

Impact of Quebec's Universal Low-Fee Childcare Program on Female Labour Force Participation, Domestic Income, and Government Budgets

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Abstract

We estimate that in 2008 universal access to low-fee childcare in Quebec induced nearly 70,000 more mothers to hold jobs than if no such program had existed – an increase of 3.8% in women employment. By our calculation, Quebec's domestic income (GDP) was higher by about 1.7% (\$5 billion) as a result. We run a simulation of the impact of the childcare program on government own-source revenues and family transfers. We find that the tax-transfer return the federal and Quebec governments get from the program significantly exceeds its cost.

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Background

In the Canadian federation, the Province of Quebec stands out on account of its more extensive family policy. Its income support to families is more extensive, its parental leave plan is more generous, and its universal low-fee childcare program is unique in Canada. This study focuses on the last of these. We aim to estimate the program's impact on female labour force participation, domestic income and government budgets.

The childcare program was launched by the Quebec government in September 1997. Back then, it cost parents \$5 per day, and initially it targeted the 4 year olds. Simultaneously, full-time kindergarten was extended to all 5 year olds. In September 1998, low-fee daycare was offered to all 5-to-12 children before and after school in kindergarten and elementary school. The program was then progressively extended to younger children. It was finally opened to all preschool-age (0-to-4) children in September 2000. In January 2004, the daily fee was raised to \$7. In March 2011, the program was serving 215,000 preschool-age children, that is, nearly half of all Quebec children in this age group. Of these, 38% attended early childhood daycare centres (*Centre de la Petite Enfance* or CPE), 43% home daycare facilities, and 19% other subsidized daycare services (Ministère de la Famille et des Aînés, 2011). In fiscal year 2011-2012, the provincial government expected to spend \$2,215 million

(0.7% of Quebec's GDP) to subsidize low-fee childcare (Québec Treasury Board, 2011, p. 115).

Below, in Section 1, we draw a broad comparative picture of recent trends in daycare services and female labour force participation in Quebec, Ontario and Canada as a whole. Section 2 focuses on four recent studies that found that subsidized daycare has led to a significant increase in the number of Quebec working mothers in the short and long term¹. Our assessment of their results leads us to conclude that in the reference year 2008 the availability of low-fee childcare had a significant positive effect on the number of Quebec mothers at work. In Section 3, we push the analysis further and estimate by how much the higher mother employment rate increased Quebec's domestic income (GDP) in 2008. Finally, in Section 4, we estimate the impact of the higher mother employment rate and higher domestic income on federal and provincial government revenues and family transfers. We conclude that in 2008 the low-fee childcare program improved the budget balances of all levels of government. It was therefore a "profitable" financial operation for all of them.

1. Recent trends in daycare and female labour force participation in Quebec and Canada

We begin by describing the evolution of daycare services and female labour force participation in Quebec and other Canadian provinces over the past 15 years.

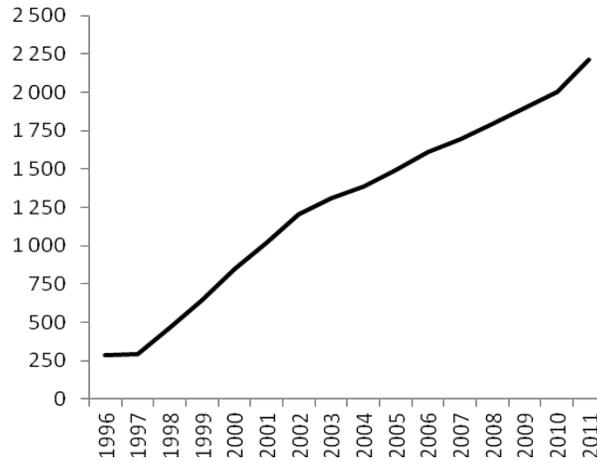
Quebec's low-fee childcare program expanded rapidly after its inception. The number of subsidized spaces (CPE, home daycare and other subsidized services) took off immediately following official implementation of the program in September 1997. Growth was very fast from 1998 to 2005, averaging 16,000 new spaces per year. It slowed down subsequently. In March 2011, 215,000 subsidized spaces were available. In non-subsidized (but regulated) daycare facilities, the number of spaces understandably crumbled at the end of the 1990s. However, it has bounced back since, first slowly until 2008 and then more rapidly since 2009. As a percentage of the total number of available spaces, non-subsidized spaces have jumped from 2% in 2008 to 8% in 2011. This recent increase in non-subsidized daycare stems from the rise of unmet excess demand for subsidized spaces, and also from the increase in the refundable provincial tax credit for daycare expenses in 2009.

The following two figures track the evolution of the cost of daycare subsidies for the Quebec government.

Figure 1: Gross cost of subsidies to daycare services, 1996-2011 (millions of \$)

Figure 1 shows that the annual cost of government subsidies increased sharply from \$300 million in 1997-1998, the year the program was launched, to \$2.2 billion in 2011-2012.

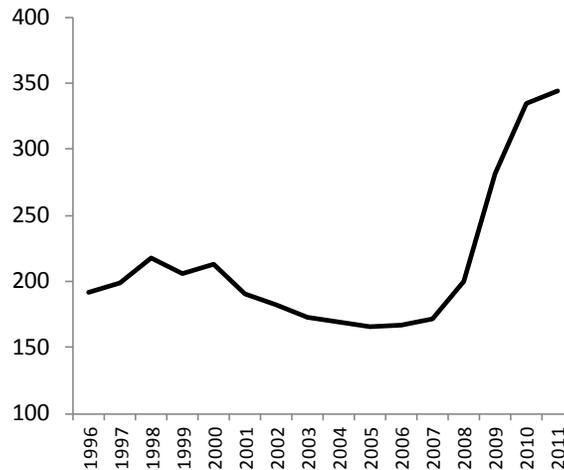
¹ A large body of empirical literature has shown the labour supply of mothers to be very sensitive to variations in the cost of daycare. A useful review can be found in Baker, Gruber, and Milligan (2008). The OECD (2011) has estimated the net cost of daycare in several member countries. It has confirmed that this factor matters a lot for the labour supply decision.



Source: Québec Treasury Board (various years).

Figure 2 indicates that the cost of Quebec's refundable tax credit for daycare expenses declined significantly up until 2005. This resulted from the fact that the daily fee paid by users for subsidized spaces did not qualify for this tax credit. Since 2005, the cost of the tax credit for the government has increased again because (as mentioned above) the number of occupied *non*-subsidized spaces has been on the rise and the tax credit itself was made more generous beginning in 2009.

Figure 2: Cost of Quebec's refundable tax credit for daycare expenses, 1996-2010 (millions of \$)

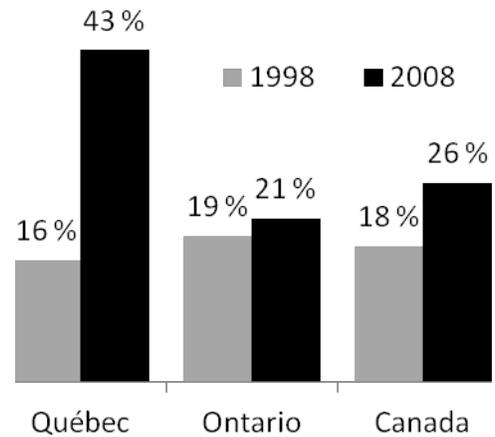


Source: Finances Québec (2011).

While attendance in regulated daycare grew spectacularly in Quebec, it changed very little in other parts of Canada.

This is shown by Figure 3, which compares attendance rates of 0-to-5 children in regulated daycare (subsidized or not) in Canadian provinces in 1998 and in 2008 (CRRU, 2000; Beach et al., 2009). The Quebec rate went from 16% to 43%. In Ontario and elsewhere, it kept hovering around 20%. The Quebec increase lifted the national average from 18% in 1998 to 26% in 2008. To sum up, over this period the attendance rate increased by 27 percentage points in Quebec, 2 points in Ontario, and 8 points in the country as a whole.

Figure 3: Percentage of children aged 0 to 5 in regulated daycare places, 1998 and 2008

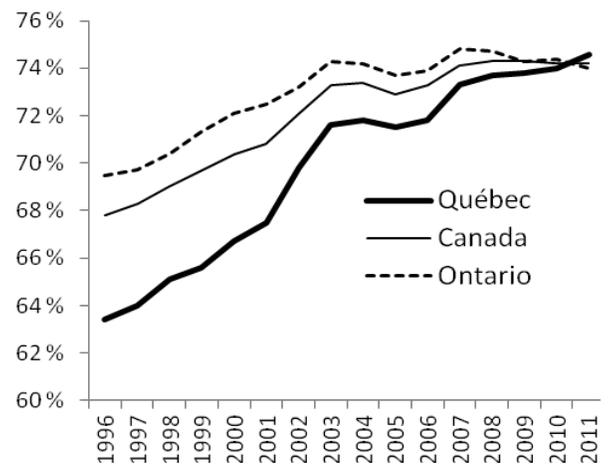


Sources: CRRU (2000), Beach et al. (2009), Statistics Canada, CANSIM Table 051-001.

The rapid development of the number of low-fee daycare spaces in Quebec was accompanied by an equally large increase in the number of Quebec women in the labour force.

Figure 4 shows that the labour force participation rate of women aged 15–64 in Quebec increased from 63% in 1996 to 75% in 2011. Though the participation rate of women in this age group increased in other provinces as well, the pace in Quebec was faster than the national average. The 6-point participation rate gap that existed between women in Quebec and those in other parts of Canada in 1996 had closed completely by 2011.

Figure 4: Labour force participation rate of women aged 15 to 64, Quebec, Ontario and Canada, 1989-2011



Source: Statistics Canada, CANSIM Table 282-0002.

² As a percentage of children of preschool age in Quebec (birth to 4 years), the attendance rate in regulated daycare increased to 51% in 2008 from 18% in 1998.

Table 1 compares the increases in labour force participation rates of women aged 15 to 64 that took place between 1996 to 2008 in Quebec, Ontario, and Canada as a whole. In Quebec, mothers experienced more pronounced increases in labour force participation than women without children. This was not the case in Ontario or in Canada as a whole.

Table 1: Labour force participation rate of women aged 15 to 64 by age of youngest child at home, Quebec, Ontario and Canada, 1996 and 2008 (percentages)

	Québec		
	1996	2008	Variation
Less than de 6 years old	63,1	74,3	11,2
6 to 15 years old	73,4	86,9	13,5
Without children	60,9	70,8	9,9
	Ontario		
	1996	2008	Variation
Less than de 6 years old	66,9	71,1	4,2
6 to 15 years old	78,8	83,7	4,9
Without children	67,8	73,5	5,7
	Canada		
	1996	2008	Variation
Less than de 6 years old	65,3	70,9	5,6
6 to 15 years old	77,2	84,1	6,9
Without children	66,0	72,9	7,0

Source: Statistics Canada (2009).

Table 2 further indicates that the increase in labour force participation from 1996 to 2008 in Quebec was very pronounced among single mothers with preschool-age children. It was nearly 22 percentage points. Over this period, the number of single-parent families on Quebec welfare rolls (headed by mothers in the vast majority of cases) declined from 99,000 to 45,000. Moreover, the relative poverty rate of single-mother families went down from 36% to 22%, and their median real after-tax income shot up by 81%³.

³ Sources: Ministère de l'Emploi et de la Solidarité sociale, for the number of families on welfare; Québec Statistics Institute, for the percentage of families whose income is less than half the median provincial household income; Statistics Canada, CANSIM Table 202-0605, for the median real after-tax income.

Table 2: Labour force participation rate of women aged 15 to 64 by family type and age of youngest child at home, Quebec, 1996 and 2008 (percentages)

<u>Dual-parent family</u>			
	1996	2008	Variation
Less than de 6 years old	65,6	75,3	9,7
6 to 15 years old	73,4	87,2	13,8
<u>Single-parent family</u>			
	1996	2008	Variation
Less than de 6 years old	46,2	67,8	21,6
6 to 15 years old	73,5	86,3	12,8

Source: Statistics Canada (2009).

Given that it is the behaviour of mothers that is most likely to be influenced by the low-fee daycare services made available in Quebec, and that (as shown in Table 1) the labour force participation rate of mothers increased more rapidly in Quebec than in Ontario or Canada as a whole from 1996 to 2008, it is interesting ask how many fewer Quebec mothers would have been employed in 2008 if their employment rate had moved in parallel with that of Ontario mothers between 1996 and 2008 instead of rising faster as it did. Needless to say, such a calculation is exploratory. It cannot ensure that the quantitative effect of low-fee childcare on female employment is appropriately identified, as there is no way of knowing by how much the employment rate of Quebec mothers would have changed absent these services. However, it can provide a useful indication of the order of magnitude of the impact that might be expected.

Table 3 presents the calculation in question. The upshot is that the number of Quebec mothers actually employed in 2008 exceeded by about 61,000 the number that would have been observed if their employment rate had moved in parallel with that of Ontario mothers from 1996 to 2008.

Table 3: Calculation of the number of Quebec mothers that would have been employed in 2008 if their employment rate had moved in parallel with that of Ontario mothers since 1996 instead of following the path actually recorded

	<u>Number of mothers</u>
Number of Quebec mothers who would have been employed in 2008 if their employment rate had remained the same as in 1996	459,940
<u>Plus:</u> Increase in the number of Quebec mothers employed that would have been observed from 1996 to 2008 if their employment rate had moved in parallel with that of Ontario mothers	54,884
<u>Equals:</u> Number of Quebec mothers who would have been employed in 2008 if their employment rate had moved in parallel with that of Ontario mothers	514,824
<u>Minus:</u> Number of Quebec mothers actually employed in 2008	575,579
<u>Equals:</u> Number of <u>fewer</u> Quebec mothers employed if their employment rate had moved in parallel with that of Ontario mothers instead of following the path actually recorded	60,755

Sources: Statistics Canada (2009); authors' calculations.

The fact that over the past 15 years Quebec has diverged from the national average both in terms of mothers' labour force participation and of children's attendance in regulated daycare does not constitute in and of itself proof that the latter has been the cause of the former. Factors other than implementation of the low-fee childcare program were present at the same time and could have drawn more (or fewer) women and mothers to the Quebec labour force. Only a finer statistical analysis can get at the true role that the program played in the matter. In the next section, we review the relevant statistical analyses that are available in the recent literature.

2. Impact of Quebec's low-fee childcare program on the employment rate of mothers

To date in the research literature, there have been four attempts at statistically estimating the impact of the low-fee childcare program on the employment rate of Quebec mothers. They have commonly applied the "difference in differences" method to microdata from two Canadian longitudinal surveys. Basically, these studies have sought to estimate by how much the difference between the employment rate of Quebec mothers and those from other parts of Canada has changed between the period prior to and the one following the introduction of the Quebec program.

Two of these studies – Lefebvre and Merrigan (2008) and Lefebvre, Merrigan, and Verstraete (2009) – have relied on the annual data from the Survey of Labour and Income Dynamics (SLID) for the periods 1993 to 2002 and 1996 to 2004, respectively. The other two – Baker, Gruber, and Milligan (2008) and Lefebvre, Merrigan, and Roy-Desrosiers (2011) – have used the biennial data from the National Longitudinal Survey of Children and Youth (NLSCY). The earlier study has exploited the data from the five NLSCY cycles 1994-1995 to 2002-2003. The later one has extended the sample to include the more recent 2004-2005 and 2006-2007

NLSCY cycles⁴. In addition to estimating the impact of the low-fee childcare program on the employment rate of mothers, these four studies have examined other outcomes as well, such as the effects of the program on the attendance rate of children in daycare and on a number of indicators of child development and well-being. In order to isolate the effects of the childcare program, a host of factors capable of influencing these various outcomes simultaneously have been taken into account, including mother's age, origin and educational attainment, family type, child's sex and birth order, size of place of residence, income other than mother's earned income, language spoken at home, and province of residence.

The four studies have exploited various samples. They differ with respect to the children's age group, the mothers' family types (i.e., all types or just two-parent families), and the sample period. These differences are indicated in Table 4.

A first characteristic of the studies is that the three of them that have focused on mothers of preschool-age children (Lefebvre and Merrigan, 2008; Baker, Gruber, and Milligan, 2008; Lefebvre, Merrigan, and Roy-Desrosiers 2011) give entirely consistent results for the period around 2002. Their estimates of program impact on the employment rate of mothers for this period have low sample variance and are of similar orders of magnitude. This is the case whether the data is from the SLID or the NLSCY and whether the sample includes all mothers or only mothers from two-parent families. The estimated increases in the employment rate lie in the 7.7-to-8.8 percentage point interval of the total population of mothers, with a standard deviation of 2 to 3 points.

Table 4: Estimated increases in the employment rate of Quebec mothers resulting from the low-fee childcare program according to four studies (percentage points of the total population of mothers)

	Lefebvre and Merrigan 2008	Baker, Gruber, and Milligan 2008	Lefebvre, Merrigan, and Roy-Desrosiers 2011		Lefebvre, Merrigan, and Verstraete 2009
Data source	SLID	NLSCY	NLSCY		SLID
Children's age group	1 to 5 years	Birth to 4 years Only from dual-parent families	Birth to 5 years		6 to 11 years
Mothers' family type	All		All		All
Period of estimate	2002	2000-2003	2002- 2003	2006- 2007	2004
Estimated impact on employment rate for this period (standard	8.1 (3.4)	7.7 (1.8)	8.8 (2.0)	12.0 (2.0)	7.0 (2.3)

⁴ In 2012, Lefebvre, Merrigan and Roy-Desrosiers have posted a new version of their 2011 paper that includes data from the 2008-2009 NLSCY cycle. The results they get for the employment behaviour of mothers with this expanded data set are only marginally different from those of the 2011 version.

error)

Note: The studies are based on data from two surveys conducted by Statistics Canada: the Survey of Labour and Income Dynamics (SLID) and the National Longitudinal Survey of Children and Youth (NLSCY). The employment rate of mothers is the percentage of the total population of mothers that had some employment in the survey reference year. The estimated impact reported on the next-to-last line should be interpreted as follows: if a group's initial employment rate was, say, 50% of the group's total population and if it increased by 7 percentage points (as in the right-most column), this means that the rate went from 50% to 57%. In the case of Lefebvre, Merrigan, and Roy-Desrosiers (2011), the effects reported for 2002-2003 and 2006-2007 are simple averages of the individual effects estimated separately for each of the six years of age (0 to 5).

Sources: Lefebvre and Merrigan (2008), Table 5; Baker, Gruber, and Milligan (2008), Table 2; Lefebvre, Merrigan, and Roy-Desrosiers (2011), Table 6; Lefebvre, Merrigan, and Verstraete (2009), Tables 3 and 4.

A second characteristic is that the impact on the employment rate of mothers estimated by the most recent study, that of Lefebvre, Merrigan, and Roy-Desrosiers (2011), is larger for 2006-2007 (12.0 points) than for 2002-2003 (8.8 points). This 35% increase in the program's impact over time is consistent with the increase in the number of low-fee childcare spaces between these two years. The number of spaces grew by 35%, from 146,000 in 2002 to 197,000 in 2006⁵.

A third characteristic of the results has been identified by Lefebvre, Merrigan, and Roy-Desrosiers (2011), but is not reported in Table 4 above. These authors have estimated that the childcare program had a large impact on the employment rate of mothers with a university degree as early as 2000, but that for mothers with a lower educational attainment the timing of the impact was different. It was initially small, but it gained strength over time until it managed to reach the same level as for the higher-educated mothers (after 2004)⁶. In 2006-2007, the impact seemed to be evenly distributed across levels of education.

A fourth characteristic of the results is the evidence they provide that the use of low-fee daycare when the child is of preschool age raises the mother's employment rate not only during this early period of the child's life but also later, once he or she has entered school. In other words, the program's impact on female participation in the labour force would have a dynamic extension and would persist over the long term. The evidence for this persistence effect was uncovered by Lefebvre, Merrigan, and Verstraete (2009), who examined the behaviour of mothers of children aged 6 to 11 having used low-fee daycare when their children were of preschool age⁷. As reported in Table 4 above, these authors have estimated that in 2004 the

⁵ Lefebvre, Merrigan, and Roy-Desrosiers (2011) also estimate for 2006-2007 an increased impact on employment for mothers of 5 year olds who were entering kindergarten and a decreased impact for mothers of children aged 0 to 11 months. In the latter case, the decrease might have come about in response to the 2006 introduction of the Quebec Parental Insurance Plan, which offers more generous parental leaves than those available in other provinces through the federally-administered plan.

⁶ The 2009 Survey on childcare use, needs and preferences of families conducted by the Québec Statistics Institute (QSI 2011b) provides further evidence. Table 6.1 of the survey reports that low-income families participate in the low-fee childcare program to almost the same extent (66%) as medium- and high-income families (75%).

⁷ See their Table 4.

employment rate of mothers of elementary school children was 7.0 percentage points higher if they had used low-fee daycare when their children were of preschool age. They also found that this increase in the employment rate was mostly due to mothers with less than a university degree. This result is consistent with the view that, even without a low-fee childcare program, a mother with a higher degree is very likely to return to work once her young children have entered school.

All told, how many more Quebec mothers has the program brought into employment⁸? Taking 2008 as our reference year, we base our answer to this question on the two most recent studies by Lefebvre, Merrigan, and Roy-Desrosiers (2011) and Lefebvre, Merrigan, and Verstraete (2009), whose results are reported in the last two columns of Table 4 above. In 2008, there were about 347,200 mothers of children aged 0 to 5 and 400,100 mothers whose youngest child was 6 to 14 years old in Quebec⁹. Multiplying these numbers by the respective increases of 12.0% and 7.0% in employment of these two groups of mothers (Table 4), we obtain an estimate of 69,700 more mothers at work in that year. This number is the sum of 41,700 more mothers of children aged 0 to 5 (the “static” effect) and 28,000 more mothers of children aged 6 to 14 who had previously been users of low-fee daycare (the “dynamic” effect)¹⁰.

Our bottom-line estimate is therefore that in 2008 the Quebec low-fee childcare program allowed 69,700 more mothers to hold jobs than would have been the case without it¹¹. Given that there were 1,852,400 women and 2,028,000 men in employment in Quebec in that year, these 69,700 more mothers raised total women employment by 3.79% and total Quebec employment by 1.78%. These orders of magnitude are quite significant. They are not too different from the exploratory results presented in Table 3.

To date, only mothers aged 50 or under may have had access to subsidized daycare and increased their presence in the labour market as a result. It can be conjectured that, as new cohorts of mothers access the program, the persistence or “dynamic” effect, and hence the total effect, of the program will grow larger over time than it was in 2008. Although plausible, this conjecture will have to wait for hard evidence to become available before a definitive conclusion can be reached.

⁸ Lefebvre, Merrigan and Roy-Desrosiers (2012) have estimated the impact of the program on the employment rate of fathers. They find that the impact is generally insignificant except perhaps in the case of fathers of 3 year olds. In what follows, we neglect the fathers’ response to the program.

⁹ Sources: Statistics Canada (2009) and the 2006 Census of Canada.

¹⁰ This follows from $12.0\% \times 347,200 = 41,664$ and $7.0\% \times 400,100 = 28,007$, which gives $41,664 + 28,007 = 69,671$. Note that we apply here to mothers of children 6 to 14 years old the figure of 7.0% that Lefebvre, Merrigan, and Verstraete (2009) have estimated for mothers whose youngest child is 6 to 11 years old. This is unlikely to generate a sizeable estimation error.

¹¹ Based on the standard errors reported in Table 4, we obtain an estimate of 11,500 mothers for the standard deviation around the estimated level of 69,700 mothers. This is calculated as follows: $((347,200)^2 \times (0.02)^2 + (400,100)^2 \times (0.023)^2)^{1/2} = 11,528$.

3. Impact of Quebec's low-fee childcare program on domestic income (GDP)

Estimating the impact of the childcare program on women's employment is only the first step that must be taken in order to measure its macroeconomic and budgetary impact correctly. In this section, we proceed to estimate the macroeconomic impact, that is, the effect on Quebec's total domestic income (GDP). In the following section, we evaluate the budgetary impact, that is, the effect on revenues and expenditures of the federal and provincial governments.

What are the consequences for the economy of several tens of thousands of women entering the Quebec labour force? More people looking for work exercises downward pressure on wages, which induces firms to employ more women. In a growing economy with inflation, wages do not diminish in absolute terms, but they do increase at a somewhat slower pace on the whole than would be the case without such a pressure from additional workers-to-be. The slower rate of wage growth increases business profitability and gives firms the needed incentive to invest in new productive equipment (e.g., machinery and equipment, buildings and engineering construction) that will make the new hires as productive as existing workers. This ensures that there will be growth not only in the total wage bill, but also in property income (e.g., business profits, investment income, etc.). All components of domestic income eventually benefit from the arrival of new workers. At the same time, precisely because the new equipment installed makes everyone more productive, wages and business profits finally return to the more "normal" levels dictated by the cost of capital established by local and global competition¹².

Given this kind of upward pressure on the labour force and the consequences just described, a fundamental theorem of the theory of economic growth due Robert Solow (1956) stipulates that domestic income (GDP) essentially reacts in proportion to the increase in the number of persons employed, provided that the new hires work as many hours and are just as productive as existing workers. This means that if employment grows, say, by 2%, GDP will end up increasing 2% as well. Solow himself (1957) presented empirical evidence for his theorem. It has since been confirmed time and again in the contemporary literature on developed economies¹³. What of the number of hours worked and productivity¹⁴ of mothers that are induced to join the ranks of the labour force by the low-fee childcare program? The studies by Lefebvre and Merrigan (2008)¹⁵, Baker, Gruber, and Milligan (2008)¹⁶ and Lefebvre, Merrigan, and Verstraete (2009)¹⁷ have estimated the impact of the childcare program on both the number of weeks and the number of annual hours of work. Their estimates suggest that mothers who enter the labour force essentially

¹² A widespread fallacy is to consider that the number of available jobs in the economy is fixed and that more women can get jobs only if they displace workers from existing jobs. The assumption that the number of available jobs is independent of the number of people who want to work is incorrect and has been shown to be so by thousands of empirical studies in time and space.

¹³ Olivier Blanchard (2000) presents a simple proof of the Solow theorem as well as modern evidence based on macroeconomic behaviour of several advanced countries.

¹⁴ Productivity is defined here as value produced *per person employed*.

¹⁵ See Table 5 of this study.

¹⁶ See Table 2 of this study.

¹⁷ See Tables 3 and 4 of this study.

hold full-time jobs and work as many hours in the year as workers who are already in the labour force on average.

The picture is a bit different for productivity and wages, which are closely related to education and experience¹⁸. The results in Lefebvre, Merrigan, and Roy-Desrosiers (2011) imply that the childcare program's impact on the employment rate of mothers of children aged 0 to 5 is as large for those with less than a university degree as for those with such a degree. However, in the case of mothers whose youngest child is over the age of 6, Lefebvre, Merrigan, and Verstraete (2009) have found that the impact on employment is concentrated among those with a lower level of education. As we have reported earlier, they get no significant effect in the case of university graduates. Given that the average wage of employees without a university degree was 89% of the average wage of the general population of workers in Quebec in 2008¹⁹, we take it that the ratio between the corresponding productivity levels of these two groups was 89% as well.

All these results on the number of hours of work and the productivity of mothers of children aged 0 to 5 and over 6 that were employed in 2008 due to the childcare program entail that their average productivity was 95.6% of the average productivity of other employed Quebec workers²⁰. With the 69,700 more mothers at work representing an increase of total employment of 1.78%, the program must have in turn raised domestic income (GDP) in 2008 by 95.6% of 1.78%, i.e., by 1.7%. This leads to an estimate of \$5.1 billion for the increase in Quebec's GDP due to the low-fee childcare program²¹.

4. Impact of Quebec's low-fee childcare program on government budgets

The impact of the childcare program on global economic activity obviously has implications for public finances. There are two main budgetary effects: increases in tax revenues and decreases in family transfers.

The standard assumption concerning tax revenues is that they are roughly unit-elastic, meaning that tax revenues increase more or less in proportion with GDP (see, for example, Dungan and Murphy, 2011; Advisory Committee on the Economy and Public Finances, 2010; Finances Québec, 2009, p. C.17). Under this hypothesis, the 1.7% increase in GDP arising from the increase in women employment we have just estimated must have led to a more or less equal increase of 1.7% in the own-source revenues of the government sector. The implied boost to tax revenues in 2008 is \$2.2 billion²². We are going to check the validity of this exploratory result through a more detailed analysis of the impact on government revenues.

¹⁸ The seminal work on the connection between wages, education and experience is that of Mincer (1974). Lemieux (2006) presents a contemporary review of the work.

¹⁹ Source: Statistics Canada (2009).

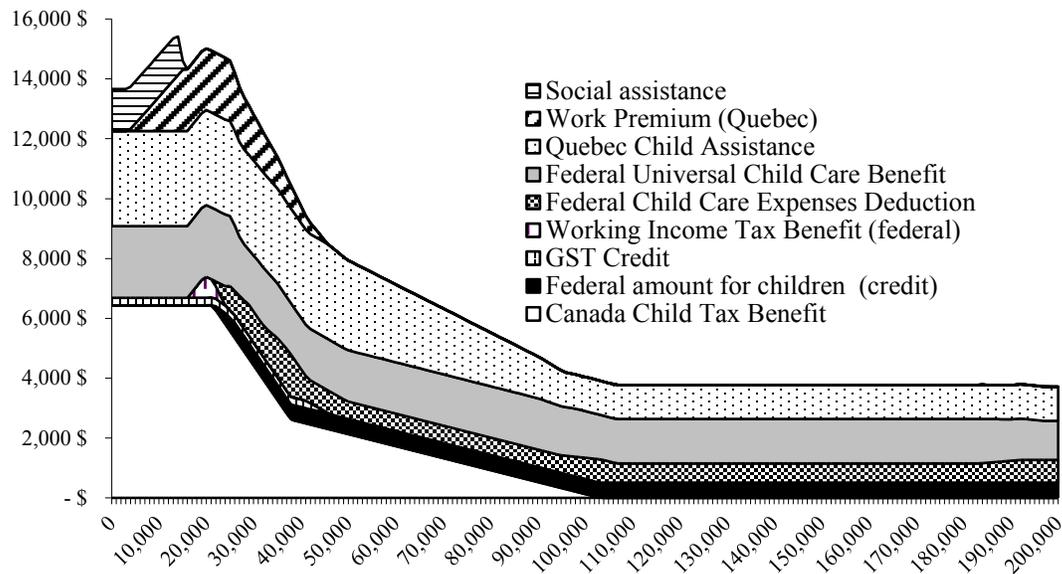
²⁰ This follows from: $(12.0\% \times 347,200 \times 100\% + 7.0\% \times 400,100 \times 89\%) / 69,700 = 95.6\%$.

²¹ The official GDP figure for 2008 is \$304,479 million, from which we get $0.0170 \times 304,479 / 1.017 = \$5,089$ million.

²² Since $\$128.2 \text{ billion} \times 0.017 / 1.017 = \2.2 billion , where \$128.2 billion is the amount of tax revenues collected by all levels of government in 2008 (Statistics Canada, CANSIM Table 384-0004).

Transfers, credits and other benefits broadly decrease when family income increases. Figure 5 illustrates this by referring to the situation of a family with two working parents and two small children. Collectively, the set of income support measures for Quebec families are a decreasing function of family income. The measures are less and less generous as family income increases. The straight implication is that higher women labour force participation translates into revenue savings for the government sector.

Figure 5: Income support measures for families with two working parents and two children under 6, Quebec, 2008



Source: authors' calculations.

Using a tax calculator, Baker, Gruber, and Milligan (2008) have estimated how much of the cost of the Quebec's subsidy to low-fee childcare is covered by the favourable impact of the increase in mothers' earned income on government budgets. They have found that in 2002 the two levels of government together managed to recoup 38% of the gross cost of the subsidy through an increase in personal income taxes and contributions to social insurance and a decrease in child tax measures. Lefebvre, Merrigan, and Roy-Desrosiers (2011) have later used the same tax calculator to estimate the increase in individual income taxes and the decrease in tax credits and transfers generated by the increase in mothers' earned income. They report that these favourable changes in taxes and transfers allowed the two levels of government together to recuperate an amount they estimate to be between a floor of 11% and a ceiling of 79% of the gross cost of the subsidy in 2004, depending on whether they assume the newly employed mothers to earn very low or very high wages. Going away from these extremes and assuming, more realistically, that these mothers earned median-level wages puts the government sector recuperation rate at roughly 35%. This is close to the earlier estimate reported by Baker, Gruber, and Milligan (2008).

The preliminary analysis of the budgetary impact of low-fee childcare offered by these authors is a good starting point but it does not cover all of the tax and transfer

changes generated by the Quebec program. Three additional elements need be taken into account. First, we have seen that the rise in the employment rate of mothers who take advantage of the program persists over the long term after the child has entered school (Lefebvre, Merrigan, and Verstraete 2009). This persistence effect too has tax-transfer implications. Second, the introduction of the childcare program has generated much more than an increase in the economy's total wage bill. As we pointed out in the previous section, it has also caused total GDP to expand and the government sector to extract – in addition to individual income taxes – indirect taxes, corporate taxes, and dividends from public enterprises. Third, a distinction must be made between the *gross* cost of the program, which is the total amount of the childcare subsidies, and its *net* cost, which subtracts from the gross cost the Quebec government savings arising from the lower use of its refundable tax credit for daycare expenses.

In the rest of this section, we explain how we have expanded the first-hand analyses of the program's budgetary impact carried out by Baker, Gruber, and Milligan (2008) and by Lefebvre, Merrigan, and Roy-Desrosiers (2011) along the lines just mentioned. We continue to use 2008 as our reference year.

We have proceeded in three steps. First, we have sought to reproduce as faithfully as possible the distribution of Quebec women into four family types according to whether they are single-parent or two-parent and whether the youngest child is less than 6 years of age or between 6 and 14. In each of these family types, women have been further distributed across five levels of annual earned income. In all, this has given us 20 categories (4 family types x 5 income levels).

For the purpose of distributing the women across the 20 categories, we have used the Survey of Labour and Income Dynamics (SLID). The SLID is an annual longitudinal survey on personal and household income that Statistics Canada has conducted since 1993, based on samples drawn from the Labour Force Survey. It provides detailed information on a vast array of characteristics and activities, such as composition of household, age and sex of members, kinship ties, educational attainment, employment experience, and various sources of income (Statistics Canada, 2010a).

It has seemed reasonable to us to assume that the childcare program had no effect on the employment of mothers whose (after-the-fact) earned income was less than \$10,000 or greater than \$60,000 in 2008. This has left women whose earned income was between \$10,000 and \$60,000 to be affected by the program. We have also assumed that the program had no effect on women from dual-parent families whose contribution to family income exceeded 75%.

The results of this operation based on the SLID are presented in Table 5. Each column of the table indicates how women are distributed by earned income (from \$10,000 to \$60,000) within one of the four family types. Depending on family type, between 70% and 80% of women earned less than \$40,000 in 2008.

Table 5: Distribution of women by family type and earned income, Quebec, 2008

Dual-parent family		Single-parent family	
Less than 6 y.o.	Between 6 and 14 y.o.	Less than 6 y.o.	Between 6 and 14 y.o.

\$10,000 to \$20,000	33 %	33 %	30 %	22 %
\$20,000 to \$30,000	27 %	21 %	30 %	30 %
\$30,000 to \$40,000	19 %	18 %	21 %	21 %
\$40,000 to \$50,000	12 %	19 %	13 %	18 %
\$50,000 to \$60,000	9 %	9 %	6 %	10 %
	100 %	100 %	100 %	100 %

Sources: Statistics Canada (2010b), authors' calculations.

The second step of our procedure has consisted of calculating by how much individual income taxes would have decreased and various transfers (GST and PST credits, Canada child tax benefit, provincial child support, and work premium) and social assistance benefits (mostly in the case of single-parent families) would have increased if the women newly hired following the introduction of low-fee daycare had not worked at all in 2008. This calculation provides an estimate of the program's direct budgetary impact.

This calculation depends on two elements. The first is the total number of women that the program has attracted into employment. Here, we make the same distinction as earlier in Section 2 between the program's "static" effect on the number of working mothers of children aged 0 to 5 (41,700 additional mothers in 2008), and its "dynamic" or persistence effect on the number of working mothers of children aged 6 to 14 who have been previous users of the program (28,000 additional mothers). For the sake of clarity, we will present our results on budgetary impact separately for the static effect and for the total effect (static and dynamic) of the program. The second required element in the calculation is the distribution of new working mothers across family types and earned income cells in 2008. We have assumed that the distribution of mothers across cells reproduces the pattern that has been reported in Table 5 from SLID data.

Once the direct impact on individual income taxes and on various transfers and social assistance benefits has been calculated based on these elements, we have proceeded to implement a third step. Full calculation of the global budgetary impact of the increase in economic activity generated by the childcare program requires estimating its effects on federal and Quebec own-source revenues other than income taxes and government transfers. These include employer and employee contributions to employment insurance, parental insurance, the Quebec Pension Plan, workman's compensation, indirect taxes (e.g., consumption taxes, property taxes, gasoline taxes, capital taxes, employer contributions to the Quebec Health Services Fund), and other revenues such as corporate income taxes and remitted profits from government enterprises. We have generally assumed that these

revenues increased in proportion to GDP, that is, by 1.1% for the static effect alone and by 1.7% for the total effect²³.

The results of our calculations based on the three steps just described are summarized in Table 6. The estimated budgetary impact is presented in three dimensions: according to whether we take into account only the static effect or include also the dynamic effect; according to whether we measure the direct budgetary impact only or the global impact; and according to whether we look at the impact on the federal budget or the Quebec budget.

Table 6: Estimated impact of Quebec's low-fee childcare program on federal and provincial finances, 2008 (millions of \$)

	Static effect			Total effect (static and dynamic)		
	Federal	Quebec	Total	Federal	Quebec	Total
Increase in individual income taxes	142	213	355	231	349	580
Decrease in fiscal benefits	58	44	102	100	63	162
Decrease in social assistance benefits	-	47	47	-	116	116
Direct budgetary impact	200	304	503	330	528	859
Increase in social contributions	34	199	234	55	318	373
Increase in indirect taxes	96	366	463	154	585	739
Increase in other own-source revenues	107	169	275	171	269	440
Global budgetary impact	437	1 038	1,475	710	1,701	2,411

Note: The nomenclature followed is based on Statistics Canada's provincial economic accounts. In addition to various consumption taxes, indirect taxes include property taxes, corporate taxes other than on income (e.g., capital tax), and payroll taxes other than social contributions (e.g., contributions to the Quebec Health Services Fund). Other own-source revenues are made of corporate income taxes, government investment income, and other transfers paid by individuals. Quebec government revenues include local government revenues.

Source: Statistics Canada (2010b), QSI (2011a), authors' calculations.

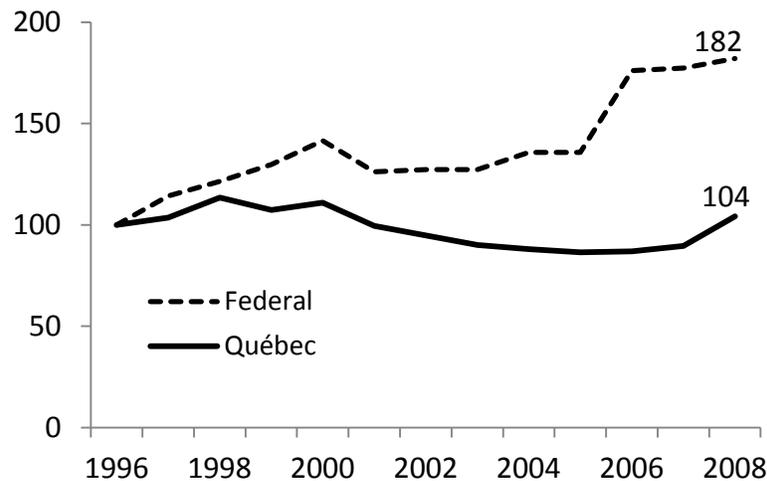
Considering the static effect alone, we calculate that the program allowed the two levels of government to recuperate \$503 million directly and \$1,475 million globally. When the dynamic effect is added, we obtain a direct budgetary impact of \$859 million and a global impact of \$2,411, again for the two administrations jointly. About 29% of the latter amount went to the federal government and 71% to the Quebec government. We also note that this global budgetary impact of \$2,411 million exceeds by about \$240 million the rough estimate obtained earlier under the assumption that the elasticity of own-source revenues relative to GDP was equal to 1 (see note 21). This extra amount may be explained by the fact that we now take into account not only the increase in own-source revenues, but also the decrease in government transfers.

The estimated global budgetary impact of \$2,411 million compares against a *gross* cost of daycare subsidies of \$1,796 million reported by Quebec government

²³ The relevant data are from Statistics Canada's *Provincial Economic Accounts* for 2008 (CANSIM Tables 384-0006 and 384-0007). The equation used is the following: if T is the amount of revenue and g is the percent increase in GDP (1.1% or 1.7%, as the case may be), then the resulting increase in T is calculated as $g \times T / (1 + g)$.

accounts in 2008. However, it is important to note that, as parents of children in subsidized daycare are not eligible for Quebec's refundable tax credit for daycare expenses, the use of this tax credit has diminished considerably since 1997. This has allowed the government to realize non-negligible savings. We estimate that these savings amounted to \$150 million in 2008. Figure 6 explains how we arrive at this estimate. The figure draws two curves, both originating at index level 100 in the year prior to the program's introduction (i.e., 1996). The bottom curve tracks the evolution of Quebec's refundable tax credit for daycare expenses. Its trajectory is rather flat and winds up at 104 in 2008. The top curve shows how the cost of the federal government's tax deduction for daycare expenses in all of Canada evolved over time. It is on a rising trend, reaching index level 182 in 2008.

Figure 6: Cost of federal and provincial tax relief for daycare expenses, 1996-2008 (1996 = 100)



Sources: Finances Québec (2011), Finance Canada (2010)

We assume that in the absence of the low-fee childcare program the cost of Quebec's refundable tax credit for daycare expenses would have mimicked that of the federal tax deduction for daycare expenses, that is, it would have increased by 82% between 1996 and 2008. With such growth, the cost of the Quebec tax credit would have been \$350 million in 2008 instead of \$200 million as was actually recorded. Hence our inference that in 2008 the Quebec tax credit was \$150 million smaller than in the absence of the childcare program. We recognize that the program may also have had an impact on the use of the federal deduction for daycare expenses by Quebec taxpayers. However, there are two opposite effects at work here: on the one hand, the number of Quebec parents using the federal deduction was much higher, but, on the other, the expenses deducted by each parent were much lower. We have neglected these effects, as they are likely to have only a small impact on net.

We conclude that in 2008 the *net* cost of childcare subsidies for the Quebec government amounted to \$1,646 million, that is, \$150 million less than their *gross* cost of \$1,796 million. The estimates that we report in Table 6 indicate that the static effect of the childcare program alone allowed the two levels of government to get back 31% of this net cost directly and 90% globally. Adding the dynamic effect, we find that the program's total tax-transfer return was 52% of the net cost directly and 147% globally.

Conclusion

In September 1997, the Quebec government launched a universal low-fee childcare program that initially targeted the 4 year olds and was gradually expanded to cover all preschool-age children (birth to 4 years) by September 2000. Over the past 15 years, there has been a spectacular jump in the proportion of Quebec children in this age group who attend regulated daycare. The percentage has shot up to 53% in 2011 from 18% in 1998. This trend has been unique to Quebec among Canadian provinces. Elsewhere in the country, the attendance rate in regulated daycare has not changed much. From 1998 to 2008, it hovered around 20% for children aged 0 to 5.

The labour force participation of Quebec women has also followed a different trend. In 1996, the labour force participation rate of mothers²⁴ was 4 percentage points lower in Quebec than in other parts of Canada. In the last 15 years it has increased more rapidly than elsewhere and is now higher than the national average²⁵. The increase in women employment in Quebec has been particularly marked among mothers of children under the age of 15 and among heads of single-parent families. Based on our review of existing studies, we have calculated that the low-fee childcare program was responsible for about 70,000 additional Quebec mothers being at work in 2008. We have then estimated that this influx of women in Quebec's labour force led to a \$5.1 billion increase in provincial domestic income (GDP) in that year.

More employed women and increased domestic income have had a significant positive impact on government fiscal balances, generating more income and other taxes and lower transfers. We have estimated that the tax-transfer return to the federal and provincial administrations from the childcare program ranged from \$500 million to \$2.4 billion in 2008, depending on whether the particular impact considered was direct or global, and whether only the program's static effect was considered or its dynamic effect was taken into account as well.

Finally, we have compared the \$2.4 billion overall budgetary return against the program's cost in 2008. We have taken into account that the lower use of the Quebec refundable tax credit for daycare expenses was subtracting some \$150 million from the out-of-pocket cost of the childcare program for the Quebec government. Our resulting estimate has been that the net cost of the program was just over \$1.6 billion in 2008. One implication is that the direct budgetary impact arising from the program's static effect and benefitting the two governments covered of 31% of its net cost. Adding the dynamic effect and extending estimation to the global budgetary impact, we have found that the program did much better than just pay for itself. Quebec's net expenditure of \$1.6 billion generated a favourable budgetary impact of \$2.4 billion for the federal and Quebec administrations taken together. The breakdown was \$1.7 billion for Quebec and \$0.7 billion for Ottawa. One way to sum it up is that in 2008 each \$100 of daycare subsidy paid out by the Quebec government generated a return of \$104 for itself and a windfall of \$43 for the federal government.

Quebec's low-fee childcare program has been financially "profitable" for the two levels of government. This in itself is interesting and reassuring. However, this is neither a necessary nor a sufficient condition for it to qualify as a "good" program. There is no doubt that the program makes it easier for parents to better balance work and family. But it needs to be recognized that its rapid growth has given rise to various problems. Above all, the demand for subsidized spaces still considerably exceeds the supply. Moreover, the development of new facilities, place assignment rules, the flexibility of operating hours, the quality of educational services (particularly for children from low-income backgrounds), short- and long-term

²⁴ That is, women age 15-64 with children under the age of 16.

²⁵ Women labour force participation has also increased briskly in the three Maritime Provinces over the 1996-2011 period.

effects on child development, the rate of investment in staff training, and the universal nature of the program are regular topics of debate. Nevertheless, the program is extremely popular with young families, so that it is definitely there to stay. Consequently, these problems must be viewed as challenges to growth that must be met rather than as threats to the program's survival.

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The benefits and costs of Ontario's proposed early learning and care system

NB: the references for this report provide a useful source for other significant ROI research

Abstract

About this Report

This report examines the benefits and costs of the early learning and care system proposed by the Pascal report on early learning and care for Ontario. The short and long-term economic benefits are calculated for the Ontario economy from the operation of the proposed early learning and care system. It is found that the early learning and care system boosts the economy by \$2.0 per dollar of expenditure in the short run. In the long run, the benefit to cost ratio is estimated to be 2.4 to one.

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Executive Summary

The implementation of the proposed early learning and care system outlined in Pascal (2009) will create substantial short, medium and long-term benefits for Ontario. This report examines the economic implications of the proposed changes as of the first year of full operation in 2012-13 using conservative assumptions. Pascal proposes to increase expenditures by up to \$990 million in order to introduce an Early Learning Program (ELP) for children aged 4-5 years so that they can have full day learning provided by school boards at no additional cost to parents. Extended day/year learning and care programs for children in kindergarten, primary grades and children 9-12 will be provided where numbers warrant on a fee per child basis. The report also proposes a significant re-engineering of current services for children 0-3 in order to develop Child and Family Centres (CFC) to provide integrated services for these children and their parents. It is envisioned that this will be accomplished by reallocating \$1 billion of current funding. Capital costs worth \$1.7 billion over 25 years will be needed to build new classrooms and to renovate existing classrooms. Funding for these initiatives will be accomplished by using \$1 billion of new funding, and re-organizing \$1 billion of current spending.

These proposals will boost the amount of spending in the economy by 2012-13 via several channels. First, as expressed by Pascal, the introduction of the ELP for children 4-5 will result in new expenditures of up to \$990 million. Moreover, the introduction of all day learning for children 4-5 will likely boost the utilization rate for this group, which we estimate will lead to an additional 12,800 children receiving JK/SK education. Second, Pascal foresees that the re-organization of Early Learning and Care (ELC) will lead to lower fees for extended day/year programming for children 4-8. Since Canadian parents are very price sensitive this will cause a significant increase in utilization rates for these programs. We estimate that lower fees will encourage an additional 126,300 children aged 4-8 to use extended day/year programs. This will cause total parental expenditures to rise by an estimated \$480 million. Third, although the reorganization of CFC will not have a significant net effect on the economy in the short-term because total spending stays the same, there is the prospect of rising utilization over time. Fourth, Capital costs over 25 years are expected to be \$1.7 billion, but the cash costs are estimated to be \$570 million on average over the first three years to ensure that there are sufficient classrooms for the programs to commence. In total, the injection of money into the economy from the proposed changes is \$2,040 million by 2012-13. This spending will cause a large increase in GDP.

For the proposed system, it is estimated that one dollar of spending for ongoing operations increases GDP in Ontario by \$2.02 and by \$1.90 for the GTA and Toronto. For capital spending, one dollar of spending adds \$1.47 to GDP for Ontario and \$1.36 for the GTA and Toronto. Combined these effects are worth 1.87 per dollar of spending in 2012-13. The total employment multiplier for the operation of the new system is estimated to be 29.3 for Ontario, 27.6 for the GTA and 27.6 for the city of Toronto per million dollars of spending. The total number of jobs created per million dollars of capital expenditures is 20.1 for Ontario and 18.8 for the GTA and

Toronto. Notably, the multiplier effects from ongoing operations in particular are above the stimulus to the economy from the expansion of most other industries and are above the short-term impact on the economy from an increase in taxes to pay for these proposals.

After factoring in the change in revenues and costs of the new extended day/year programming for children 0-12, we estimate there would be roughly \$60 million in extra funding available to support additional fee subsidies. At the expected amount of fees per child in the new system, this would provide an additional 6,420 subsidized spaces for children 0-3 or 12,890 subsidized spaces for children 6-8. If subsidies are distributed across all age groups in the same proportion as current subsidies there would be 9,710 new subsidized spaces. In total our estimates suggest that Pascal's proposals will increase the number of children receiving early learning by 139,200. The more children receiving quality education the greater the long-term benefits are to society.

Long-term benefits from the implementation of the proposed ELC system can be divided into benefits to children and parents/mothers. The primary quantifiable benefit to children is higher future income due to lower high-school dropout rates and consequently higher post-secondary attendance rates. The primary quantifiable benefits to parents/mothers are increases in present earnings due to higher labour force participation rates and increases in future earnings due to more work experience and higher post-secondary completion rates. Qualitative benefits include improved psychological outcomes from higher quality care. It is found that the ratio of long-term benefits relative to long-term costs for Ontario is 2.42, and is estimated to be 2.21 for the GTA and 2.24 for the city of Toronto. These long-term estimates are based on conservative assumptions and are in the range of the benefit-to-cost ratios that other researchers have estimated for universal programs. These short and long-term benefits clearly indicate that the implementation of the Pascal recommendations will benefit the Ontario economy and society.

The number of children who will benefit from improved access to quality education is expanding. Demographic projections show that the number of children needing ELC will expand for the foreseeable future, which means the net economic benefits from changing the ELC system will be magnified in the future beyond the estimates for the first year of the operation of the new ELC system highlighted in this report.

Introduction

This report analyzes the short- and long-term economic implications of the implementation and operation of the early learning and care system (ELC) as outlined in Pascal (2009) for Ontario and the city of Toronto. The focus of the report is on the ELC system when first fully implemented by 2012-13.

To understand the economic implications of the Pascal report it is helpful to understand several factors including: the proposed changes to early learning and care services, the number of children who likely will be affected by these changes, the short and long-term economic effects that flow from these changes.

To simulate the short-term impact of the Pascal report on the economies of Ontario and Toronto, the direct and indirect economic impacts resulting from a change in money injected into the Ontario economy is estimated using Statistics Canada's input-output model simulations for Ontario. These results were distributed to sub-provincial areas based on the number of affected children. The induced economic impact was also estimated to ensure that the full short-term effects are included. The approach to determine the induced effect used the C₄SE Ontario regional model. The Ontario regional model has the Greater Toronto Area (GTA), but not specifically the city of Toronto. The induced effect was distributed between the city of Toronto and the GTA outside of Toronto based on the number of children affected.

The long-term benefit/cost analysis rests on the approach taken by Fairholm (2009a) and uses various data for Ontario, the GTA, the Toronto Census Metropolitan Area (CMA) and the city of Toronto. The basic approach is to calculate the net present value of all benefits to children, parents and the economy, as well as the net present value of costs to society over the next 80 years.

The analysis is divided into four main sections. The first section supplies a brief synopsis of the proposed changes to the ELC system in Ontario and some broad discussion of the implications. The second section identifies the number of children in Ontario and Toronto who will potentially be affected by changes to the early learning system. The third section outlines the short-term economic impacts of the proposed early learning and care system, and the fourth section outlines the long-term economic impacts of the proposed early learning and care system. A detail discussion of the methodology used can be found in the appendices.

Pascal Report Synopsis

The Pascal report recommends several changes to the early learning and care services in Ontario. Some changes will affect children in all age groups, while other

changes will affect specific demographic groups. The proposals will clearly involve children in four distinct cohorts: 0-3, 4-5, 6-8 and 9-12 years. Other proposals have the potential to affect children with special needs. The proposals will influence the number of children using ELC services, potentially the quality of ELC, as well as the developmental and educational outcomes for children. To understand the potential effects it is helpful to summarize the changes that are proposed and the broad implications of these proposals and the assumptions used in the analysis before examining the impacts in detail.

Pascal proposes a common programming framework for all of Ontario's early childhood settings based on Early Learning for Every Child Today (ELECT). The continuum of development and guidelines of practice in ELECT will provide a common approach, tools and guidance for working with children zero to eight years, including in Child and Family Centres (CFC), the Early Learning Program (ELP) and the primary grades.

Pascal also states that Ontario needs a consistent approach to screening all children as early in life as possible. He proposes using the Nipissing District Developmental Screens (NDDS) throughout the province. The NDDS offers 13 screens that assess children's development at intervals between 1 month of age and 6 years. The NDDS is also included in the enhanced 18-month well-baby visit now in development in Ontario. Pascal envisions the visit as being a prime occasion to connect parents with CFC and other community services. He also proposes that a further developmental check should be carried out at registration for the Early Learning Program.

Therefore Pascal proposes assessments of children shortly after birth, 18 months and registration for the full-day ELP. Assessments have the potential of identifying children with special needs.

Pascal also thinks these assessments will provide parents with information about their child and complement the detailed portfolios of each child's progress in early years programming. This information could help to engage more parents in their children's education. In particular, Pascal notes the importance of parental involvement in their children's education and partnerships between educators and parents. He proposes informal outreach for some parents, and a process through flexible program models that support two-way partnerships. Pascal notes that achievement gaps can be reduced by regular participation in quality programming that helps make parents aware of how their children learn and gives them ideas and resources to support their children's development. If these gaps are eliminated there could be a very large impact on the long-term effects.

For children 0-3, the report notes that the current arrangement is spread among multiple providers and under a variety of auspices. Pascal recommends that programs be integrated into Best Start CFC under a single municipal system manager in each area. The centres would provide a variety of services including flexible, part-time and full-day/full-year early learning/care options for children up to 4 years of age. The preferred location of these centres would be in schools. Non-school locations would be partnered with a school or family of schools. The operation of CFC could be provided by local or regional governments, school boards, postsecondary institutions, or non-profit agencies. Non-profit and commercial providers could continue to operate licensed child care in accordance with current

program standards. All service expansion would take place through CFC and school boards. Fees would continue to be charged for some aspects of ELC.

For children aged 4-5, there would be a shift from the provision of half-day kindergarten to a system that provides a full-day, school-year ELP, operated by school boards. The full-day implementation would start in 2010-11 and take three years to be implemented, so that the plan would be fully implemented by the 2012-13 school year. There would be no parent fees, so these services would be financed via general provincial tax revenue. Parents would have the option of extended programming before and after the school day and year, not as an add-on, but as part of the ELP provided by school boards. Parents would pay fees for extended day/year programming.

The Pascal report also proposed that extended programming would also be available for primary school children. For children 6-8, there would be extended programming provided by school boards before and after the traditional school day, and during summer and school holidays. For children 9-12, school boards would be obligated to ensure there is after school programming (e.g., sports, arts, communications, etc.). These extended day/year programs would be made available at the request of 15 or more families in a school. Parents would be charged fees for extended day/year programs.

Pascal's proposals extend beyond the above reforms. He suggests that after the above programs are established that by 2020 paid parental leave should be expanded to up to 400 days on the birth or adoption of a child. Six weeks are for the exclusive use of the father or other non-birthing parent; if not used the time would be deducted from the 400 days. This provision, however, would not impact single parents who would be entitled to the full 400 days. Coverage would be expanded to include self-employed parents. The program would be flexible to allow parents to extend and supplement their leave by returning to work part time. In addition, there would be ten days of job-protected family leave for parents with children under 12. Since this report is focused on the economic impact of the ELC system when first fully implemented the economic effects of expanded parental leave will not be examined.

Economic Implications of Measures in Pascal Report

This section discusses the implications of the changes proposed by the Pascal report. Global implications are discussed first and then those for specific cohorts are discussed next. Where possible the analysis will identify if the proposals affect the short-term versus long-term analysis.

The short-term analysis focuses on the change in expenditures to operate the new system. If governments spend more on direct expenditures, such as salaries and infrastructure, then near-term economic activity receives a boost. An increase in government transfer payments does not directly boost economic activity. It is only when the money is spent by the recipient, such as households, school boards or municipal governments that economic activity is increased. This distinction is important because spending in different sectors affect the economy differently. Moreover, since the re-organization of ELC is expected to lower fees, ELC utilization

will rise. If total spending on ELC increases there can be an additional leveraged economic effect.

For the long-term analysis, it is important to determine not only the magnitude of the impact on societal costs and benefits but also the timing of these impacts so that the net present value of the long-term benefits and costs and the benefit/cost ratio can be calculated.

Some of the proposed changes are straightforward to quantify, while others are more difficult. To help in the calculation of the economic effects, it is useful to differentiate between the impact on an average or representative child and the total number of children who will be affected. The effects per child or child hour are obtained from the literature that examines the impact of different types of early learning programs on children's developmental and/or educational outcomes.²⁶ The number of children affected are calculated by using an average of parental fee sensitivity that was found by Powell (2002) and the situation in the U.K. (see Appendix A) The implications of the proposed changes are more difficult to quantify when dealing with changes that affect the quality of ELC services or the behaviour of parents. In some cases there is insufficient information to quantify the effect on the average child or the number of children affected using reasonable assumptions. In these cases the effect is noted, but the impact is not included in the quantitative analysis.

General Implications

It is important to note that Pascal is proposing a number of complementary changes to the early childhood learning and care system. These ECERS changes could influence the quality of ELC, early identification of special needs children and provide a system that successfully increases the involvement of parents in their children's education. If successful, the proposals could dramatically improve the developmental and educational outcomes for children of all ages and therefore would boost the long-term economic benefits flowing from Pascal's proposals. Many of the proposals could also boost demand for ELC services in the short, medium and long-run. The combination of increased benefits per child with greater demand (more children using the ELC services) means that the total effect could be larger than the sum of the partial effects discussed below.

Pascal proposes a common programming framework for all of Ontario's early childhood settings based on Early Learning for Every Child Today and use of NDDS throughout the province. In Pascal's view these assessments will provide parents with good information about their child and complement the detailed portfolios of each child's progress in early years programming. This approach appears to be part of a process by which to engage parents in their children's education. The involvement of parents in their child's learning can pay large dividends.

Jeynes (2005) states that meta-analysis show that parental involvement is associated with higher student achievement outcomes. These findings emerged consistently whether the outcome measures were grades, standardized test scores, or a variety of other measures, including teacher ratings. For the overall population

²⁶ see Fairholm (2009a) for a review of the literature.

of students, on average, the achievement scores of children with highly involved parents was higher than children with less involved parents. This academic advantage for those parents who were highly involved in their education averaged about 0.5 to 0.6 of a standard deviation for overall educational outcomes, grades, and academic achievement.

Unfortunately, it is beyond the scope of the present study to include the potential economic impact from changes in parental involvement. There are two reasons for this limitation. First, the current rate of parent involvement is unknown. Second, the impact that the new system will have on parental involvement is unknown. Omitting this effect will cause the long-term benefit/cost estimates to be conservative.

Special Needs Children

Early identification and intervention is widely acknowledged to offer improved outcomes to children with learning disabilities.²⁷ If early assessment is successful in identifying special needs children, then there could be a large payback for these children. For children with established disabilities, meta-analysis finds that early intervention improves cognitive development by 0.5-0.75 of a standard deviation (SD).²⁸ However, La Paro et al. (2002) indicate that establishing criteria for the entry of infants and toddlers into services is difficult because the majority of very young children eventually identified as developmentally delayed or learning disabled (LD) display no organic basis or overt marker. Jenkins and O'Connor (2002) find that approaches used to identify children with reading/learning disabilities tend to either over or under predict the number of children with persistent learning difficulties. Both over and under prediction have costs. Pascal recommends a higher frequency of assessments using NDDS. NDDS is a parent based screening tool with 13 screens that assess child development. Nagy, et al. (2002) found a high rate of agreement between NDDS and the Ages and Stages questionnaire.²⁹ And Dahinten and Ford (2004) examined parent completed NDDS with results obtained through direct child assessments by professional and found that NDDS is effective at capturing children with severe delays compared with direct child assessments using the Mental Development Index of the Bayley Scales of Infant Development-II. Children with mild to moderate delays were less well identified. These studies, however, compare NDDS with other assessments, but not versus longer-term developmental outcomes. No studies that show the predictive success of NDDS were found, so the actual number of over-referrals and under-referrals cannot be estimated.

There appears to be greater success in identifying LD at older ages, so having multiple assessments as proposed by Pascal could lead to a better identification of LD than a single assessment. The degree of improvement, however, is unknown. Furthermore, there is no estimate of the cost of the increased frequency of the assessments. Even in a system of parent-based screening, false positives that

²⁷ see Casto and Mastropieri (1986), Shonkoff and Hauser-Cram (1987), and Guralnick (1997)

²⁸ Guralnick (1991). Guralnick (2004) also states that declines in intellectual development for children at risk in the U.S. can be 0.5 to 1.5 SD.

²⁹ Dahinten and Ford (2004), NDDS 1 flag: total agreement 78.3% over referral 21.2%, under referral 0.5%, NDDS 2 flags: total agreement 93.4%, over referral 21.2% and under referral 0.5%.

require additional assessments by professionals would have a cost. It is not clear if these costs are expected to be offset by a reduce number of false positives using the current system. Since there is a lack of information regarding the potential benefits and the costs, this part of the Pascal report cannot be explicitly included in the benefit/cost analysis.

Children 0-3

The implicit assumption in the Pascal report concerning the Child and Family Centres for children 0-3 is that there would be a reallocation of funding and no net change in spending. There would be significant re-engineering of existing programs that would reduce costs in some areas and increase costs in other areas, but that there would be no net change in the overall operating costs once the new system is in full operation. Since operating costs remain the same, there will not be a significant short-term economic impact from the operation CFC in the new system.³⁰ The Pascal report did indicate that there may be a need for transitional funding, but the magnitude was not identified and would presumably not continue during the normal operation of the new system, which is the focus of this examination. The report also suggests that once services are organized to reflect what families want and need, they will have a better idea about the levels of new investment required for expansion. So there may be more money later for this aspect of the proposals, but the magnitude of this expansion was not specified in the original proposals and therefore was not included in the current analysis of the short-term effects. Furthermore, if fees for ELC services for children 0-3 remain the same there would not be any change in utilization rates, which would keep total parental fees at the same level. So the net short-term impact would be zero.

Long-term benefits depend on the effects per child from the operation of the new system and from changes in the utilization rate. For children 0-3, there may be long-term benefits because the new system will be delivered by ECE trained providers and special needs resource teachers. More highly trained staff tends to improve the quality of ELC services and therefore the long-term benefits for participating children. Also more highly trained staff could help to identify special needs children earlier, which would provide additional long-term benefits. The Pascal report also suggests that the staff-child ratios and age groups should be reviewed, which could result in a change in the staff-child ratio.³¹ A higher staff-child ratio likely would improve the quality of the ELC services provided to children and would boost long-term benefits. Higher staff-child ratios would also boost costs and these expenditures would have an immediate short-term impact. Any change in the staff-child ratios, however, is likely to occur beyond 2012-13, which is the focus of the current study.

³⁰ Ontario's direct and indirect GDP multipliers are: 0.99 for child care, 0.92 for education and 0.86 for health care and social services. There could be a small positive net impact depending on the mix of spending changes. Since the re-engineering is mostly administrative costs, it is not possible to determine the impact.

³¹ McCartney (2004) states a ratio of one teacher for three or four infants (1:3-1:4) is accepted as a quality threshold. Current Ontario's staff-child ratios are 3:10 for children less than 18 months and 1:5 for children 18 to 30 months. The former is in McCartney's quality threshold range, but the latter is not. Pascal suggests a ratio of 1:4 for children up to 30 months, which is in McCartney's range.

It is not clear what additional long-term benefits may accrue to children 0-3 years from the introduction of the new system since these benefits depend in part on the early identification and intervention for special needs children, and from increased parental involvement. Any additional impact on the long-term benefits and costs would therefore depend on whether the utilization rate increases in the new system. Since costs of the system remain the same it is unlikely there would be an increase in the utilization rate.

Children 4-5 School Day Program

The proposal to replace the half-day kindergarten program with a full-day ELP for 4-5 year olds would cause an increase in the utilization of school provided ELC during the normal school day and a decrease outside the school system. Parents would favour the all day ELP over non-school services for two reasons. First, the direct cost to parents of using these services would fall to zero since the system would be funded by general tax revenues. Second, the actual and perceived quality of ELC provided by the school system would likely be higher than what generally is provided outside the school system in part because the new system uses teachers and ECE trained staff.

If parents perceive that the quality of ELC provided by the school system is higher than what is currently available there will be an increase in demand for these services. We have assumed that enrolment rates for JK rises from 83% to 87.5%, and that the enrolment rate for SK rises from 88% to 92.5% and averages 90% for the combined 4-5 age cohort (see Appendix A for a discussion of the assumptions). Also better trained staff means the developmental and educational outcomes will be better for children in the new system, which will boost the long-term benefits.

Children 4-12 Extended Programs

Extended day/year care can be beneficial to children, particularly disadvantaged children. Durlak and Weissberg (2007) state that one meta-analysis of 35 studies found that the test scores of low-income, at-risk youth improved significantly in both reading and mathematics after they participated in after-school programs (Lauer et al., 2006). They report, however, that academic outcomes for other youth have been inconsistent (Kane, 2003; Scott-Little, Hamann and Jurs, 2002; Vandell et al., 2004). Durlak and Weissberg's find that youth who participate in after-school programs that use evidence based skill training approaches improve significantly in three major areas: feelings and attitudes, indicators of behavioral adjustment, and school performance. They also reduced problem behaviours (e.g., aggression, noncompliance and conduct problems) and drug use. They find that effective after-school programs improve academic achievement measures by 0.31 SD and is similar in magnitude to successful primary prevention programs

Similarly the research that examines extended year programs tend to find positive results. In a meta-analysis of summer school results for elementary and middle school children Cooper et al. (2000) reported that children benefited by 0.14 to 0.25 standard deviations on academic achievement measures from summer school programs. And Kim (2006) found that those studies employing the most rigorous (random assignment) evaluation designs showed even larger effects. Winship et al. conclude that these meta-analyses imply that summer academic programs typically increase students' test scores by one-fifth of a standard deviation, which is

equivalent to moving a student from the 50th percentile of the distribution to the 58th percentile.

For 4-8 year olds we have assumed that the utilization rate for extended day/year programming rises based on the drop in fees and the higher utilization rate for wrap around care found in the UK. Using an average of these estimates, means that the utilization rates for 4-5 will rise from 34% to 52%. For 6-8 year olds, it is assumed that the utilization rate rises from 7% to 24%.³² Since there is no drop in fees for children 9-12, the utilization rate for this age cohort is assumed to remain the same after the change in after school programs. (see Appendix A for a discussion)

Costs/Funding

The Pascal report recommends the following new spending:

- \$990-million for staffing, occupancy and operating of full school day/year preschool program for 4-5 year olds and occupancy costs, administration, supervision, program and professional development for an extended day/year program for 4-12 year olds
- \$1.7-billion in capital for school expansion
- Reallocate child services spending of up to \$1 billion, and re-engineering of services provided by CFC. To be managed by municipalities
- Transitional funding for municipalities –not specified

Pascal suggests the following funding sources:

- \$500 million of committed funding. The Ontario government’s funding commitment is for \$200 million in 2010 and \$300 million in 2011.
- Reallocate up to \$1-billion of children’s service spending (Ministry of Children and Youth Services (MCYS) and municipal) to municipalities
- Re-engineering of services provided by CFC.
- \$1-billion of new funding out of general revenues.
- Parents’ contribution for fee based programs: early learning and care program for children 0-3 and extended day/year for children 4-12.

Table 1: Government Costs and Funding of New Early Learning System First Year of Operation*	
Costs	(\$ Millions)
Early Learning Program for Children 4-5**	\$990
Municipal Spending for CFC & Subsidies for children 0-12	\$1,000
Capital Expansion***	\$570
Transitional Funding for Municipalities	Not Specified
Total Spending	\$2,560
Funding	
New Funding	\$1,000

³² The number of children 6-8 in extended programs is unknown. The utilization rate for the children 6-12 is used instead in the calculations.

Reallocated From MCYS & Municipal Share to Municipalities	\$1,000
Parent Fees	Not Specified
	\$2,000

* First year of full operation expected to be the 2012-13 school year
 ** Pascal estimates costs in the range of \$790 and \$990 million. The higher figure is presented in the table
 *** Pascal estimated capital costs of \$130 million per year and \$1.7 billion over 25 years. There would be more capital costs in the first three years of the transition to the new system as classrooms are renovated and built. If the total costs of \$1.7 billion are spread over three years cash cost would average \$567 million and total costs would be \$2,557 million after which costs would fall to \$1,990.

Program Costs and Fees

For children 0-3, the Child and Family Centres will be funded by reallocating to municipal authorities all existing transfers for programs/resources that will be consolidated under CFCs, plus resources associated with regulation and oversight, plus all child care savings generated from the implementation of the ELP.³³ After this reallocation, total funding is estimated to be \$1 billion. The report does not suggest fees for children aged 0-3. If fees for children remain at the same level as for 2008, then the total revenues (costs to parents before subsidies) would be \$780 million by 2012-13 using the same percentage of children using ELC as in 2008. It is envisioned that in the new full-day kindergarten system, children aged 4-5 years will be in school 6 hours a day and 188 days a year. These services will be mandatory for school boards to provide with no parent fees. The program will therefore be funded from general government revenues. Pascal estimates that the increase in staffing costs will be \$430 million for the ELP and that operating and occupancy costs will increase in the range between \$360 and \$560 million for a total of between \$790 and \$990 million (see Table 2). This report uses the \$990 estimate. The above funding of \$990 million will also be used by school boards to help fund the extended day/year programming for children 4-12 years of age. The money will cover occupancy, administration, and professional development costs and program costs for the extended day/year programming and program costs during the school year. Parent fees will fund the cost of lunch, snacks, staff and supervision costs of the extended day/year programming and program costs during the summer. Parent fees are expected to be \$27/day for 4-5 year olds; \$20/day for 6-8 year olds. The report does not suggest fees for children 9-12.

Table 2: Estimated Costs of Full-Day Learning	
(\$ Millions)	
Staffing Costs	430
Operating Costs	360-560
Total Costs	790-990
Source: Pascal (2009)	

If 52% of all children 4-5 use the extended day/year programming on average in 2012-13 there would be

³³ MCYS (2009): for fiscal 2009-10, child care and early learning \$868.9 million, healthy babies/healthy children \$86.5 million, early years community support \$177.6 million for a total of \$1,133.0 million.

50,900 more children served. At \$27 per day and 250 days per year, the total revenue (cost to parents before subsidies) would be \$1,000 million (see Table 3). If the utilization rate for children 6-8 for an extended day/year program rises to 24% on average, then there would be 75,400 more children served. At \$20 per day and 250 days per year, the total revenue (costs to parents before subsidies) would be \$500 million. Fees are not specified for children 9-12 years of age, so the total revenue cannot be directly estimated. If fees for 9-12 year olds remain at \$26.24 per day then the total revenues (costs to parents before subsidies) would be \$270 million by 2012-13 using the same percentage of children as in 2008. (see Appendix A for utilization rate assumptions)

Pascal estimates that to make room for full-day learning and CFC that significant renovations of existing classrooms and new purpose-built classrooms would be needed. The report estimates that the capital costs would be \$130 million per annum or \$1.7 billion over 25 years. The cash costs of this provision seems to be front end loaded to the first three years of the program to ensure that sufficient space is available to make room for full-day learning. If the total capital costs of \$1.7 billion are spread over the first three years, the cash cost would average \$567 million.

Based on the above calculations, government policy will encourage a \$480 million increase in the consumption of early ELC services (as quantified by total parent fees) so there would be a boost to the economy from this spending. The additional \$990 million for the ELP and the \$570 million in construction spending would also provide a short-term boost to the economy. The reallocation of \$1 billion in spending for CFCs would have a small effect because the total amount stays the same.

Table 3: Revenues from Parent Fees For CFC and Extended Day/Year Programs			
Utilization Rates for Children 4-8 Rise Based on Lower Fees			
(\$ Millions)			
Age of Children	New System	Existing ELC	Change in Fee Revenues
0-3	780	780	0
4-5	1,000	840	150
6-8	500	200	330
9-12	270	270	0
Total	2,580	2,100	480
Gross revenues estimated by multiplying fees by the number of children estimated to be enrolled in child care in 2012-13. Totals may not add up due to rounding.			

Staffing Costs of Programs

The Early Learning Program is to be staffed by well-trained teams of teachers and early childhood educators. Staffing is calculated on one staff to approximately ten children 4-5 years of age. For a group of up to 20 children, the staff team would include a half-time kindergarten teacher, a full-time Early Childhood Educator (ECE) during traditional school hours and another ECE for traditional school hours and extended hours. ECEs are expected to earn wages of \$47,000 per year plus benefits

worth an additional 24% for a total annual labour income of \$58,300.³⁴ Kindergarten teachers' salaries will be determined by collective agreements. In 2005, the census indicates that kindergarten and elementary teachers earned \$59,273 on average for full-time, full-year employment. If teachers also receive benefits worth 24% of wages, their average labour income would be \$73,499. As discussed in the previous section, Pascal estimates that the total increase in staffing costs of the ELP to be \$430 million.

The new system envisioned by Pascal will feature educators with age-specific qualifications, which may require upgrading of skills for these workers. Some certified primary school teachers may have acquired specific early childhood knowledge and skills through prior postsecondary education, in-service professional development, or early learning additional qualification courses. Others may have acquired the equivalent knowledge and skills through experience and learning opportunities. Pascal suggests that a rigorous process for prior learning assessment and recognition (PLAR) should be established to recognize equivalency. Those without these qualifications would complete an early childhood additional qualification course or its equivalent within five years to qualify as an educator in the ELP. ECEs in the ELP would hold an ECE degree or diploma. The costs of the PLAR process and the upgrading of qualifications are not quantified, although as noted above the \$990 million increase in funding includes professional development.

The Pascal report does not directly indicate staffing costs for CFC. The report does suggest that over time there may be an increased in enrolment in child care for children aged 0-3. If the same percentage of children by age groups –Infant, toddlers, and 2 ½-3 years—use ELC by 2012-13 as in 2008 and staff-child ratios remain the same, children average 6.4 hours per day and hours worked average 7 hours per day, then there would be an increase in staffing costs by \$260 million because of the increase in labour costs of ECE workers to \$58,300 per annum (see Table 4).

Staffing costs for the extended day/year program for children 4-5 would increase \$340 million in 2012-13 if 52% of all children in the target age group attend extended care, and using the same staff-child ratios, ECE labour costs per worker of \$58,300 per annum, average hours of children in care in care of 4.2 and average work days of seven hours.

The Extended Day Primary program for children ages 6 to 8 years will be lead by school board employees with an ECE degree or diploma. Staffing is calculated based on one staff to 15 children. ECEs are expected to earn \$58,300 in wages plus benefits. Pascal envisions that staffing costs will be funded by parent fees in the Extended Day Primary program. Total costs depend on the number of children using extended day/year programs. If the percentage of children using extended care rises to 24%, then there would be an increase in staffing costs of \$110 million.

³⁴ Using an hourly wage of \$26.85, 250 days a year and 7 hours a day the annual wage is \$46,987.5, which rounds to \$47,000. Adding 24% benefits brings the total labour income to \$58,264.5 per annum.

The After School program for children 9 to 12 years is to be lead by staff knowledgeable about the developmental needs of 9 to 12 year olds. Staffing is expected to be one staff to 15 children. This program is organized by school board employees with a variety of appropriate qualifications: ECE, recreation, teaching, child and youth, who may draw on the resources of community partners such as municipal parks and recreation services or appropriate community organizations. There is no indication what these workers would earn in the future nor is the composition of the workforce specified. These unknowns make estimating staff costs impossible to calculate.

For example, according to the most recent census, program leaders and instructors in recreation, sport and fitness earned \$29,533 in 2005. If all workers earn this wage and 15% benefits then by 2012-13 the cost of staff would be roughly \$60 million if the same percentage of children use after school programs as did in 2008 and the staff-child ratio stays the same. In comparison if all the workers earn \$47,000 plus 24% benefits then staff costs would be around \$80 million. It is assumed that the pay and composition of the workforce stays the same, so there is no net change in costs.

Table 4: Staff Costs For CFC and Extended Day/Year Programs Utilization Rates for Children 4-8 Rise Based on Lower Fees (\$ Millions)			
Age of Children	New System	Existing ELC	Change in Staff Costs
0-3	710	450	260
4-5	580	240	340
6-8	150	40	110
9-12	60	60	0
Total	1,570	780	710
Staff cost estimated by multiplying labour income per worker by the number of staff required based on staff-child ratios and the estimated number of children expected to be enrolled. Totals may not add up due to rounding.			

Table 5: Change in Net Income For CFC and Extended Day/Year Programs Utilization Rates for Children 4-8 Rise to 50% (\$ Millions)			
Age of Children	Change in Fee Revenues	Change in Staff Costs	Change in Net Income
0-3	0	260	-260
4-5	150	340	-180
6-8	330	110	220
9-12	0	0	0
Total	480	710	-220
Staff cost estimated by multiplying labour income per worker by the number of staff required based on staff-child ratios and the estimated number of children expected to be enrolled. Totals may not add up due to rounding.			

The increase in revenues for the extended day/year programming for 4-12 year olds more than offset the increase in salary expenses under the assumptions used above (see Table 5). The estimates, however, show that the increase in labour income will

increase costs for municipalities operating the CFC. There would be other cost savings to offset this increase in staff costs, however.

Re-Allocation and Re-Engineering

Municipal authorities will be responsible for the creation and management of CFCs. These new centres will be developed and expanded by consolidating and re-engineering the resources, governance and mandates of existing child care, family resource and early intervention services. These include regulated group and home child care, family resource programs, Ontario Early Years Centres, Parenting and Family Literacy Centres, Healthy Babies/Healthy Children, Preschool Speech and Language, Child Care Special Needs Resourcing, and family literacy coordinators.

Currently the MCYS and municipalities spend about \$1-billion on these services (Table 6). These funds would be used by municipalities to fund the operation of CFCs. Compared with what municipalities currently receive there would be an increase in funds from fee subsidises for children 4-12, wage subsidies for staff currently providing services for 4-12 year olds, and municipalities would receive the parental co-payments from child care fee subsidies for children 0-3. Assuming that fee subsidies are distributed evenly across children receiving these subsidies by age, this would amount to \$308 million (Table 7). If wage subsidies are distributed across all staff, then there would be an extra \$84 million available from staff providing services to children 4-12. And if parental co-payments are distributed across all children, then for children 0-3 there would be \$18 million.

Municipalities would also derive cost savings from the re-engineering of these services. The magnitude of the cost savings from this re-engineering was not specified in the Pascal report. There could be administrative cost savings, which tend to be in the range of slightly less than 10% of total program costs, and there could be other savings from overlapping costs, such as occupancy costs, which tend to be in the range of 7% of total costs. Applying these savings to the costs of the special needs and family resource services would provide savings of \$19.9 million. (Table 7)

Table 6: Total Expenditure Estimates for 2008/09				
(\$ Millions)				
	Provinc e	Municipaliti es	Subsidy Users Co- payments	Tot al
Fee Subsidies	473.6	51.4	40.1	565.1
Wage Subsidies (Regular CC)*	167.3	29.9		197.2
Special Needs Family Resource Programs	91.4	15.5		106.9
Administration	11.8	2.8		14.6
	51.4	38.1		89.5
Total	795.5	137.7	40.1	973.3

Source: City of Toronto. *Excludes wage subsidies for Special Needs and Resource Centres

Table 7: Funding for CFC from Re-Engineering and Re-Allocation of Services
(\$ Millions)

Fee Subsidies For Children 4-12 Shifted to CFCs	310
Wage Subsidies For Children 4-12 Shifted to CFCs	80
Parent Fees Subsidy Co-Payments	20
Administrative & Occupancy Savings	20
Total Funding Available*	430
Extra Costs From Higher Paid Staff	260
Extra Funding Available For Children 0-3*	170

Totals may not add up due to rounding.

*Costs include fee subsidies for children 0-3, so total & extra funding available are after subsidies

Table 8: Funding for Extended Day/Year Programming
(\$ Millions)

Change in Net Income	40
Savings from Shifting Costs to School Boards	90
Parent Fees Subsidy Co-Payments	20
Extra Funding Available Children 4-12*	150

Totals may not add up due to rounding.

*Subsidies have been shifted to CFCs, and are not included.

There will be cost savings for the extended day/year programming from the shifting of occupancy, administration, and professional development costs to school boards as well as programming costs for the extended day programming. Using City of Toronto data to estimate the percentage of total costs that are represented by these aspects, the cost savings would amount to roughly \$90 million and after adding in the increase in net income (fees less costs) of \$40 million and subsidy co-payment reductions the total extra funding available for child 4-12 would amount to \$150 million.

Combining the extra funding for children 0-3 and 4-12 together, there would be \$320 million in available funds from the program re-engineering and reallocation of funding. Since the costs of subsidies for children 0-3 were not removed from expenses, the \$320 figure already includes those costs. These funds can be used to provide additional fee subsidies to children. Since the funding for fee subsidies for children 4-12 were reallocated to municipalities in the calculations above it is likely that children 4-12 who require subsidies will be taken care of first.

Pascal highlights possible savings on fee subsidies because of lower fees for 4-8 year olds. As fees drop for children in the 4-5 and 6-8 cohorts, fewer parents will require fee subsidies and fee subsidies for parents receiving subsidies will drop. These savings will free up subsidies for other families. The implications of these changes can be estimated.

Table 9: Fee Subsidies

Child Receiving Subsidies	Children in Child Care	Subsidized Children /
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	Children in CC ratio		
Infants	4,994	7,759	0.644
Toddlers	10,019	27737	0.361
Age 2.5-3.8	19,579	39,240	0.499
JK/SK	19,668	96578	0.204
School Age	22,930	72287	0.317
Total	77,190	243,601	0.317

Source: Pascal (2009)

Table 10: Eligibility for Fee Subsidy	
Net family income(\$)	Daily fee for subsidized families (\$)
20,000	0
30,000	4
40,000	8
50,000	19
60,000	31
70,000	42

Source: Beach et al (2009), effective 2007/08

There are 77,190 children receiving fee subsidies of all ages (see Table 9). The percentage of children receiving subsidies relative to the total number of children in child care by age range from 64% of infants to 20.4% of children in JK/SK. There are close to 20,000 children currently in JK/SK who receive fee subsidies who would not require subsidies to attend the full day kindergarten. These children, however, would remain eligible to receive subsidies for extended day/year care. Since extended day/year care is less expensive than current child care fees, there would be a reduction in the dollar amount of subsidies to support these children.

To understand the dollar magnitude of the subsidies that will be freed-up it is helpful to consider that the current subsidy system provides a full fee subsidy to families earning \$20,000 or less. For families earning above \$20,000 to \$40,000 the subsidy is at a rate to ensure that the family pays 10% of their pre-tax income. Once a family earns 40,000 per year and above, the subsidy ensures that they will pay 30% of all additional income (see Table 10). The reduction in daily fees for children in JK/SK from an average of \$34.42 to \$27 per day means that the dollar amount of

the daily subsidy will drop by at most \$7.42 per day (see Table 11). For 250 days this will amount to at most \$1,855 per subsidized child. Since there are just under 20,000 children in JK/SK receiving subsidies, the drop in fees will add up to \$36 million of savings.

There will also be a reduction in fees and therefore subsidies for children aged 6-8 of \$6.24 per day. For 250 days the savings will add up to \$1,560 per annum. If the estimated number of school age children receiving subsidies are distributed based on population, the number of children 6-8 receiving subsidies by 2012-13 would be just under 10,000 and savings would add up to \$15 million.

If the same number of children 4-12 receive subsidies as do currently, and after taking into account the lower fees in the new system, then the subsidies to children 4-12 would represent \$260 million. This is \$60 million less than the available funds systemically (see Table 12). This means there would be roughly \$60 million in funding available to support additional fee subsidies. This estimate assumes that the stabilization of existing funding for children 0-3 is the first priority. At the expected fees in the new system, this would amount to an additional 6,420 subsidized spaces for children 0-3 or 12,890 subsidized spaces for children 6-8. Assuming subsidies are distributed across all age groups in the same proportion as current subsidies there would be 9,710 new subsidized spaces.

Table 11: Child Care Fees		
	Current Fee	New System Fee
Infant	52.37	---
Toddler	43.67	---
2 1/2 – 5	35.14	---
3 8 m - 4	34.42	27
4 8m - 5	34.42	27
6 – 8	26.24	20
9-12	26.24	---
Source: Pascal (2009)		

Given the current distribution of family incomes and subsidies there would be no shortage of families available to utilize these subsidies (see Table 13). The total number of families earning less than \$20,000 with children less than six years of age was around 50 thousand in 2005. The number of subsidized spaces for children less than six was 55 thousand, which exceeds the number of families earning less than \$20,000, although it should be noted that these data do not indicate the total number of children less than six in these families. The total number of subsidized spaces is 62% of the number of the families in the two lowest income groups combined. Once all eligible income groups are combined—up to \$70,000—subsidized spaces represent only 19% of the number of eligible families. Since there are families with higher income than \$20,000 who receive subsidized spaces, as witnessed by the \$40.1 million in subsidy co-payments in Table 6, there would be a large number of children in the lowest family income cohorts who do not currently receive subsidies.

Table 12: Extra System Funding Available for Fee Subsidies

(\$ Millions)	
Extra Funding Available 0-3*	170
Extra Funding Available 4-12	150
Total Extra Funding Available 0-12	320
Subsidy Costs for Children 4-12	260
Net Systemic Funding Surplus	60
Totals may not add up due to rounding.	
* Includes fee subsidies for children 0-3	

Table 13: Number of Subsidy Eligible Families						
Net family income(\$)						
Number of Families	\$20,000	\$30,000	\$40,000	\$50,000	\$60,000	\$70,000
Families with Children <6	49910	37900	48215	49310	49110	49805
% of eligible families by income	17.6%	13.3%	17.0%	17.3%	17.3%	17.5%
Cumulative % of Total Subsidies <6	108.7%	61.8%	39.9%	29.3%	23.1%	19.1%
Families With Children 6-12 yr*	86298	65937	81573	79100	77960	78558
% of eligible families by income	18.4%	14.0%	17.4%	16.9%	16.6%	16.7%
Cumulative % of Total Subsidies 6-12	26.6%	15.1%	9.8%	7.3%	5.9%	4.9%

Source: 2006 census, Beach et al (2009) & calculations by author,
* estimated from number of families with children less than 17.

Summary of New Spending

To estimate the short-term economic effect, the magnitude of the injection of money into different parts of the economy needs to be calculated. Table 14 summarizes the net new spending in the economy as a consequence of Pascal's recommendations and expected results. As expressed by Pascal the introduction of the Early Learning Program for children 4-5 will result in new expenditures of \$990 million. The reorganization of CFC lead by municipalities will not have a significant net effect in the short-term on the economy because total spending stays the same, although there would be a small net impact as a result of the re-organization because different sectors have different short-term multipliers and higher paid employees spend less of every extra dollar. As expressed by Pascal the re-organization of ELC will lead to lower fees and higher utilization rates that will cause total parental expenditure to rise by an estimated \$480 million. Capital costs over 25 years are expected to be \$1.7 billion, but with an estimated annual cash costs \$570 million on average over the first three years to ensure that there are sufficient classrooms for the programs to commence. The analysis uses these estimates to calculate the short-term impacts.

Table 14: Summary of Net New Spending First Year of Full Operation*
(\$ Millions)

Early Learning Program**	990
Capital Expansion***	570
CFC	0
New Parent Spending****	
0-3	0
4-5	150
6-8	330
9-12	0
Sub-Total	480
Total	2,040
Totals may not add up due to rounding.	
* First year of full operation expected to be the 2012-13 school year	
** Pascal estimates costs in the range of \$790 and \$990 million. The higher figure is presented in the table.	
*** Pascal estimated capital costs of \$130 million per year and \$1.7 billion over 25 years. There would be more capital costs in the first three years of the transition to the new system as classrooms are renovated and built. If the total costs of \$1.7 billion are spread over three years cash cost would average \$567 million.	
**** Assuming an increase in utilization rates for 4-5 and for 6-8 year olds to 52% and 24% respectively and no change in utilization rates for 0-3 and 9-12 year olds.	

Benefits and Costs of Early Learning and Care

The net benefits of an ELC program to an economy can be illustrated in two different ways. A multiplier can be estimated, which shows the rise in overall economic activity in the short run per dollar increase in expenditure for that particular program. Alternatively, the present value of the benefits and costs can be estimated, the dollar amount of the net benefits of the program can be calculated and the benefit/cost ratio can be determined.

The literature on the short-run effects of spending on ELC programs typically find that they are among the largest of all sectors. Fairholm (2009a) examines direct and indirect GDP multipliers in different sectors of the Canadian economy. He finds that the ELC sector provides one of the largest direct and indirect GDP multipliers of all the major sectors—tied for fifth largest—using estimates from Statistics Canada’s Input-Output model. Furthermore, the ELC sector has one of the highest induced multipliers. When the direct, indirect, and induced effects are combined, ELC boosts the economy by 2.3 dollars per dollar of spending, which is one of the largest short-term multipliers of all the major sectors. Prentice (2008) finds that the local area multiplier for a sub-provincial area is quite high, with a multiplier of 1.58 for a local area of Manitoba. Similarly, US research also shows that ELC program multipliers are higher than multipliers for other key sectors of the economy.³⁵

The literature that estimates long-term costs and benefits of child care programs consistently shows that the benefits exceed costs. The extensive Chicago child-parent centres program and two randomised studies: the High Scope/Perry and Carolina Abecedarian programs in the US show costs being repaid several times over for disadvantaged children. Other child care programs, both targeted and universal, show positive albeit smaller net benefits to society per dollar spent. For

³⁵ Warner and Liu (2004) find that child care has a direct and indirect (type I) multiplier of 1.49 and a direct, indirect and induced (type II) multiplier of 1.91 for the US economy.

Canada, Fairholm (2009a) found that the net present value of benefits to be 2.54 per dollar invested and Cleveland and Krashinsky (1998) estimated high quality child care in Canada would return over \$2 for every dollar invested. For the US, Karoly and Bigelow (2005) estimated that a universal child care program in California would yield benefits of \$2-\$4 for every dollar invested, and Belfield (2005) estimated that every dollar invested provides future benefits worth \$2.25 for the Louisiana child care system.

Short-term analysis

In order to estimate the short-term economic benefits as accurately as possible several sets of impact estimates were taken from Statistics Canada's detailed Ontario input-output model. This permits the analysis to reflect the economic impact from the removal of different components of existing ELC services and the implementation of the proposed ELC services.

The removal of the current ELC system for 0-8 year olds used the "child care, outside the home" GDP and employment multipliers.³⁶ The implementation of the full-day Early Learning Program for 4-5 year olds uses the education category. The implementation of new extended day/year ELC for 4-5 and 6-8 year-olds and the CFC system for 0-3 year olds used adjusted GDP and employment multipliers. The ELC multipliers were adjusted to reflect the higher wages and benefits in the new system and to reflect the changed share of non-labour cost spending by child care centres. For children 9-12, fees and the number of children using after school care remains the same and there is no known change in costs, so the net impact is zero and are not included below.

Short-term economic impacts were calculated for direct and indirect multipliers obtained from Statistics Canada and from induced multipliers calculated by the authors (see Appendix B for the detailed methodology). The induced economic effect occurs because of the increased spending by households that happens because of the direct and indirect change in employment and labour income. The magnitude of the induced effect will vary by sector based on the share of labour costs in total costs for that sector, and based on the wages of the workers employed. In general, lower wage workers have a lower marginal tax rate, and a tendency to save less (spend more) from an extra dollar of income than higher wage earners. More income for lower wage workers therefore cause a larger induced effect per dollar than for higher wage workers.

To estimate the short-term economic impact for a particular infusion or withdrawal of spending caused by the transformation of ELC into the new system, the spending estimates were multiplied by the related multiplier. All of these short-term economic impacts were transformed into hourly estimates for Ontario, the GTA and

³⁶ A special simulation of Statistics Canada input-output model was undertaken to estimate the impact of changes in child care services. In the IO model, this was done by increasing output for the commodity, "Child care, outside the home", since the North American Industry Classification System (NAICS) Industry 6244—"Child day-care services"—was not represented in the worksheet level model. This custom simulation is helpful because it illustrates the impacts on the overall Ontario economy from changing ELC output and by design can be compared with the impacts on the economy from increasing output in other industries.

Toronto using data for hours and costs of hourly child care (see Appendix C for calculations of hours and costs). This allowed the estimation of costs and the resulting impact on gross domestic product (GDP) and employment for these jurisdictions.

For construction spending, the direct and indirect construction industry multipliers from Statistics Canada along with induced effects calculated by the authors are used to estimate the impact on the Ontario economy. The capital costs are not decomposed by type of construction or by geographic location, however. In order to estimate the sub-provincial effects, it is assumed that the capital costs are distributed based on the number of children hours in different geographic locations. The GDP multiplier reflects the increase in value added (or GDP) in Ontario from a change in industry output or spending. These multipliers exclude leakages such as imports and avoid double counting of intermediate inputs. For the proposed system, one dollar of spending increases GDP by \$2.02 for ongoing operations and by \$1.90 for the GTA and Toronto. For capital spending, one dollar of spending adds \$1.47 to GDP for Ontario and \$1.36 for the GTA and Toronto.

The employment multiplier measures the number of jobs created per million dollars spent. Using the wages and benefits provided by the Pascal report, it can be estimated that one million dollars spent on early learning in Ontario directly creates 13.6 jobs in the ELC sector. As suppliers increase output as a result of the rise in the ELC sector's activity they will also hire an estimated 1.1 additional people. One million dollars spent on the early learning in the GTA creates 13.6 jobs in the ELC sector and 1.0 additional jobs by suppliers. In the city of Toronto one million dollars creates 13.7 jobs in early learning and 1.0 additional jobs by suppliers. The total employment multiplier is estimated to be 29.3 for Ontario, 27.6 for the GTA and 27.6 for the city of Toronto.

Table 15 - Proposed Early Learning - Ratios and Multipliers - ELC Expenditures			
	Ontario	GTA	Toronto
GDP (per dollar of expenditure)			
Direct GDP	0.89	0.89	0.89
Direct and indirect GDP	0.96	0.96	0.96
Total GDP multiplier	2.02	1.90	1.90
Ratio of total to direct GDP	2.27	2.13	2.13
Labour Income (per dollar of expenditure)			
Direct labour income	0.80	0.81	0.81
Total labour income multiplier	0.85	0.85	0.85
Ratio of total to direct labour income	1.06	1.05	1.05
Employment (per million dollars of expenditure)			
Direct Employment	13.59	13.65	13.67
Direct and indirect Employment	14.70	14.62	14.64
Total Employment multiplier	29.26	27.62	27.65
Ratio of total to direct Employment	2.15	2.02	2.02

The total GDP multiplier for capital expenditures is 1.47 for Ontario and 1.36 for the GTA and Toronto, and the total number of jobs created per million dollars of capital expenditures is 20.1 for Ontario and 18.8 for the GTA and Toronto (see Table 16). Notably, the stimulus to the economy from implementing Pascal proposals is larger than the direct negative shock on the economy from the higher taxes that may be needed to finance these proposals. In the short-run the impact of tax changes is less than one because of the impact of tax changes on savings and therefore the marginal propensity to consume, which lowers the multiplier.

Table 16 - Early Learning - Ratios and Multipliers - Capital Expenditures			
	Ontario	GTA	Toronto
GDP (per dollar of expenditure)			
Direct GDP	0.52	0.52	0.52
Direct and indirect GDP	0.76	0.73	0.73
Total GDP multiplier	1.47	1.36	1.36
Ratio of total to direct GDP	2.83	2.63	2.63
Labour Income (per dollar of expenditure)			
Direct labour income	0.41	0.41	0.41
Total labour income multiplier	0.57	0.56	0.56
Ratio of total to direct labour income	1.39	1.35	1.35
Employment (per million dollars of expenditure)			
Direct Employment	7.86	7.86	7.86
Direct and indirect Employment	10.95	10.61	10.61
Total Employment multiplier	20.13	18.78	18.78
Ratio of total to direct Employment	2.56	2.39	2.39

Long-term Economic Impact Analysis

Early learning also provides long term benefits. This section summarizes a benefit-cost analysis that provides a more complete assessment of the benefits to society from early learning than a short-term economic impact assessment can produce. Both the costs of providing early learning and the overall benefits to participating children and mothers are estimated. The main parts of the benefit-cost analysis are:

- number of hours;
- early learning costs per hour;
- early learning cost savings per hour;
- child benefits from early learning;
- mother/parents benefits from early learning; and
- calculation of benefit-cost ratio.

The net long-term impacts of implementing early learning are found by subtracting the costs and benefits from current formal ELC which would be replaced by the new early learning system from the costs and benefits of the new early learning program. Total costs and total benefits are estimated from costs per hour and benefits per hour times the number of hours. The net present value (NPV) calculations of costs

and cost savings, benefits to children and benefits to mothers, along with an overall benefit-cost ratio from implementing the early learning program are listed in Table 17 (using a real discount rate of 3%). 2005 is chosen as the base year instead of 2013 because the most recent census data are from 2005 and 2006. The selection of the base year to estimate the inflation adjusted expenditures has no impact on the ultimate benefit-cost calculation if inflation affect benefit and costs equally. These calculations show that the benefit-cost ratio is 2.42 for Ontario, 2.21 for the Greater Toronto Area and 2.24 for the city of Toronto. These estimates are based on conservative assumptions and are in the range of the benefit-to-cost ratios that other researchers have estimated for universal programs. Note that the benefit-to-cost ratio for universal ELC programs is generally lower than benefit-to-cost ratios for programs that target disadvantaged children.

Table 17: Summary of Costs and Benefits from ELC			
	Ontario	GTA	Toronto
NPV hourly costs of early learning	\$5.52	\$5.64	\$5.63
NPV hourly costs savings on informal child care	<u>-\$1.57</u>	<u>-\$1.53</u>	<u>-\$1.58</u>
NPV hourly net cost of early learning	\$3.95	\$4.11	\$4.05
NPV hourly net benefits mothers/parents	\$7.69	\$7.79	\$7.73
NPV hourly net benefits children	<u>+\$1.88</u>	<u>+\$1.28</u>	<u>+\$1.34</u>
NPV hourly net benefits from early learning	\$9.56	\$9.07	\$9.07
Benefit-cost ratio of early learning	2.42	2.21	2.24

Profile of Children and Families

In order to understand the potential impact on the province from the implementation of the proposed ELC system it is important to understand the demographic situation. The number of children in the province in different age groups matters because the proposed programs vary by age and the utilization rate is expected to vary by age as well. Furthermore, there are higher staff-child ratios for younger children than older children, which mean that per child more early childhood educators are needed for younger age groups. Current staff-child ratios in Ontario rise from 3:10 for children from birth to 18 months to 1:15 for the oldest age cohort (see Table 18).

Table 18 - Ontario Staff-Child Ratios for Regulated Child-Care Centres		
Age Groups	Staff-Child Ratios	Maximum Group Sizes
0 < 1 ½ yrs	3:10	10
1 ½ - <2 ½ yrs	1:5	15
2 ½ -5 yrs	1:8	16
3 yrs 8 mns -5 yrs 7 mns	1:10	20
4 yrs 8 mns -5 yrs 7 mns	1:12	24
5 yrs 8 mns -12 yrs	1:15	30

Source: Beach et al. (2009)

In 2006, there were 1,876,555 children aged zero to 12 years of which 28.5% were 0-3 years, 14.5% were 4-5 years, 23.1% were 6-8 years, and 33.9% were 9-12 years (see Table 19). According to the mid-range Ontario Ministry of Finance population projection published in 2009, by 2013 when the ELC system is to be fully implemented there are estimated to be 1,913,160 children aged zero to 12 years, which is a 2% gain. And the number of children 0-12 years is projected to reach 2,312,720 by 2026, which is a gain of 23.2% and by 2036 this population is projected to reach 2,465,880 for a gain of 31.4%. These estimates illustrate that the number of children needing ELC will continue to expand for the foreseeable future, which means the net economic benefits from changing the ELC system will be magnified in the future beyond the estimates for the first year of the operation of the new ELC system highlighted in this report.

In 2006, there were 353,820 children aged 0-12 in the city of Toronto (see Table 20). Of these children, 30.8% were aged 0-3 years and 14.7% were aged 4-5 years, while 22.6% were aged 6-8 years and 31.9% were aged 9-12 years. This age distribution is slanted more toward younger children than for the province as a whole. This means that once the new system is implemented that

Table 19 - Children by Age in Ontario (2006)			
Age	Number of Children	%	
Children 0-12	1,876,555	100.0%	
Total 0-3	535,210	28.5%	
Under 1 year	132,180	7.0%	
1	133,255	7.1%	
2	135,705	7.2%	
3	134,070	7.1%	
Total 4-5	272,690	14.5%	
4	135,550	7.2%	
5	137,140	7.3%	
Total 6-8	432,715	23.1%	
6	142,665	7.6%	
7	142,930	7.6%	
8	147,120	7.8%	
Total 9-12	635,940	33.9%	
9	151,735	8.1%	
10	158,680	8.5%	
11	163,145	8.7%	
12	162,380	8.7%	

Source: 2006 Census

there will be a larger relative increase in the need for ECE trained workers in the city of Toronto than in the rest of the province because younger children required more trained staff than older children. Over time, the pace of population growth for children in Toronto is expected to lag behind that for the Province, with a gain of roughly 21.5% from 2006 to 2036.

Table 20 - Children by Age in City of Toronto

(2006)		
Age	Number of Children	%
Children 0-12	353,820	100.0%
Total 0-3	108,945	30.8%
Under 1 year	28,275	8.0%
1	27,410	7.7%
2	26,915	7.6%
3	26,345	7.4%
Total 4-5	52,145	14.7%
4	26,035	7.4%
5	26,110	7.4%
Total 6-8	79,935	22.6%
6	26,780	7.6%
7	26,010	7.4%
8	27,145	7.7%
Total 9-12	112,795	31.9%
9	27,550	7.8%
10	28,415	8.0%
11	28,870	8.2%
12	27,960	7.9%

Source: 2006 Census, Census Division

As illustrated in Table 21, there were 886,330 children aged 0-12 in the Greater Toronto Area (GTA) in 2006 according to the census. There were relatively more children 0-3 and 4-5 years of age than in Ontario as a whole, with 29.2% and 14.7% respectively. The implication of this observation is that the GTA will require relatively more ECEs than the rest of Ontario because these age groups have higher staff-child ratios. And the number of children 0-12 is expanding quickly in the GTA, with this group expected to grow by 51.3% from 2006 to 2036. Most of this population growth will occur in the GTA outside of Toronto. The children's population of the GTA outside Toronto is expected to grow by 71% from 2006 to 2036.

Table 21 - Children by Age in GTA (2006)		
Age	Number of Children	%
Children 0-12	886,330	100.0%
Total 0-3	259,170	29.2%
Under 1 year	64,680	7.3%
1	64,630	7.3%
2	65,410	7.4%
3	64,450	7.3%
Total 4-5	129,965	14.7%
4	64,730	7.3%
5	65,235	7.4%
Total 6-8	203,750	23.0%
6	67,780	7.6%
7	66,635	7.5%
8	69,335	7.8%
Total 9-12	293,425	33.1%
9	70,705	8.0%

10	73,795	8.3%
11	74,865	8.4%
12	74,060	8.4%

Source: 2006 Census, Durham, York, Peel, Halton and Toronto Census Divisions

As of 2006, there were 990,230 children aged 0-12 in the province of Ontario outside the GTA (see Table 22). Proportionately fewer children outside the GTA are in the 0-3 and 4-5 cohorts than in the province as a whole, with 27.9% and 14.4% respectively. This implies that the need for ECE trained workers will be relatively less in this area compared with the number of children because of lower staff-child ratios for older age groups. Moreover, the population growth in this region is below that for the province, with the projected increase from 2006 to 2036 being 13.0% compared with 21.5% for the province as a whole.

Age	Number of Children	%
Children 0-12	990,230	100.0%
Total 0-3	276,040	27.9%
Under 1 year	67,500	6.8%
1	68,625	6.9%
2	70,295	7.1%
3	69,620	7.0%
Total 4-5	142,725	14.4%
4	70,820	7.2%
5	71,905	7.3%
Total 6-8	228,965	23.1%
6	74,885	7.6%
7	76,295	7.7%
8	77,785	7.9%
Total 9-12	342,515	34.6%
9	81,030	8.2%
10	84,885	8.6%
11	88,280	8.9%
12	88,320	8.9%

Source: 2006 Census

Conclusion

The implementation of the proposals laid out in the Pascal report will have significant short, medium and long-term economic implications. The short-term stimulus from these proposals would be in the order of 2.02 per dollar spent for the operation of the system, and 1.47 for the capital spending. Combined these effects are worth 1.87 per dollar of spending in 2012-13. This level of multiplier is above the stimulus to the economy from the expansion of most other industries and is above the short-term impact on the economy from an increase in taxes to pay for these proposals.

Pascal's proposals would also increase the number of children receiving early learning by an estimated 139,200. The more children receiving quality education the greater the long-term benefits are to society. The long-term benefits to the economy are estimated to exceed costs by a factor of around 2.4 for every dollar

invested. These short and long-term benefits clearly indicate that the implementation of the Pascal recommendations will benefit the Ontario economy. The short-term multipliers and the long-term benefit/cost estimates were calculated using conservative assumptions regarding the impact of the implementation of the new system. Consequently, there is the likelihood that the benefits to the economy will exceed estimates provided in this report. Even with conservative assumptions there are considerable benefits to the economy from implementing these proposals.

The demographic projections illustrate that the number of children 0-12 in Ontario will be expanding over the next twenty years, with a gain of over 31% from 2006 to 2036. The area outside Toronto in the GTA will see the largest increase at around 71%. These estimates illustrate that the number of children needing ELC will continue to expand for the foreseeable future, which means the net economic benefits from changing the ELC system will be magnified in the future beyond the estimates for the first year of the operation of the new ELC system highlighted in this report.

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