1.29)**	-0.93 (2.46)	2.27 (3.10)	5.60 (4.95)	8.61 (6.86)
<i>F-test (p-value)</i>	0.283	0.346	0.540		
<1 year (2,562)	3.70 (2.00)*	-5.05 (4.11)	-2.38 (4.57)	2.11 (6.81)	5.03 (9.54)
<i>F-test (p-value)</i>	0.161	0.473	0.432		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Table 11: Impacts of Quebec’s childcare policy on single mother’s labour force participation and annual weeks at work in reference year by age of children

Samples (number of observations) ²	Model Specification				
	(1)	(2)	(3)		
	$[\alpha_{31}=\alpha_{32}=0;$ $\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=\beta_{\text{cycle5}}=\beta]$	$[\beta_{\text{cycle3}}=\beta_{\text{cycle4}}=$ $\beta_{\text{cycle5}}=\beta]$	β_{cycle3}	β_{cycle4}	β_{cycle5}
Labour force participation					
0-5 years (8,249)	0.051 (0.03)*	0.019 (0.05)	0.068 (0.08)	0.142 (0.12)	0.151 (0.17)
<i>F-test (p-value)</i>	0.059	0.380	0.556		
1-5 years (7,511)	0.039 (0.03)	0.020 (0.05)	0.076 (0.08)	0.156 (0.13)	0.173 (0.18)
<i>F-test (p-value)</i>	0.029	0.391	0.569		
1-4 years (5,153)	0.040 (0.34)	0.044 (0.06)	0.069 (0.09)	0.151 (0.14)	0.130 (0.20)
<i>F-test (p-value)</i>	0.024	0.351	0.468		
Annual weeks at work					
0-5 years (8,259)	1.64 (1.32)	1.35 (2.29)	4.34 (3.61)	9.06 (5.75)	9.48 (7.97)
<i>F-test (p-value)</i>	0.321	0.161	0.259		
1-5 years (7,525)	1.04 (1.40)	2.41 (2.40)	5.10 (3.85)	9.60 (6.13)	9.76 (8.50)
<i>F-test (p-value)</i>	0.261	0.208	0.244		
1-4 years (5,165)	0.54 (1.58)	1.24 (2.92)	2.64 (4.15)	8.92 (6.53)	6.47 (9.09)
<i>F-test (p-value)</i>	0.057	0.040	0.088		

1. See text for specifications and hypothesis tests. Robust standard errors are in parenthesis. Statistical significance: ***=1%; **=5%; *=10%. The cycles 1 to 5 of the survey were conducted in the autumn and spring of respectively years 1994-1995, 1996-1997, 1998-1999, 2000-2001 and 2002-2003.

2. Number of mothers whose youngest child is in the age group.

Figure 1: Fixed hours subsidy of day care

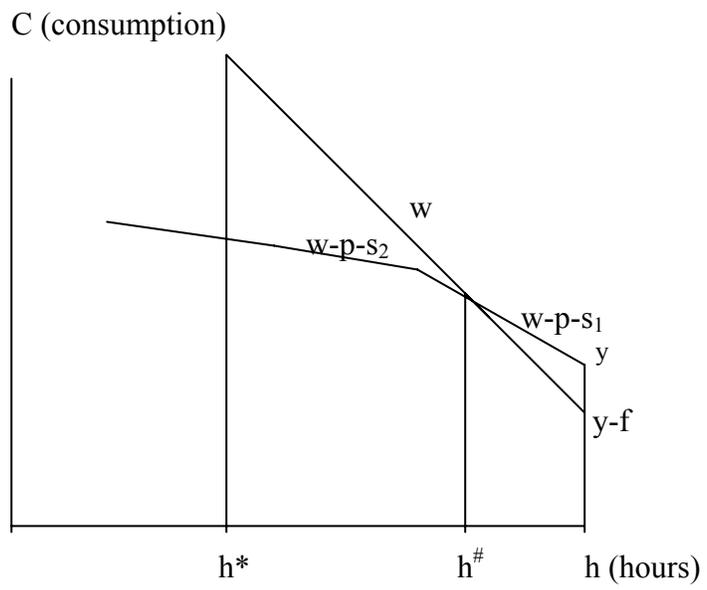
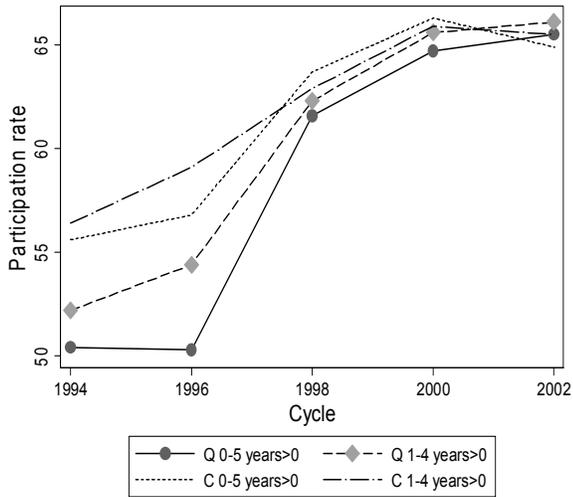
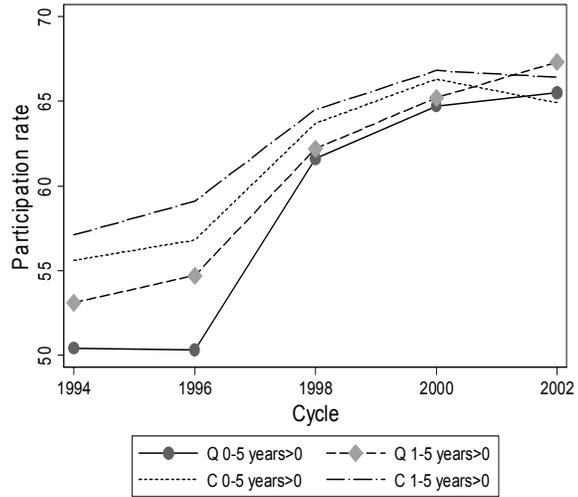


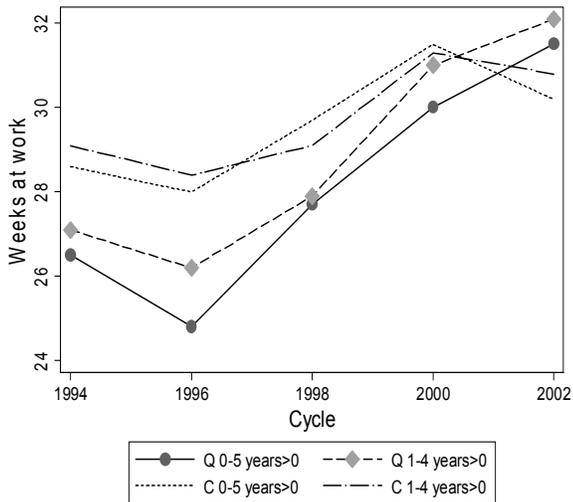
Figure 2: All and single mothers' labour force participation rate and weeks at work, by NLSCY cycle and age of children, Quebec (Q) and other provinces (C)



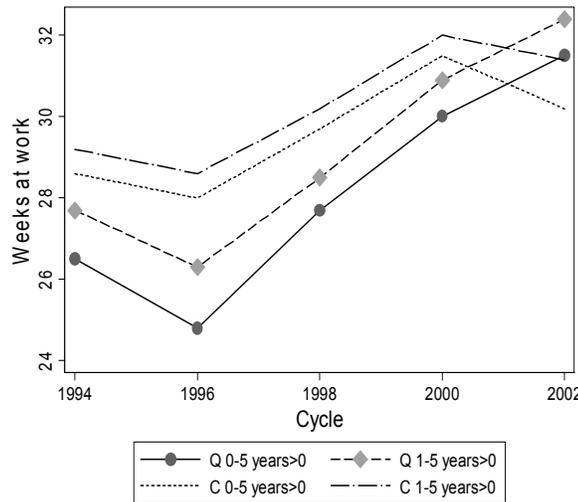
(a) All mothers



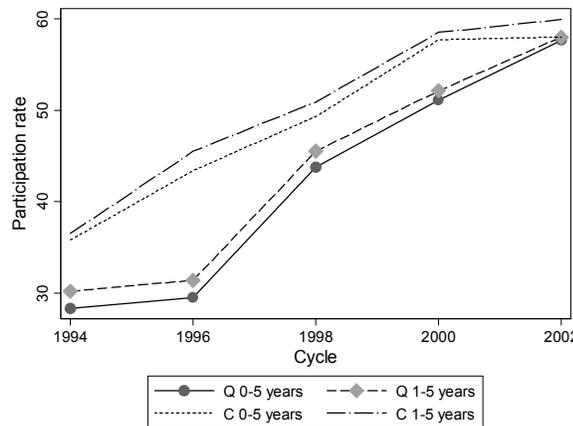
(b) All mothers



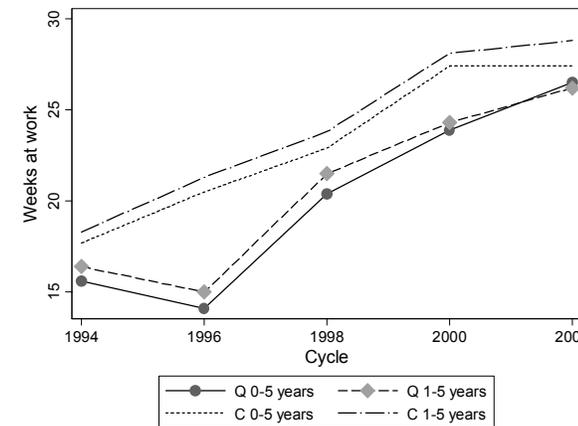
(c) All mothers



(d) All mothers



(e) Single mothers



(f) Single mothers

Figure 3: Average number of hours per week children spent in primary care to allow parent(s) to work or study, by NLSCY cycle and age of children, Quebec (Q) and other provinces (RofC)

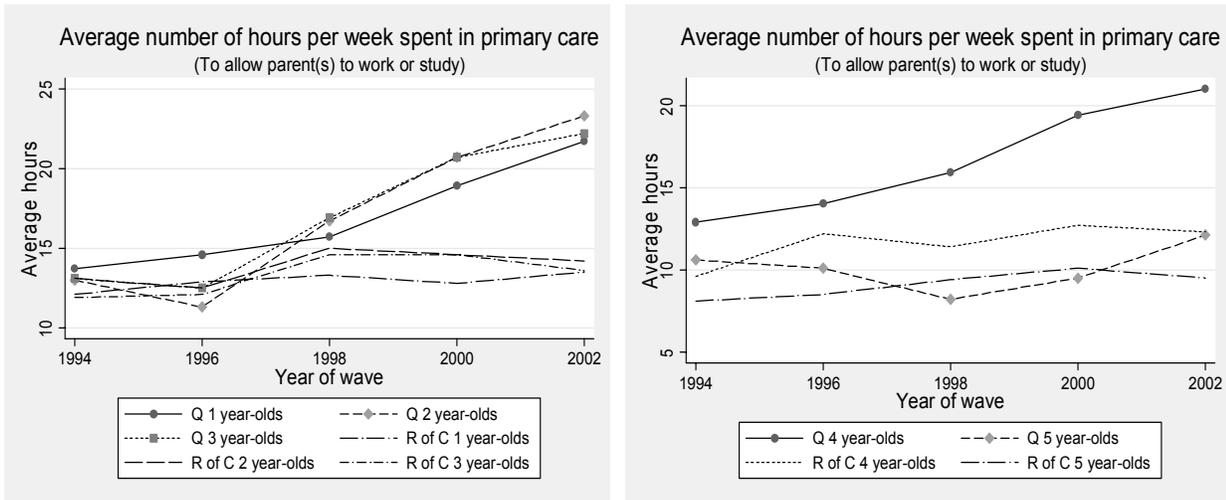


Table A1: Childcare fee subsidy eligibility levels, rates and average fees in regulated centres, 2001

Jurisdiction	Family size	Full subsidy to (\$)	Partial subsidy to (\$)	Maximum subsidy child care in centres	Average monthly fees in child care centres
Newfoundland & Labrador	1 parent, 1 child	14,160	20,280	0-24 mo \$30/day	18 mo-3yrs \$380
	2 parents, 2 children	15,240	25,560	2-12yr \$21.25/day	3 yr-5.11 yr \$360
Prince Edward Island	1 parent, 1 child	13,440	25,440	0-2yrs \$24/day	0-2yrs \$520
	2 parents, 2 children	19,200	51,040	2-3yrs \$20/day 3+ yrs \$19/day	2-3yrs \$432 3+ yrs \$412
Nova Scotia	1 parent, 1 child	16,812	24,540	\$14.95/day all ages minimum parent fee of \$2.25/day	0-17 months \$565; 18 mo-36 mo \$490; 3-5 yrs \$488
	2 parents, 2 children	17,712	34,092		
New Brunswick	All family sizes	15,000	—	0-2 yrs \$18.50/day	0-17 months \$482
	1 child, 2 years or older	15,000	23,100	2-6 yrs \$16.50/day	1.5-5.11 yrs \$418
	1 child, under age 2	15,000	24,180	6-12 \$9.25/day	school age \$226
Quebec	Not applicable	—	—	—	\$5/day for all ages
Ontario	n/a ³	n/a	n/a	n/a	n/a
Manitoba	1 parent, 1 child	13,787	24,577	\$4,756/child/year for full-day pre-school aged children. Programs may surcharge parents \$2.40/day/child	Infants \$560 ⁵ Preschool: \$376 School age \$238
	2 parents, 2 children	18,895	40,475		
Saskatchewan	1 parent, 1 child	(gross)19,668	(gross) 31,920	Infant \$325/month Toddlers \$285/month Preschool \$235/month School age 200/month Parents pay minimum of 10% of the cost	Infant \$ 481 Toddlers \$420 Preschool \$384 School age \$277
	1 parent, 2 children	(gross)20,868	(gross) 45,720		
Alberta	1 parent, 1 child	20,520	31,680	Infants \$475/month All other ages \$380/month	\$522.84 all ages
	2 parents, 2 children	24,120	44,520		
British Columbia	1 parent, 1 child	18,984	27,816	Infants \$585/month Toddlers \$528/month 3-5 yrs \$368/month	Infants \$705 Toddlers \$662 3-5 yrs \$494
	2 parents, 2 children	23,016	31,846		

Source: Doherty *et al.* 2003, Table 8.

1. Quebec: Provides publicly funded programs for all and additionally subsidizes parents who cannot afford the \$5 a day fee.
2. Ontario: Eligibility for subsidy is fixed by provincially determined needs tests with income being only one of a number of items considered. Each municipality can determine the rates within a range, a situation that creates considerable variation across the province. There are no province-wide maximum income levels for full or partial fee subsidies.
3. Manitoba: Sets maximum fees for all children in funded centres.
4. British Columbia: Effective April 2002, several changes were made to subsidy program. Eligibility levels were reduced.