

# **The Benefits and Costs of Good Child Care**

The Economic Rationale for Public Investment in Young Children- A  
Policy Study

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## Foreword

In 1994, the Child Care Advocacy Association of Canada (CCAAC) presented a brief entitled "Taking The First Steps — Child Care: An Investment in Canada's Future" to the House of Commons Standing Committee on Human Resources Development. Our position taken during the Committee's review of social security in Canada was that developing a carefully designed child care plan would be in the social and economic interests of all Canadians. The CCAAC brief put forward a plan for gradual movement towards a substantial public investment in building a system of early childhood care and education services for Canada's children.

The Child Care Advocacy Association of Canada has, since its founding in 1982, promoted the development of a high quality, comprehensive system of child care services that would meet the needs of all families who wish to access these services. These high quality services, including centre-based child care, nursery schools, home child care and family resource centres, would be regulated, accountable and accessible. All children under 12 years would have access to services, regardless of their parents' participation in the labour force. Substantial public funding would create a stable framework in which these services would operate.

The CCAAC's framework for a child care system began with the premise that a child care system would be initiated within an intergovernmental policy framework

guided by strong federal leadership. The plan would be developed through bilateral negotiations and encompass provincial/territorial/aboriginal child care systems that would result in “universally accessible, comprehensive, high quality, publicly-funded and accountable services.” (CCAAC 1994). Funding for the child care system would come from three main sources: provincial/territorial governments, the federal government, and parental contributions through fees.

As a “first step” we proposed two clear, measurable goals:

- the provision of sufficient high-quality, publicly funded child care services to accommodate 50% of all children between 3-5 years of age.
- the provision of sufficient, high-quality publicly-funded child care services to accommodate 50% of children outside of this core age group whose parents are in the paid labour force.

The rationales for this proposed child care plan were based on the work of social policy analysts, child development specialists, child care advocates, and many professionals who work on behalf of young children and their families. These groups have consistently argued that a public investment in children’s early years is required to meet a set of interconnected social and economic goals.

These goals include healthy childhood development and readiness to learn; economic productivity and labour force attachment; women’s equality; positive population health outcomes; reduced levels of family and child poverty; and cohesive safe communities. The CCAAC argued that in addition to the many well-established social policy rationales for investment in early childhood, our plan also made good economic sense.

The brief took the initial steps in providing an economic rationale. This study, *“The Benefits and Costs of Good Child Care: The Economic Rationale for Public Investment in Young Children”* further develops this rationale. The study is remarkable for assessing, using a conventional cost-benefit analysis, the likely economic impact of federal and provincial/territorial government adoption of some of the child care policy options that we advanced. Based on an assessment of the quantitative economic impacts of child care developmental effects in children, economic equity in society, particularly on women and low income lone mother families, and macroeconomic effects, the study concludes that the benefits of providing quality child care for children are likely to far exceed the costs.

In initiating this important study, we recognized that there could be concerns about an approach that narrowly applied traditional economic measures such as profitability, efficiencies and productivity to early childhood education and child care. However, we felt that there were two important reasons for undertaking this study at this time.

Traditionally, debates about public investment in social programs have tended to exclusively focus on the costs of the program, with little attention to the benefits. This has certainly been true of the public debate on child care. Many of those who oppose publicly-funded child care have tended to argue that “we cannot afford it”. But the same argument is not applied to public spending on activities that support economic,

corporate, or business stimulation — these expenditures are readily seen as ‘investments’. Based on the results of this study, we will now shift the debate on child care from its current narrow focus on costs to one equally focused on the benefits of investment.

Combined with our awareness of the acute need to balance the arguments about the costs and benefits of publicly-funded child care was the imperative posed by the growing body of research on the importance of the early years. The now extensive literature on the relationship between participation in quality early childhood programs and healthy child development allows the authors of this study to factor in positive outcomes for children as a central element in their cost/benefit analysis. While more research on these linkages is needed, this starting point provides a child-centred place for a conventional economic analysis to evaluate child care.

We are therefore confident that this economic analysis strengthens and complements our social benefit arguments without undermining our commitment to the quality of life for children, women, and families. There are, however, two limitations that we ask the reader to bear in mind.

The evidence about the developmental impacts of early childhood education and child care (Chapter 3) includes research that uses children’s later academic success as a key measure. While this data is highly relevant, it should not be misused to reduce the purpose of quality child care programs to a limited focus on readiness to learn or adult productivity. The United Nations Convention on the Rights of the Child suggests that children have an inherent right to quality of life, even in their pre-school years. Quality child care programs are not only about children’s future — they are about children’s rights to be appreciated and nurtured now.

This study also uses the economic impact of child care on mothers’ participation in the labour force, and on family life in general as another central criterion. (Chapter 1) Again, this data is highly relevant, but should not be misused to suggest that child care alone can solve the unemployment problem in Canada. For the full benefits of investment in the early years to be realized, child care must be one part of a broader social and economic agenda that will create adequate jobs at adequate wages to support families.

The CCAAC initiated this study with no guarantees about its outcome. There are few surprises, however, in the findings that the benefits of investing in young children outweigh the costs. While continued research on this important issue in social policy is required, this study makes an important contribution to understanding about our collective responsibility for young children. We welcome the examination, critiques, and debates that will be motivated by this landmark study.

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## Executive Summary

This study examines the economic arguments concerning the investment of public funds in the care of young children. These arguments are highlighted by computing the benefits and costs of such an investment. The study demonstrates that, under relatively cautious assumptions, the benefits significantly exceed the costs. Thus, publicly funded child care would represent a prudent and productive use of scarce public funds.

In order to make such statements, two conditions must be met. First, benefits must exceed costs. The study looks at a comprehensive public program, providing relatively high quality licensed child care to all children aged two to five years with employed parents, as well as enriched nursery school for children cared for primarily by their parents at home. It concludes that for every dollar spent on such a program, approximately two dollars worth of benefits are generated for children and their parents.

Second, however, public funding can be justified only if a significant portion of the benefits are public as opposed to private. That is, although the benefits of child care exceed the costs, if all these benefits were purely private (if they all accrued to the parents making the decision on child care), then we could assume that parents would make appropriate decisions to purchase high quality child care without any public intervention. The study argues, however, that there is a significant public interest in high quality child care. For families in which parents are employed and those in which they are not, stimulating child care can have strong and long-lasting effects on child development. And, for some families, good child care can permit parents to maintain job skills and continuous employment experience, with enduring effects on family incomes (especially in the event of family breakup). For various reasons discussed in the study, parents often do not take these social factors into full account in their decisions about child care and employment when children are young.

The benefits of child care are divided analytically into the benefits to children and the benefits of employment to their parents. Previous cost-benefit studies of child care have focused on employment effects, but both types of benefits are critical to this analysis.

Assigning a specific number to the benefits that accrue to children is a difficult task. For although child care experts agree that good child care matters, determining how much it matters is problematic. Few studies of child care's effects on children can properly control for all the other factors that influence child outcomes, so the separate effect of child care is difficult to identify. A number of studies are able to control for a wide range of possibly confounding factors and they provide quantitative measures of child care's impact on child development; we rely on these studies as a guide to the magnitude of the effects of good child care. Even so, it is difficult to derive a single number to summarize the benefits of a comprehensive program such as that evaluated here.

Faced with this problem, one approach would be to ignore child development benefits altogether. This would clearly be wrong, since there is a lot of indirect evidence that developmental benefits are substantial. The fact that many parents with high incomes do purchase high quality child care or enriched nursery school services suggests that this kind of care does have considerable benefits. Similarly, the large expenditures made in the public school system for young children just beyond the age range considered in this study, combined with the observation that early intervention is critical in children who have special learning or social difficulties, also suggests that high quality child care can have a large payoff.

This study deals with the difficulty of determining an exact number for benefits to children both by drawing on current research and by using other relevant information to make an educated estimate of the benefits. It is anticipated that further research with the National Longitudinal Study on Children and Youth and elsewhere will allow for refinement of these numbers.

The benefits to parents are somewhat easier to assess. Child care frees up parents' time to participate in the labour force, and this generates two relatively clear benefits. First, employed parents receive wages for that participation. Second, by continuing to be employed while children are young, parents are able to avoid extended absences from the workforce. These absences erode work skills in a variety of ways, and result in future reductions in earning power. Drawing on specific studies of these issues, a value can be assigned to the increases in employment permitted by a comprehensive child care program.

All of these benefits must be weighed against the cost of quality child care. The paper assumes that good child care could cost about \$8,500 per year for full-time care. This figure is based upon use of workers skilled in the provision of developmentally oriented child care, the provision of wages and benefits adequate to avoid the kind of staff turnover that erodes quality, and maintenance of staff-child ratios near the top of currently mandated levels within Canada.

When all this is brought together, the incremental benefits of the identified changes to child care arrangements in Canada amount to approximately two dollars for every dollar of cost to the public purse. Public funding also depends on the significant public element in these benefits. The paper argues that both benefits to children and benefits to parents have this public element. Canadian society has a continuing and abiding interest in the care of its young children, and it has traditionally devoted significant public dollars to education for exactly that reason. And although employed parents do benefit from increased incomes that may accrue because of their use of good child care, there are important benefits to society as well.

In summary, good child care matters to children, to parents and to society. The benefits of such a program are likely to significantly outweigh the costs, and thus, publicly funded child care deserves a high priority when decisions on the allocation of scarce public funds are made.

## What Does Economic Theory Tell Us About The Potential Benefits Of Good Child Care?

### INTRODUCTION

This study will assess the economic impact of a major investment of public money in ensuring that Canadian children two to five years of age receive good quality early childhood education. The proposals we evaluate are based on those put forward by the Child Care Advocacy Association of Canada (CCAAC) to the Standing Committee on Human Resources Development in Halifax in December 1994 in *Taking The First Steps — Child Care: An Investment in Canada's Future*. The CCAAC brief proposes an interim goal of providing sufficient high quality publicly funded child care services to accommodate 50 percent of all children three to five years of age by the year 2005, and 50 percent of children outside this core age range who have parents in the paid labour force.

Chapter 1 provides an extended discussion of the background to and techniques of economic analysis used to make judgements about the economic benefits and costs of child care in the later chapters. Chapter 1 is theoretical and methodological; it lays out a set of important arguments that could justify public investment in child care. This catalogue of arguments is reconsidered in detail in other chapters, where we review existing literature and evidence related to each of these arguments. Chapter 2 reviews evidence about the developmental and educational impacts of child care on young children. We assess the quantitative economic impacts of child care on a diverse set of developmental effects in children. This, in our view, is an important advance in the limited literature<sup>1</sup> on the economic benefits and costs of child care (Townson, 1986; Cohen and Fraser, 1991; Verry, 1992; Rose, 1996). The effects of child care on children are the most important of all effects and should therefore be the focus of any benefit-cost analysis. Chapter 3 presents and analyzes evidence concerning the economic impacts of child care on mothers' participation in the labour force in particular, and on family life in general. This chapter includes consideration of the effects of publicly financed child care on economic equity in society, particularly on women and low-income lone mother families. Chapter 4 considers the economy-wide employment effects and, generally, the macroeconomic effects of potential child care programs. Chapter 5 calculates, using a variety of approximation techniques, the value of the benefits and of the costs of a program of high quality child care for all children two to five years of age. We conclude that the benefits are likely to far exceed the costs of good quality early childhood development and education. Chapter 6 draws together the conclusions of the study as a

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<sup>1</sup> There is a larger literature assessing compensatory preschool programs for disadvantaged children such as Head Start programs (e.g., Currie and Thomas, 1995) and the Perry Preschool Project in the US (e.g., Barnett, 1985a, 1985b, 1992).

whole. An Executive Summary is provided at the commencement of this document; detailed bibliographical references and appendix materials are provided at its end.

#### THE ECONOMIC POINT OF VIEW

It is important to understand that any economic analysis has, like many computer programs, a set of built-in default settings. You are not compelled to select the default option, but you have to explicitly choose, and in economics you have to make persuasive arguments for, any other option. The primary default option in economic analysis (distasteful to some, welcomed by others) is that a free competitive market for product "X" will produce the best possible economic results. This argument has an impressive pedigree and is quite persuasive when applied to, for example, the market for carrots or the market for chocolate bars. In a free, competitive market there is minimal government intervention (primarily government sets up criminal and contract law, perhaps some product inspection services, etc.) and individual consumers are presumed to be able to decide on their own whether to spend their money on carrots, chocolate bars or neither. The public has no special interest in trying to control consumer behaviour in these markets; consumers are the best judges of their own tastes and they are assumed generally to be well informed about the effects of carrots and chocolate bars on their well-being. It is further presumed that the market will have economic incentives to serve consumer tastes as well as possible. The fact that the market is competitive (many sellers and many buyers, no one with any considerable market power) will keep downward pressure on prices (reasonably close to costs) and will encourage innovation, if the innovation can give a producer some temporary advantage over his/her competitors.

Do we need to do an economic assessment of the costs and benefits of producing carrots or chocolate bars in order to decide how many should be produced? No, the economist would say; in effect, this analysis is performed by the interaction of demand and supply in a competitive market. An explicit economic analysis would add up the benefits of carrots and chocolate bars to the individual consumer and compare them with the costs of producing each commodity. But it is not necessary to do such an analysis because the individual consumer pays for the costs of production in the purchase price of the carrot or chocolate bar, and receives all of the benefits of the item. Thus the individual does an implicit cost-benefit calculation in deciding whether or not to purchase the product; the fact that the purchase takes place reveals to us that the benefits outweigh the costs (if they did not, the consumer would refuse to buy carrots or chocolate and would divert the resources elsewhere). This is in fact a simplified version of the standard explanation that economists give for why markets "work". And when all the benefits from a purchase accrue to the purchaser and all the costs of production (including any social costs) are passed on to the purchaser through the market price, the economic model would assert that there is no efficiency argument for government intervention (of course, there could be valid equity arguments).

In making the case for public involvement in funding child care, the economic model thus requires us to show that the operations of a free competitive market will not produce efficient results in this particular case. In economic language, we must show that a private competitive market for child care services has failed in some fundamental way (the language here can be annoying; many people will be upset when we suggest



there are many potential market failures associated with child care; no negative associations are intended). There is of course a basic asymmetry in this approach: since markets are assumed to work most of the time, the onus is on those who would argue for government intervention to show that a particular market is not working. Those who are fundamentally hostile to capitalism and markets will find this way of thinking somewhat unattractive. But the logic of economic analysis requires us to accept that competitive markets are the default option, and government funding is the exception rather than the rule.

## ARGUING FOR PUBLIC FUNDING TO CORRECT MARKET FAILURE

The economics profession uses the term “market failure” as a rubric for various ways in which markets will not work well. There is an extensive literature about the various types of market failure, and most economists believe that there are cases where markets do not work appropriately and where some sort of government intervention is required. There are several ways in which child care can be shown to involve this kind of market failure. And the notion of market failure provides a framework for explaining and arguing for government intervention in the economy. If one wants to use economic analysis to argue for child care programs, then it is precisely this kind of approach that is necessary.

Most of the arguments put forward by advocates for public support for child care can easily be expressed within the context of this economic model. To argue that child care markets work perfectly and that no government intervention is required, one must assume that there is no public interest in the raising of children (i.e., that only parents are concerned about what happens to their children) and that parents of young children make the decision to work and purchase child care with perfect information about all the outcomes of their decision and with the ability to borrow against future earnings to deal with any expenses. Since none of these assumptions make a great deal of sense, there are some compelling arguments for government intervention of one kind or another. The economic model expresses these arguments in a way that is both clear and rigorous. It also makes the case for public intervention in a way that may be persuasive to those most concerned with the “bottom line”.

Fundamentally, the economic argument for public child care funding will have two separate strands. These will correspond to the two groups that benefit most directly from high quality child care: parents and children. In each case, although we accept that there is an important “private” benefit in child care, we also argue that there is a related and additional “public good” aspect to high quality care for children (in other words, there are significant benefits to society, in addition to the private benefits to parents and children). In the language of economists, this means that child care is a “mixed” good, rather than a commodity that is either purely private or public. In the next section of this chapter, we will look at the benefits to parents; in the following section, we will consider benefits to children. Although there is a reasonable case to be made for some public funding of child care to help working parents, we believe that the strongest case for child care lies in the benefits to children. Table 1 on the next page provides a brief

outline of the major benefits and costs of good child care, and therefore a tabular guide to the rest of the material in this chapter. It is adapted from Verry (1992).

## FAILURES IN THE CHILD CARE MARKET

In this section we will ignore the potential market failures associated with the decision by parents<sup>2</sup> to work outside the home. Instead we will focus on the quality of care received by children. We believe that this is the stronger of the two arguments for public investment in child care, both because of the enormous costs to society when children receive poor care at young ages, and because of the political reality that voters are generally more sympathetic to the needs of children than to the needs of their parents.

The traditional economic assumption of perfect markets presumes that the person making the decision to purchase goods or services has accurate information about the characteristics and quality of these goods or services, and their short — and long-run effects. It also assumes the purchaser receives all the benefits and pays all the costs. In the case of child care, this means that the parent purchasing care knows all about child care and that the benefits of that care accrue completely to the parent. When this is not the case, market failure has occurred.

### **Market Failure Because of the Public Interest in Child Care**

Clearly, there is a public interest in the type of care received by young children. There would be no market failure if this interest mirrored completely the interest of parents making decisions about those children. However, this may not be the case.

First, even if all parents care deeply about their children, many parents will not have the resources to purchase the best kinds of care. Of course, one answer would be to transfer more resources to these parents so that they could afford better care. But we would expect parents to devote those extra resources not just to the child but to all members of the family. If the government has a greater interest in the well-being of children than it does in the welfare of their parents, then this use of public resources would not be satisfactory. The only way to direct additional resources directly to children is through goods and services that provide direct benefits to children.

Education is one such service, which may explain in part why we subsidize education so heavily. Funding for education evolved in a period when we believed that young children could only be cared for effectively by their mothers. Thus, additional

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<sup>2</sup> For our purposes, it is important to recognize that mothers take major responsibility for rearing and caring for young children if and when these children are not in child care. For instance, the Canadian National Child Care Survey of 1988 (Lero et al., 1992) found that about 95% of the time the mother was the “designated adult” most responsible for children. While it is true that men are taking increasing responsibility for child care, child care does not affect men’s careers and employment prospects as it does women’s.

resources could not readily be funneled directly to children until those children went to school. We now understand that the early years prior to normal school age are vitally important to the development of children, and that appropriate care and nurturing can be provided both in the family and in regulated child care facilities. Furthermore, even for children cared for primarily at home, we now believe that there are significant benefits to high quality group experiences outside the family (which explains why well-off parents generally pay for nursery school experiences for children not yet old enough to attend regular schools).

We also live in a period when old-fashioned father-at-work mother-at-home families are no longer the rule. Even if one believes in the effectiveness of two-parent families in raising children, it is clear that family dissolution and the resulting low incomes of single parents place some significant numbers of our children at risk.

Funding for high quality child care would then seem to be a natural extension of the reasoning that led originally to funding for public schools. We will discuss the considerable evidence about the effectiveness of early education and care for children and of the payoffs to this kind of investment. But it is useful at this time to consider the arguments that have been made for funding public schools, since these same arguments apply to child care.

Significant benefits accrue to the individual child from education. Those with better educations earn higher incomes, and this presumably provides a significant incentive for families to invest in the education of their children. However, several kinds of market failure make us unwilling to leave education to the whims of individual families.

First, we believe that a well-educated workforce is essential both for economic growth and for the maintenance of a healthy democracy, and these benefits “spill over” beyond the individual to society as a whole.

Second, we believe that families differ in their ability to provide education to their children, but that equal opportunity for children is a vital social value that transcends individual interests. Furthermore, education is to some extent a “positional” good (in the sense that access to the better jobs depends not just upon the absolute level of education, but on one’s education relative to others in the workforce), implying that standardized public education can reduce wasteful competition among parents and schools.

Third, parents may differ in their willingness to provide extra resources to their children. There is a social interest in assuring that children have access to quality education whatever the tastes of their parents. All of these arguments are mirrored in an assertion that there is a public interest in quality child care for children. Incidentally, this also argues for some early education for children even if they are being cared for primarily in their homes.

## **Market Failure Because of the Variations in Child Care by Parents**

A second, somewhat more controversial, argument focuses on the relative quality of care provided by different parents. It is hardly extreme to suggest that parents differ in their abilities to raise children. So long as no intervention was possible prior to school age (because most mothers were not employed and did not use child care, and because we did not believe that licensed care could in any way replace maternal care of whatever quality), these differences had to be accepted. The public school system could be thought of as an equalizing influence, although we are not sanguine about its ability to compensate for differences among families.

However, once it becomes clear that child care can provide valuable services to children, then high quality child care may be the most important tool we have to provide equal opportunity to children, regardless of their parents' abilities or resources. Since there is a public interest in this equal opportunity, inequality among parents, of whatever kind, represents a kind of market failure. The argument for public funding follows naturally.

### **Market Failure Because Parents Cannot Accurately Judge the Quality of Child Care**

The assumption of perfect markets requires that those purchasing a commodity be fully informed about the quality of what they are buying. In the case of child care, the "commodity" is actually consumed by a small child whose ability to communicate about quality to the parent is limited. Furthermore, the impact of low quality may not become apparent for many years (assuming of course that the low quality reflects only neglect or lack of stimulation, rather than physical abuse). Thus parents may not be able to judge the differences among types of care or to appreciate the importance of additional resources in the child care centre. In that case, there is market failure because parents will not make the "correct" decision about what kind of care to purchase.

The case for public intervention is clear, but it is not clear exactly what form that intervention should take. One approach is to regulate child care to ensure minimal standards for quality. However, this regulation will raise the cost of formal child care and may drive parents into the informal sector where regulation is difficult. In that case, it will be more efficient to subsidize good quality licensed child care centres and supervised home child care so as to attract parents into the part of the child care sector where higher quality can, to some reasonable extent, be assured.

### **FAILURES IN THE LABOUR MARKET FOR MOTHERS OF YOUNG CHILDREN**

In this section we will temporarily ignore the public interest in the care of young children and focus on the decisions made by mothers • with young children to work and use child care. Put another way, in this section we assume that parents put the same weight on the well-being of their children as does the society at large, so that the informed decision of the parent fully captures the public interest in that child. We will

thus focus on the ways in which child care benefits parents — more generally, mothers — by freeing them up to take jobs and earn incomes.

If the labour market behaved perfectly, the economic model predicts that parents would make “correct” decisions about whether and how much to work and no government programs would be required on this account. In a perfect labour market, a mother would come to the labour market with a certain set of skills, education and experience and these attributes would be rewarded with wages reflecting the marginal contribution these skills, education and experience would make to the production of goods and services. The mother, faced with a wage offer, would decide on her own whether or not to work, taking into account the cost of child care and other work-related costs. If working brought in enough wages both to cover the cost of child care and to leave enough extra to justify the loss of personal time when one worked, the mother would decide to work. Under these circumstances, economists would consider that mothers were making the work decision optimally. If a mother decided not to work, this would mean that her contribution to society through paid work must be small, relative to her contribution to society by staying home and rearing her own children. If a mother decided to work in the paid labour force, this would imply that her earnings (and therefore the amount of goods and services she was responsible for producing) were large, relative to the value of her “home production” by providing exclusive care for her children. In other words, in a perfect market, we can leave the cost-benefit analysis to the individual and she or he will make a decision that gives the best (most efficient) result for society (maximizes the total value of output — market and home output combined).

If child care subsidies are to improve the net gains to society (given the assumptions adopted in this section), there must be imperfections in the operation of the labour market. There appear to be four principal strands in this argument, corresponding to four different types of market failure.

## **Market Failure in the Taxation of Earnings**

There is already a significant distortion in the way labour markets work because of the existence of a large tax on earnings. This tax makes working look less attractive to workers than it properly is and can distort the decision to work (i.e., people may decide to reduce their work effort because they do not receive the full benefits from working). Of course, a tax on earnings is necessary to support a wide variety of public programs. However, it has been shown — under the reasonable assumption that child care expenses are a necessary cost of working for most mothers — that once we have such a tax on earnings, child care costs must be made fully tax deductible<sup>3</sup> in order for working mothers to make efficient labour market decisions.

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<sup>3</sup> We do not intend here to take a position on whether child care assistance should take the form of a tax deduction versus a tax credit. Some people favour a tax credit on the grounds that it is more generous to low-income families. The point here is that if mothers are discouraged from working because they are charged, in effect, more than the full cost of child care (i.e., they must pay for child care in after-tax dollars), their labour market decision will be one that is inefficient from the point of view of society.

It is worth noting that this kind of deductibility would go significantly beyond the arrangements in the current Canadian tax code. It would require that this deductibility apply to all taxes on income, including payroll taxes (unemployment insurance premiums and Canada Pension Plan contributions, including both employees' and employers' portions of each).

This argument for deductibility stands alone. That is, even were there no other types of market failure, the case for deductibility of child care expenses would remain intact. The other types of market failure argue for public financial support that goes beyond simple deductibility.

### **Market Failure in Borrowing Against Future Earnings**

A well-known phenomenon of the labour market is that workers' wages grow over time as the workers acquire experience, expertise, and a reputation for hard work, and as they are promoted within their firms. Extended absences to care for young children can severely compromise this progress. Since the benefits of these wage increases accrue to the worker, there is no market failure so long as workers can borrow perfectly against future earnings. Thus, a young parent with low wages but good prospects would want to avoid an extended absence from the labour market, since the full cost of that absence would be significantly more than the loss of current wages.

Of course the currently low wages of the mother may make it virtually impossible to buy decent child care in order to go to work. In theory, the parent can avoid this problem by borrowing money for child care when she is young and paying it back when experience and expertise have raised those wages. In practice, of course, no bank would make an unsecured loan against future increases in earnings. This kind of market failure (which economists refer to as "a failure of capital markets") is not unique to child care. The same kind of failure applies to educational loans to students.

This argument for public intervention has limited direct applicability, since it generally would justify not direct subsidies, but rather some government guarantees for child care loans to affected parents. A child care loan program is not what most advocates have in mind. Incidentally, the same logic could be applied to maternity leave provisions. In this approach, parents of newborn children could be offered loans to help them finance unpaid leaves while their children are very young. We already offer more than that, but Canada lags behind many other countries in its willingness to assist parents to make paid leave arrangements.

This argument is somewhat broader if we think of the government as, in effect, providing money through child care assistance to families with young children, and then taxing it back from those same families when the parents' incomes are higher. If every family had the same number of children, used child care to the same extent, and earned the same parental incomes, there would be no redistribution between families involved in governmental child care assistance of this sort. The government would, in

each generation, merely be redistributing income from families with grown-up children to families with young children, to ensure efficient labour market decisions by the parents of those young children.

### **Market Failure in Assessing Payoffs to Labour Market Attachment**

The argument in the previous section assumes that workers have perfect information about the benefits of continued attachment to the labour market. In that case, those parents should be willing to finance child care (and, to carry the argument to the extreme, maternity leaves) themselves to avoid those absences. However, market failure occurs if some young workers are not aware of the importance of this kind of attachment, or are prepared to ignore that knowledge when they make decisions.

Young mothers may find it particularly difficult to take the long view in deciding whether to maintain some form of labour market attachment. Discriminatory social pressures that compel them to sacrifice their own interests rather than their husbands', and the lack of reasonable child care arrangements, may lead them to ignore the impact on their future earnings resulting from a prolonged absence from the labour market. In that case, they may make decisions about work and child care that they will later regret. Public support to high quality child care may compensate for problems of incomplete information and lead to maintenance of labour market attachment, with higher incomes and job satisfaction in the future.

Furthermore, young mothers are likely to be relatively close to the beginning of a marriage or relationship and thus not consider the possibility that they will, at some later date, be left alone to raise their children. If their decision to stay out of the labour market to care for young children is based upon the assumption that they will remain married and benefit from the earning power of their husbands, and if this assumption is incorrect, then they will again not make "correct" decisions about labour market attachment. We know that a significant number of young mothers will lose their partners and will not receive adequate child support when that occurs. Many of these women will end up on welfare unless they have careers that generate incomes high enough to support their families. Child care support can induce them to stay in the labour market and build those careers.

It is useful in this argument to be clear on how young mothers would act if all the assumption of "perfect markets" held. In that case, a new mother would understand completely the risks of later marital dissolution. Because mothers are generally made significantly poorer by divorce, the young mother who was contemplating leaving the labour force to raise her children would insist on a marriage contract that perfectly compensated her for the income she would lose because of this, including especially the later income lost when the mother finally reenters the workforce. Many young mothers, understanding that families are made worse off financially by divorce, and understanding the difficulties in enforcing child support, would refuse to leave the labour force, even if their current earnings were relatively low. In the presence of perfect information and perfect contracts, there would be no further argument for government

intervention to protect young mothers. (There would still be an argument for protecting the well-being of their children, but that is a separate issue, addressed further below).

Of course, information and contracts are not perfect. This argument is familiar in other contexts (although it is not generally stated in this fashion). We, for instance, pass laws about child support and do not rely exclusively on marriage contracts to protect women's interests precisely because we do not believe that young newly married women give proper consideration to the possibility of later divorce. If mothers are prone to make decisions about labour market participation early on that disadvantage them significantly in the case of marital breakup, and if they make these decisions either because they lack good information or because they are not prepared to believe and act on that information, then market failure has occurred and public intervention of some kind is required. In particular, child care subsidies make work more attractive to young mothers and compensate effectively for the kinds of bad information that we have been discussing.

### **Market Failure Because of the Existence of Welfare**

The point has already been made that single parenthood often results in the family receiving social assistance payments from the state. Our welfare system generally has extraordinarily high tax-back rates — that is, those on welfare often do not end up much better off financially when they work because their welfare payments are reduced or eliminated when they begin to receive a pay cheque. This can make work (and, by implication, education and training to prepare for work) look relatively unattractive to the single parent, despite the fact that it is of great benefit to the state because of reduced welfare rolls. This is a type of market failure referred to as an externality, because the effects of an incorrect decision do not just affect the decision-maker.

In this case, public financial assistance for child care is efficient because it increases the incentive to work and reduces the need for welfare both now and in the future. An up-front public investment in child care can thus pay dividends in reduced welfare payments over a significant period of time (Cleveland and Hyatt, forthcoming).

This argument becomes more persuasive if one believes that children learn labour market behaviour and work-ethic lessons from their parents. If children growing up in homes where no parent regularly participates in the labour market are then themselves less attached to labour markets, a pattern of intergenerational welfare dependency might emerge. Funding for adequate child care can avoid this market failure



## USING THE ECONOMIC MODEL TO ARGUE FOR CHILD CARE

### **The Holistic Nature of Economic Analysis.**

Interestingly, almost all the arguments above will appear to have simply restated the normal non-economic case for child care in economic terms. This reflects our contention that the economic approach must be seen as “holistic”. It is important when using the tools of economic analysis not to think that arguments should be divided into “economic” and “non-economic” categories. A good economic benefit-cost analysis takes into account all relevant benefits and costs.

### **Why Caution is Necessary in Counting Employment Effects**

It is common to assume that the provision of a large number of new jobs for young women (and some men) is a major benefit of a new child care program. Employment impacts of a major public financial commitment to preschool child care would be substantial; the magnitude of these effects is calculated in Chapter 4. Further, evidence of the job-creating potential of public support of child care may be very persuasive politically. However, it is easy to overstate the net benefit of job creation in the child care field to society as a whole.

It is true that any child care assistance would increase the number of child care spaces in licensed child care programs and employ more trained child care workers. There are, however, two offsetting impacts to take into account. First, many self-employed caregivers in the informal child care sector, who may have few other skills, will lose an important source of income. Second, the money for public financial assistance to child care may come either from new taxes or from a reduction in other programs. If the dollars come from higher taxes, then these taxpaying consumers will have less to spend in other areas, and the growth in employment in child care will be cancelled out by the reduction in employment in those other areas. Similarly, if the dollars come from other programs, the growth in employment in child care would be at least partially offset by the shrinkage of employment in those other programs.

Of course, it is possible to pay for child care by increasing the size of the federal or provincial deficits. This is unlikely to be a popular political position during a period of fiscal restraint and political reluctance to increase deficits, but in any case, the employment effects of this deficit financing are not really due to child care. The employment effects of larger deficits are not dramatically different whether the dollars are spent on child care or on building roads or on other projects.<sup>4</sup> At best, the employment effects of a child care program should be seen as a side benefit or an extra, rather than a major justification for government spending.

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<sup>4</sup> Cohen and Fraser (1991) argue that money spent on child care is more skills-enhancing than money spent for other uses. It can certainly be argued that increases in the number of reasonably paid educated child care workers in licensed facilities and decreases in the number of poorly paid, untrained caregivers in unregulated situations amounts to replacing bad jobs with good jobs.

There is a further reason to be wary of emphasizing the employment-generating effects of child care. When there is widespread unemployment, government spending on child care job creation may seem divinely inspired. But, as surely as night follows day, the business cycle will eventually come to a point where the economy is overheated, there is too much demand for goods and services, unemployment is relatively low and there are inflationary rises in prices and wages. Divine political inspiration may now call for the reduction of government child care spending to reduce overall demand pressures. Employment effects are, for these reasons, not treated in this study as a major rationale for public spending on child care. Following from the above discussion, it is also inappropriate to count as a benefit of any child care program any further consumption effects because of additional spending by those newly employed by the program.

### **Why Caution is Required in Counting the Benefits of Participation in the Paid Workforce.**

Child care frees mothers to work, and the output that they generate (along with the value of the child care itself) is counted as an addition to Canada's Gross Domestic Product. However, the net benefit of this work to society is, in general, less than the total value of this increased production. To argue otherwise is to suggest that mothers at home produce nothing of value to society when they care for their own children. The net benefit is the difference between the value of market work and the value of home production, which may, in theory, be positive or negative. For reasons detailed below, we believe that the overall net lifetime benefits of labour force participation for mothers of two- to five-year-old children are positive. For children younger than two years, the net benefits are less certain and appear to depend upon the child and the family to a considerable extent. The authors strongly favour the extension of maternity and parental leave as an option for parents of very young children.

Chapter 2 reviews available evidence about the nature and magnitude of child care's long-lasting effects on children. The effects depend partly on the comparison made; we look, first, at the effects on ordinary children who move from care by their mother to care in regulated child care, second, at the effects on children in low-income lone mother families who move from care by their mother to care in regulated child care, and third, at the effects on children who move from lower quality child care to higher quality regulated care.

Chapter 3 examines evidence about the effect of a major public contribution to child care on the decision of mothers to be employed, the number of hours to work, and the type of job to take. Chapter 4 calculates the direct employment effects of an expanded child care program on the hiring of additional trained child care workers. Chapter 5 puts numbers to the ideas described in previous chapters; it provides estimates of the probable magnitude of the costs and benefits of adopting proposals similar to those advanced by the Child Care Advocacy Association of Canada. Chapter 6 summarizes the conclusions of this study.

## The Long Term Effects of Good Child Care on Children's Development and Learning

### INTRODUCTION

Child care may allow parents to be employed when their children are young, and this provides both private and public benefits. However, far more important as a justification for public assistance to child care are the direct effects of good child care on the children themselves. The early years of childhood are now recognized as crucial ones for the development of cognitive and social abilities. In this chapter, we will look at a number of sources of information about the effects of child care on the child development/learning<sup>5</sup> that takes place in the preschool years.

Public funding of good quality child care programs will have direct effects on children in one of two ways. Some children, who are currently cared for exclusively by one or another parent or by a relative, will be encouraged to switch from "parent/relative care only" to part-day or full-day use of good quality child care. Other children, currently using either a neighbourhood sitter, a nanny, or poor quality centre-based care, will decide to switch from child care of uneven or uncertain quality to subsidized high quality care (which may be centre-based or in a family day care home).

In order to assess the impact of these two different types of switches (from "parent/relative care only" to good quality non-parental child care and from low quality to high quality care), three distinct topics in the child development literature are relevant. First, we will look at empirical studies that compare the abilities and accomplishments of ordinary middle-class children who have had preschool child care experience to the same children without child care experience. This literature will allow us to draw inferences about long-term gains from the use of good child care by ordinary children. Second, we will consider evidence of the long-term gains made by disadvantaged children who have received compensatory preschool education. These first two sources give us evidence about what happens to children who receive good child care services as well as parental care instead of receiving exclusively parental care (or relative care) in their preschool years. Third, we will review important results about

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<sup>5</sup> It is important to recognize that children's development is an extraordinarily complex phenomenon. As Hayes et al.(1990) note, children's development involves the biological, cognitive and socioemotional domains, and progress does not occur uniformly across domains. By focusing on those types of development which can be assessed using a quantitative measure and also which have a direct perceptible economic effect on the child's future, we distort somewhat the intentions of child care's advocates. Good child care aims to develop and educate the whole child, not just the "economically productive" side of her.

the effects of variations in child care quality on child development and learning. This third source is intended to give us a basis for judging the beneficial effects on children who already use some form of child care of being encouraged by public policy to move from low quality to higher quality child care.

## THE DEVELOPMENTAL BENEFITS OF GOOD CHILD CARE FOR ORDINARY CHILDREN

Doherty (1996) reviews twenty-one studies that compare the development of children with and without (or with a negligible amount of) regular non-parental child care. These studies can help us answer our first key question: “Will reasonable quality child care for preschool children, supplementing normal parental care, result in long-lasting effects on children’s development, learning and school performance?” All of the studies reviewed involved ordinary community services, not highly resourced or special compensatory programs. (Compensatory programs, the effects of which are reviewed in the next section, are designed to provide an enriched social and intellectual experience to compensate for a low-resourced home environment. Often these child care programs are part of a package that includes extensive health care, parent education and other family support services.)

In a series of chapters, Doherty discusses the effects of child care attendance on the period of transition into school. She reviews evidence about the effects on peer relationships, classroom skills, cognitive functioning, language skills and academic readiness. In general, regular participation in child care of reasonable quality is found to be strongly beneficial for these important abilities and skills. The most important research for our purposes is, however, that discussed in Doherty’s Chapter 5 — the longitudinal research that has followed children who were in preschool child care through grade one and beyond. Evidence on the same five “competency areas” is reviewed: peer relationships, classroom skills, cognitive functioning, language skills and academic functioning.

TABLE 2 : FIRST GRADE REPEAT RATES FOR FRENCH PUPILS BY FATHER’S OCCUPATION AND NUMBER OF YEARS IN PRESCHOOL

Father’s Occupation	One year in preschool	Two years in preschool	Three years in preschool
Professional and Executive	11.6%	10.9%	8.0%
Skilled Worker, Artisan, Shopkeeper	25.1%	21.8%	15.5%
Farmer, Unskilled Worker Unemployed	41.4%	38.1%	32.6%

Three of these studies provide quantitative measures of the long-term effects of child care of reasonable quality on the later school performance of these children. For a benefit-cost analysis, quantitative measures of the amount of effect are indispensable.<sup>6</sup> The first is a study by the Ministère de l'Éducation Nationale in France written up in Richardson and Marx (1989). The study provides information on the rates of repetition of first grade by children with different numbers of years of preschool child care in France's well-developed preschool system. Table 2 is reproduced from that study; it shows that, controlling for father's occupation, pupils with more years of preschool education are less likely to have to repeat first grade.

The repeat rate among those attending for three years is cut by between 3 percentage points and 9 percentage points or by 20 percent to 40 percent from its level among those who attended preschool for one year. Thus, one might say that an additional two years of preschool cuts first grade repeat rates by about 30 percent. Of course, this data does not provide a direct comparison between those attending child care and those not attending child care. Given the popularity of the public preschool programs in France, it is likely that there are too few children with absolutely no child care experience to provide this comparison.

This 30 percent reduction in repeat rates in first grade is undoubtedly an overestimate of the effects that are purely due to preschool attendance. Those who attend preschool for three years instead of one are likely to be a select sample of the French child population. They are, perhaps, more likely to be urban dwellers, more likely to have an educated mother and a mother in the paid labour force, more likely to have a higher family income, less likely to be from a recent immigrant family, than children who attend for only one year (see Bergmann, 1996, p.33). All of these factors also affect the repeat rates in Grade One, but their effects in this study are attributed exclusively to preschool attendance. Furthermore, most Canadian jurisdictions fail a much smaller percentage of first grade children than does France. Still, the 30 percent figure can be used as an indicator of some of the educational benefits provided by additional years in a universal child care program. Currie and Thomas (1995), for instance, cite evidence that grade repetition is highly correlated with the likelihood of dropping out of high school, which is known to have long-term effects on occupational choice, family income, etc. (See also Ross and Shillington, 1990 and Conference Board of Canada, 1992).

The second relevant study for judging the long-term effects of child care on ordinary children is a Swedish one (Andersson, 1992). This is a follow-up study of an earlier one in which positive effects of early day care experiences were found on children's cognitive and socioemotional competence at age eight. This study records the

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<sup>6</sup> Appendix A discusses some of the methodological difficulties of doing and assessing child development research. It explains why only studies that assess the quantitative magnitude of child development effects are relevant for this benefit-cost analysis.

longer term effects of early child care at age 13. It finds that earlier entry to child care benefits children, particularly during the first two years of the child's life (virtually all families in Sweden take advantage of six months or so of paid parental leave to care for newborn children, since raised to twelve months).

The sample of about 100 families was drawn from low- and middle-resource areas in Sweden's two largest cities. Information on family background, on child care experience, on ability at age 8, and on measures of academic achievement at age 13 are available for each family. A form of regression analysis is used which controls for various family background factors, for the gender of the child, and for the child's native intelligence. With these factors controlled, the earlier a child entered centre or family day care, the stronger the positive effect on academic achievement at age 13.

Table 4 in the Andersson study shows the adjusted means of the school performance ratings for children with different amounts of early childhood education outside of home. These are means for each age of entry to child care group with adjustments made to control for differences in socioeconomic status and child's intelligence. The mean rating for those receiving no child care (home care only) is 35.87. For those who entered child care between the age of two and six years of age, the adjusted mean is 36.96. For those entering child care between the age of one and the age of two, the adjusted mean is 39.85. For those entering between zero and one years of age, the adjusted mean is 42.66.

For those who enter child care later in their preschool years, the academic benefit at age 13 therefore appears to be an increase of 3 percent over the child raised exclusively at home. For those who enter child care in their second year of life, the benefit appears to be a rise of about 11 percent in school performance at age 13. For those entering child care in their first year, the benefit appears to be marks which are 19 percent higher at age 13 than they would have been without any exposure to child care. In evaluating these results, it is worth remembering that Swedish child care is of uniformly high quality.

The final and most statistically convincing of the studies is one by A. F. Osborn and J. E. Milbank published in 1987. It is described as the first major evaluation of British preschool education. It is unique not only in the large number of children involved but because it evaluates the whole gamut of types of organized preschool education, finding similar types of effects for nearly all. The comprehensiveness of the study reduces the probability that sample selection bias is a major factor.

The Osborn and Milbank study drew, as a sample, all those children born in the United Kingdom in one week of April 1970. After various sample restrictions for data availability reasons, about 8500 children remained in the final sample. This is a longitudinal study; the children were assessed using cognitive and educational tests at five years of age and then again at ten years. Several different statistical techniques are used to process the data. The main one takes the gross mean differences on various types of tests at ten years of age for children with different child care backgrounds and tries to add as "intervening" variables whichever factors reduce the net differences the most. The study looks separately at the developmental effects of six or seven different

types of preschool programs. These were ordinary preschool programs, rather than unusual and highly specialized ones.

The differences in school performance scores for children attending various types of preschool were maintained even after controls for a host of different factors were introduced. Factors controlled included:

Social Index score (a measure of socioeconomic status)  
Maternal depression  
Child's height (correlated with early IQ)  
Neighbourhood  
Number of children  
Child's gender  
Mother's age  
Family type  
Ethnic origin  
County within Britain  
Handicap  
Maternal employment  
Change in social index  
Change in type of family  
Change in family size  
Type of junior school attended  
Index of parental interest in child's education  
Type of preschool attended

The main conclusion, for our purposes, is the following:

[T]he overall differences in the children's mean scores according to their preschool experience were large relative to the effects of other social and family factors. This amounted to the equivalent of about one-third of a standard deviation in the tests which compared favourably with those differences attributed to the child's gender, maternal age, parental interest in the child's education and family size. Socioeconomic inequality as measured by the Social Index, however, remained the most powerful determinant of differences in the cognitive and educational attainment in children (p. 213-14). Children who had no preschool placement achieved the lowest mean test scores in four out of the seven tests analyzed and had the second lowest score in the other three. This suggests that attendance at most types of preschool facility can increase children's educational potential (p. 220).

In other words, children in different types of preschool arrangement, from full-day full-week day nurseries to part-day part-week playgroups with parental participation, scored about one-third of a standard deviation higher on school performance tests at age ten years than did their counterparts with no preschool experience, even after controlling for a wide variety of potential alternative explanations. If, for instance, the average score on these tests for those with no preschool was 65 percent, with a standard deviation of 15 percent, the Osborne and Milbank study would find the average score among those who attended preschool to be 70 percent, even when all other factors affecting school performance are held constant. Since school performance at age ten is

positively correlated with the decision to take post-secondary education and with future family income, this is strong evidence of the long-term effects of early care and education.

This section has considered several studies on the effects of child care on children - focusing on studies that provide quantitative measures of child development effects and have statistical controls for other factors affecting child development (see Appendix A). Hayes, Palmer and Zaslow (1990), Doherty (1996), and Lamb (1998) are excellent reviews of the vast literature on the effects of child care on children's development. It is important to note that this literature is not completely unambiguous about the positive effects of preschool child care on children, particularly since studies may consider child care experiences of different levels of quality. Summaries of this broad literature typically reflect some ambivalence. For instance, Hayes, Palmer and Zaslow write:

In the area of cognitive development, there is no evidence that child care participation has negative effects among middle-class children. Furthermore, high-quality cognitive enrichment child care programs have positive implications for intellectual development among low-income children at risk for declining IQ scores. In the area of socioemotional development, the evidence points to a pattern of greater overall social competence in children with child care experience. Children in child care show a pattern of peer interactions that is richer and more complex, but also characterized by more conflict. Children in child care tend to show a shift in social orientation toward peers and away from adults (pp. 64-5).

Doherty (1996) concludes:

The research has clearly shown that non-parental care is not harmful when it is provided by people who are warm and responsive to the child, have some understanding of child development, and are not responsible for too many children. In fact, child care may be beneficial, especially in the area of social and language skill development. However, the research is equally clear that non-parental child care has the potential to harm children, even those from middle-class homes. Children's development can be stunted when child care has one or more of the following characteristics: a caregiver who is neglectful or harsh, caregivers who are unable to provide individualized attention because they are responsible for too many children, and/or situations where the children lack adequate stimulation (p.51).

Lamb (1998) writes:

Taken together, the published literature reveals that center-based child care, presumably of high quality, can have positive effects on children's intellectual development, regardless of family background, and does not seem to have negative effects on any groups of children. Too few researchers have studied family child care to permit confident conclusions about the effects of this form of care, however ( pp. 115-16).



## THE DEVELOPMENTAL BENEFITS OF COMPENSATORY PRESCHOOL FOR DISADVANTAGED CHILDREN

There are two excellent sources of information in the economics literature on child care that investigate the economic effects of compensatory preschool education. Steven Barnett (1992) summarizes and assesses the results from twenty-two studies of centre-based preschool education programs; these are studies that assessed effects in addition to those on IQ and that followed students' progress through the third grade or further. A second main source of information used in this section is Currie and Thomas (1995), who use sophisticated corrections for selection bias in estimating the effects of Head Start programs on children.

The overall conclusion from Barnett's research is:

[a]s a whole, the evidence indicates that the pessimism about the potential for preschool education to produce long-term gains in human capital accumulation for children from low-income families is unwarranted. On the contrary, compensatory preschool education seems to be an economically efficient public investment (p.280).

Early studies of the effects of preschool education focused on the effects on children's IQ levels. It was found that compensatory preschool had an immediate positive effect on IQ of about one-half a standard deviation or eight IQ points. Nearly every study found, however, that this differential effect on IQ is temporary, disappearing at the latest by Grade 5.<sup>7</sup>

Similarly disappointing results have been found on school achievement measures in many studies reviewed by Barnett. However, Barnett finds this evidence unsatisfactory on statistical grounds. (Most tests were school-administered with no controls to ensure uniform testing standards across schools; in general, more children in control groups were retained in grade or entered special education, but these low performers were systematically excluded in collecting achievement test data.)

On measures of school achievement that do not have the same statistical problems, there is good evidence of the long-term positive effects of compensatory preschool. Barnett examines results for grade retention, special education placement and high school graduation and finds grade retention reduced, special education reduced and high school graduation increased in every study that assessed these variables, though often without statistical significance in experimental studies<sup>8</sup> (see Table 3, page 287, and Table 5, page 293, Barnett, 1992).

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<sup>7</sup> Barnett (1992, pp. 302-4) provides a useful discussion of the reasons why diminishing I.Q. differentials and continuing school achievement differentials can be consistent with one another.

<sup>8</sup> Statistical significance is difficult to achieve in experimental studies with very small samples.

TABLE 3: LONG TERM EFFECTS OF THE PERRY PRESCHOOL PROJECT

	Controls (%)	Experimental (%)
Classified as mentally retarded	35	15
Completed high school	49	67
College or job training	21	38
Had a job	32	50
Had been arrested	51	31
Charged with serious crime	38	24
On public assistance	32	18

SOURCE: Osborn and Milbank, 1987 p.15.

In assessing the overall effects of compensatory preschool, Barnett directs special attention to the results from the Perry Preschool Project. The Perry Preschool Project began in Ypsilanti, Michigan in 1962; the project was a classical treatment-control experiment with children randomly assigned to control and treatment groups. Children participating in the part-day preschool and parent education program were followed up to the age of 19, being tested at different intervals. The Project began with a sample of 123 educationally high-risk preschool children. Fifty-eight took part in the project and 65 served as controls. At age 19, there was a clear pattern of differences between experimental and control children, as Table 3 shows.

Barnett, in earlier work, conducted a benefit-cost analysis of compensatory preschool based on the results of the Perry Preschool Project (Barnett, 1985a and 1985b). Program costs were calculated and five types of benefits were estimated: (a) the value of child care; (b) reductions in the costs of public education; (c) increases in earnings (and fringe benefits); (d) reductions in welfare payments; and (e) reductions in the costs of crime. Benefit estimates were based on the program results through age 19 and forecasts beyond age 19. Barnett finds that two years of compensatory preschool education have an overwhelmingly positive net benefit both to participants in the program and to taxpayers who foot the bill.

The RAND report, *Diverting Children from a Life of Crime: Measuring Costs and Benefits* (Greenwood et al., 1996), provides supplementary evidence (see RAND, pp. 7-9 for a review of relevant studies) about the potential of early childhood education, combined with perinatal and infant home visits to provide advice and assistance to the young mother, to reduce criminal behaviour in at-risk populations (defined as young, poor, single-mother families). Although the crime reduction results are not projected to be sufficient on their own to justify expenditures on home visits and child care, the calculated costs and benefits are almost equal. If any of the other expected

developmental and educational effects had been calculated, net benefits would clearly have been strongly positive. RAND also projected, but did not factor in, a reduction of about 50 percent in child abuse in families receiving the child care and home visits.<sup>9</sup>

Currie and Thomas' (1995) study is entitled *Does Head Start Make A Difference?* Head Start is the most important publicly funded preschool program in the United States; over 600,000 children are served by this program annually, and the cost is about US \$2.2 billion per year or about US \$3,500 per child. Previous evaluations of the effects of Head Start have been plagued with statistical problems, making reliable inferences about the long-term effects of the program impossible.

A central empirical problem with many Head Start studies has been that children are not randomly selected into the Head Start program, but participate in Head Start for a host of observable and unobservable reasons. It is necessary to control for these "selection" factors in order to isolate the separate effect of the Head Start program on children's development. The Currie and Thomas study uses a national sample of data (nearly 5000 children) from the National Longitudinal Survey of Youth to examine the impact of Head Start on school performance, cognitive attainment, preventive medical care and health and nutritional status. Using inventive ways of controlling for selection (e.g., looking at the difference in effects on siblings, one of whom attended Head Start while the other did not in order to control for family background selection factors), Currie and Thomas find statistically significant positive effects of Head Start.

The study focuses on four measures of child outcomes; the two academic ones are the Picture Peabody Vocabulary Test (PPVT) score and whether the child has progressed through school without repeating a grade. The study finds a statistically significant 6-percentile-point increase in the PPVT score for white children, relative to white children with no preschool. Further, white children who attended Head Start are 47 percent less likely to repeat a grade than their siblings who did not attend preschool. In contrast, for African-Americans, there is no significant long-term effect of Head Start programs. The authors investigate reasons for this racial difference in results. They find that there are significant early effects of Head Start for children from all backgrounds, but that by age ten, African-American children have lost any benefits they gained, while ten-year-old white children retain a substantial benefit.

Using their results as a base, Currie and Thomas attempt to assess the magnitude of the benefits from Head Start. They briefly review evidence on the relationship between test scores in school and later earnings, and between academic performance in early grades, eventual high school completion and later wage earnings. For instance, an additional year of high school is associated with an 8 percent increase in lifetime wages. High school graduates are also less likely to be unemployed. Using these kinds of results in the literature, Currie and Thomas calculate that the increase in test scores due to Head Start might result on average in an increase in expected future wages by 4 percent. The reduced probability of repeating a grade due to Head Start would likely lead to a 5 percentage-point decline in the probability of dropping out of high school among white

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<sup>9</sup> See also the conclusion by Leibowitz (1996) that "[s]ome of the greatest problems facing our society today are exactly the social and behavioral outcomes that high-quality child care seems to affect most, and the 'culture of poverty' that supposedly fosters them" (p. 47).

children. Overall, using these rough calculations, Currie and Thomas conclude that potential gains from Head Start are “much larger than the costs”. They add, “If the factors preventing African-American children from maintaining the gains they achieve in Head Start could be removed, the program could probably be judged an incontrovertible success” (p. 361).

## THE DEVELOPMENTAL BENEFITS OF HIGHER-QUALITY CHILD CARE

A large number of children now use some form of child care during their preschool years. For instance, the Canadian National Child Care Survey of 1988 shows that more than 74 percent of all children aged 18 months to five years were in non-parental arrangements in the reference week. For these children, the effect of a major publicly funded child care program may be to switch them from one type of care to another, from (perhaps) low quality child care to higher quality child care. There has been increasing recognition that child care arrangements of different types are not of uniform quality. Lamb (1998) refers to the vast differences in the quality of care that children experience both in and outside their homes ( p. 42). US studies have found that the average quality of care in both centre-based and family day care is barely adequate and that many settings are of poor or inadequate quality (Galinsky, Howes, Kontos and Shinn, 1994; Kontos, Howes, Shinn and Galinsky, 1994; Scarr, Eisenberg and Deater-Deckard, 1994; Helburn et al., 1995; Whitebook et al., 1989). For instance, the Cost, Quality and Child Outcomes Study recently rated the quality of child care at most centres in the US as poor to mediocre, with only one in seven centres providing a level of quality that promotes healthy development.

There are no large-scale on-site studies of the quality of care in centres or family homes in Canada, so it is impossible to characterize with any certainty the typical level of quality or range of qualities found in this country. However, several smaller-scale studies provide some clues. In a study for the Special Parliamentary Committee on Child Care, SPR Associates Inc. (1986) interviewed provincial child care consultants responsible for licensing child care centres about the quality of care in the centres for which they were responsible — a total random sample of about 1000 licensed centres across the country. About one-sixth were judged to be of poor or very poor quality — in violation of then current provincial regulatory standards.

Goelman and Pence (1987) conducted a thorough two-year test of quality levels in a sample of child care centres, and of licensed and unlicensed family child care in Victoria, BC. According to their rating scheme, “The unlicensed family child care settings, for example, scored as high as 3 (i.e., minimal quality) on only one subscale and had consistently lower scores than the licensed family child care and centre settings on every subscale as well as for the total” (Goelman and Pence, 1987, p.94).

Goelman and Pence’s findings suggest that little may have changed in unregulated care since the Project Child Care study of 1976. This study surveyed 281 private unsupervised caregivers (not living in the child’s home), in Metropolitan Toronto. It

concluded that the majority of caregivers provided only “adequate custodial-type care”. The quality of care provided was described in these terms:

In some situations, one caregiver was responsible for up to twenty small children, and in others, children were never taken outside, even in the finest weather. About one-third of the caregivers said they never tell stories or read with the children, sing or listen to records with them. Almost half said they never teach or work with the children on language, numbers or nature studies. And 17.6 percent said they never play with the children at all. The children spend more than two hours a day watching television on the average, which amounts to a quarter of the time they are at the caregivers’ homes (Johnson and Dineen, 1981, p. 31).

Hayes, Palmer and Zaslow (1990) cite evidence from several sources indicating that care by both child care centres and sitters in the US is inadequate. High rates of staff turnover (42% per year in group programs, 59% per year for unlicensed sitters), legal staff-child ratios well below professionally accepted minimums, full-time wages of less than \$10,000 annually, evidence that parents are unwilling to pay a premium for quality, and evidence of the inadequacy of the child care search process that parents engage in all of these factors strongly suggest that quality problems are widespread in US child care. The issues they raise are believed by many to be reflected in Canadian child care as well, although perhaps not to the same extent.

There is now reasonable consensus on what features of child care are typically associated with higher quality.<sup>10</sup> These features relate both to regulatable structural aspects of the child care arrangement and to the process of interactions generated in that environment. A brief review of key features of good quality child care is provided by Friendly (1994):

A high quality child care program can be identified by certain general characteristics. These include: (1) staff/caregiver-child ratios that are adequate to allow interactions between each child and the caregiver to be frequent and personal; (2) staffing that is stable so that children have a chance to develop consistent relationships with caregivers; (3) group sizes that allow children’s interactions with other children to be personal and individual; (4) teachers/caregivers who have specific, post-secondary training in early childhood education so that the program is developmentally appropriate, not custodial, controlling, or inappropriately schooly ; (5) health and safety provisions that ensure children’s well-being; (6) a physical and administrative environment that enhances the program for everyone, including the caregivers ( p. 218).

Further discussion of the characteristics of good quality child care can be found in Phillips (1987), Hayes, Palmer and Zaslow (1990), Doherty (1990 and 1992), Helburn et al. (1995), and Lamb (1998).

Research on the effects of high quality versus low quality child care on children developed impetus in the late 1970s. The US National Research Council study, *Who Cares*

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<sup>10</sup> See also Peter Moss’ discussion of how opinions of child care quality get determined (Moss and Pence, 1994). Moss’ contribution to this book begins this way: “[t]he starting point for this book is that ‘quality’ in early childhood services is a relative concept, not an objective reality” (p. 1). Blau (1997) raises doubts about whether structural features of child care centres are consistently associated with higher quality care.

*For America's Children?* (Hayes, Palmer and Zaslow, 1990), describes three waves of child care research; the second one concentrates attention on the effects of quality variations on child development; the third pays special attention to distinguishing the effects of quality from those of family background.

There seems to be broad consensus that the quality of child care experienced is relevant. For instance, the National Research Council study states that "[t]he second wave of child care research strongly supports a key conclusion: child care quality is important to children's development" (p. 71). Carollee Howes (1990) concurs in her reading of the literature:

There is less controversy in the literature over the issue of child-care quality. In studies of concurrent social adjustment, infants and toddlers scored higher when they were enrolled in child-care arrangements with stable, as opposed to unstable, caregivers (Cummings, 1980; Howes and Stewart, 1987; Rubenstein and Howes, 1979; Suwaldky, Zaslow, Klein and Rabinovitch, 1986), with caregivers trained in child development, as opposed to untrained caregivers (Howes, 1983; Ruopp, Travers, Glantz and Coelen, 1979; Stallings and Porter, 1980), and with more adult caregivers per child (Howes, 1983; Howes and Rubenstein, 1985; Ruopp et al., 1979).

Further, the Goteborg Child Care Study in Sweden (Broberg et al., 1997; Broberg et al., 1989; Hwang, 1991; Lamb, Hwang, Broberg and Bookstein, 1988) provides a preliminary answer to a key question that Canadians may ponder in considering the evidence on quality, which comes predominantly from the US. Do variations in child care quality still matter at higher average levels of quality than those found in the US? Lamb (1998) provides an affirmative answer from the Goteborg study. In Sweden, nonparental care is government subsidized and strictly regulated in order to ensure high quality. Despite the limited variations in the quality of care across settings, however, quality of out-of-home care has been one of the most important and consistent correlates of children's personality maturity, social skills, and compliance with maternal requests (p. 53).

Most research to date has studied the effects of child care on children who are currently in child care, rather than studying long-term effects. From the point of view of society, it is not really the contemporaneous level of development of children that is the key issue, however. Rather, it is the long-lasting impacts of good child care quality on children's ability to grow and develop into capable students in their school years and later into well-functioning adults. Researchers are aware that this longitudinal perspective is missing in most studies but lack of data has ensured that research progress on the long-term effects of child care quality variations remains slow.

There is a small group of recent studies, reviewed by Doherty (1996), which have tried to assess statistically the effects of preschool child care quality variations on some measure of social or intellectual ability in kindergarten or grade one or later (Howes, 1988; Howes, 1990; Vandell, Henderson and Wilson, 1988; Jacobs and White, 1994; Jacobs, Selig and White, 1992). All of the data samples are small, making precise estimates difficult. Further, none of these studies provides clear guidance to the magnitude of long term positive effects of higher quality child care. As Hayes, Palmer and Zaslow (1990) have noted:

the research on quality is limited in its usefulness in the policy arena in that it has not, as yet, considered effect sizes. For example, the magnitude of improvements on particular child outcomes cannot be associated with specific increments in quality (p. 71).

In Howes (1988), children's social and cognitive development is assessed at the end of the first grade in a high quality model elementary school. Step-wise regressions are used to explain academic progress, school skills and child behaviour; these regressions take account of family characteristics such as mother's education and employment and number of parents, as well as the quality of child care received at age 3. Assessment of the children's development occurs after three years in the lab school and consists of teacher ratings of the child's academic progress and school skills, and parent ratings of behaviour problems. With family characteristics controlled, higher quality of earlier child care explains a significant amount of the variation in academic progress and school skills in boys and of school skills as well as behaviour problems in girls.

Howes (1990) examines age of entry to child care and quality of child care in relation to social and cognitive development in the toddler and preschool periods and in kindergarten. She finds that quality of child care is predictive of later social outcomes but not of cognitive outcomes. Looking particularly at outcomes during kindergarten, lower quality child care predicts more child hostility and less task-orientation as rated by teachers. Children who entered care before their first birthdays and experienced poor quality care receive less positive teacher ratings on distractibility and considerateness in kindergarten.

Vandell, Henderson and Wilson (1988) find that the quality of centre care that children receive at age four affects their observed and rated social behaviour in three-way peer interactions at age eight. Controlling for social class, higher quality care at age four for this white middle-class sample significantly predicts friendlier peer interactions, more positive affect, greater social competence and better conflict negotiations. Higher quality care at age four is negatively correlated with unfriendly interactions, solitary play and designations of the child as shy.

Jacobs and White (1994) analyze results from two longitudinal studies. In the first, it is hypothesized that quality of child care for 36 preschool children may affect their degree of participation and cooperation. In the second, play patterns of 28 children in child care are compared with their degree of participation and cooperation in kindergarten. There is some statistical support for the hypothesis that quality of child care affects cooperation by children in later schooling.

Jacobs, Selig and White (1992) follows a group of children with and without regular day care experience through to grade one. On the basis of PPVT tests and ratings from teachers, this study found that both children who had been to high quality child care and those who had been cared for at home were significantly advanced over those who had attended low quality day care.

Briefly summarizing the results of these five studies, Doherty (1996) writes:

In summary, when children whose preschool child care experiences were of high quality are compared with those who were in low quality care, they have been found to be: (1) more considerate of others, less hostile, and better able to work co-operatively in a group when in kindergarten (Howes, 1990). At age eight, they exhibit higher overall peer social skills and obtain more positive ratings from classmates (Vandell, Henderson and Wilson, 1988); (2) more willing to accept adult direction and rules in kindergarten (Jacobs and White, 1994) and at the end of Grade One (Howes, 1988); (3) more able to resist distraction and remain focused on a task when in kindergarten (Howes, 1990) and in Grade One (Howes, 1988 using a different sample from that in her 1990 study); (4) better able to follow multi-step directions and to work independently when in Grade One (Howes, 1988); and (5) perform better on tests to measure both understanding and use of language in Grade One (Jacobs, Selig and White, 1992).

There is another more recent study, which has an added longitudinal component that is not yet complete. *Cost, Quality and Child Outcomes in Child Care Centers* (Helburn et al., 1995), takes a comprehensive approach to the study of quality in child care, its effects on children, the prevalence of different levels of quality in US child care centres, and the economic and other factors that affect levels of child care quality. The longitudinal component of the study — evaluating the effects of child care centre quality on four-year-olds once they begin school two years later — will be produced soon. The study is important because it provides detailed and quantitative contemporaneous measures of the effects of quality on children, controlling for a series of intervening factors.

*The Cost, Quality and Child Outcomes Study* focuses on the relationship between the cost and quality of child care in centres providing full-day services. It is based on a study of about 400 child care centres in four states in 1993 and a sample of over 800 preschool children attending those centres. To the extent that these states are representative of the US, inferences are possible for the entire country.

The study finds that child care provided at most centres in the United States is poor to mediocre, and that only one out of seven centres provides a level of quality that promotes healthy development. The authors provide a useful three-way breakdown of the notion of “quality” in child care there is structural quality, process quality and children’s developmental outcomes. Structural quality refers to quality of the inputs to child care provision (e.g., child-staff ratios, level of staff education, etc.) . Structural quality is regulatable by government. Process quality refers to the general environment and social interactions in the classroom (e.g., Early Childhood Environment Rating Scale (ECERS) and other indexes of child care quality measure the overall level of process quality). Finally, child outcomes refers to measures of the cognitive and socioemotional functioning of the children, outcomes which may relate to longer term success in school; this child development is the primary output of good child care.

The authors develop an index of child care process quality, based on existing indexes and broad consensus among professionals:

Developmentally appropriate child care includes an integration of good nurturing care that protects children’s health and safety; developmentally appropriate activities for children; the interaction of trained teachers with children to promote their emotional security, development and learning; a physical environment that provides adequate stimulation and



opportunities for a wide variety of developmental and learning activities; and involvement with the child's family through clear and routine communication (p. 21).

They find that three measures of structural quality are most closely associated with process quality: child-staff ratios, staff education and the experience level of administrators.

The study investigated the relationship between process quality and the current level of development of children in different child care centres. For this part of the study, 826 children in 181 classrooms were examined. Data on each child's developmental outcomes were gathered from two sources: individual assessments (of children's language ability, pre-academic skills, perceptions of their own competence and attitudes to child care) and teacher ratings (of children's social skills). Controlling for mother's education, child's gender and ethnicity, auspice of child care and US state, the study found a positive influence of child care quality across all areas of children's outcomes. Children in better quality child care displayed more advanced language and pre-math skills, had more positive views of their child care situation and themselves, had better relationships with their teachers, and had more advanced prosocial skills. Children's understanding of language showed the strongest relationship to quality of all the outcome measures studied. Looking at mean scores of children in different quality centres, the study finds that children in mediocre quality centres score about half a standard deviation lower than children in good quality centres on language ability tests. Children in poor quality centres score a full standard deviation below those in good quality centres on this same test. Results for pre-math abilities are not as dramatic, with the gap being somewhat less than half a standard deviation between poor and good quality centres.

From the regression analysis of child outcomes on the index of process quality in child care centres, controlling for a series of other factors that affect child outcomes, we can calculate the following effects of a 10 percent increase in the quality of child care offered: there would be a two percent increase in receptive language ability; a .5 percent increase on the pre-math subtest; a three percent increase in the child's perceptions of his/her own competence; a one percent increase in teacher ratings of the child's social skills; and a one percent improvement in the teacher-child relationship. All of these factors might well have long-term impacts on a child's development and education.

The most recent set of results from the Goteberg study in Sweden (Broberg et al., 1997) confirm the important effect of child care quality on measures of child development, when family background, quality of care in the home and other factors are held constant. This study selected children at age one from child care waiting lists and followed them for seven years into the early years of school. The relevant findings are expressed this way:

Children who had spent more months in centre-based care before they were 40 months old obtained higher scores on tests of cognitive ability than did other children. For children who had spent three or more preschool years in out-of-home care, quality of alternative care was also predictive. Dynamic measures of quality (quality of adult-child interaction) predicted verbal abilities, whereas structural measures of quality (child-staff ratio, group size, age range) predicted mathematical ability.

## PARENTS' ABILITY TO CHOOSE BETTER QUALITY CHILD CARE

It is one thing to show that better quality child care leads to better child outcomes. It is quite another to show that this requires public financing of developmental early child care and education. It is necessary, therefore, to show that parents will not, without government assistance, automatically recognize, choose and be able to afford good quality care which provides developmental outcomes.

There are several reasons why parents may not end up selecting the ideal type and quality of care for their children. First, young parents may have inadequate incomes to be able to afford the kind of care they know is best. We provide some evidence below to suggest that this is especially true at this time in Canada. Second, they may not be able to judge accurately the true quality of the child care experiences their children are receiving. We provide evidence that this is frequently, and somewhat alarmingly, true. Third, it may be true that the mix of characteristics which parents prioritize in looking for child care are not necessarily those which are ideal for their children. There is some evidence this is true, as well. As a whole, this evidence suggests that pure parental choice is not a sufficient mechanism for ensuring that children get the non-parental child care they need, and that there is a social interest in encouraging and ensuring a better overall standard of early care and education for our young children.

### **Inadequate Incomes**

Income matters in the decisions that families make about child care. The table below provides some suggestive evidence, from the 1988 Canadian National Child Care Survey. As Table 4 indicates, the use of low-priced child care falls as income rises in Canada and the use of higher-priced care rises as income rises.

Individual incomes have been squeezed in Canada over the last 15 years or so, with the entry of married women into the labour force providing the boost that has kept average real family incomes approximately level. The pressures on young families have been even greater than those on other members of the labour force. As Beach and Slotsve (1996) show, the average family incomes of families with the head aged 20 to 24 were 17.6 percent worse off in 1991 than similar families in 1980. Families with the head aged 25 to 34 were 5.8 percent worse off. The average family in Canada, over the same period, was 2.6 percent better off, measured by before-tax real income. As Beach and Slotsve indicate:

More recent family cohorts have clearly lost out in comparison with their parents' generation, and in the 1980's even slipped markedly in absolute terms. Given that, in the more recent cohorts, family income has been earned by spouses' having spent more time working in the labor market than was the case in the previous generation, the slippage in the economic well-being of the younger cohorts is likely even more marked than these income figures indicate (p. 86).

In other words, young families today are much worse off than were their parents; this has to affect the decisions they make about caring for their children.

TABLE 4: PERCENT OF FAMILIES BY HOURLY AMOUNT PAID FOR CHILD CARE, BY FAMILY INCOME CLASS.

Hourly amount paid for child care	<u>Annual pre-tax family income class</u>					
	less than \$10,000	\$10,000-\$19,999	\$20,000-\$29,999	\$30,000-\$39,999	\$40,000-\$49,999	\$50,000 or more
less than \$1.00/hour	45%	42%	30%	19%	15%	10%
\$1.00-\$1.99	38%	42%	57%	65%	65%	56%
\$2.00-\$2.99	14%	13%	10%	15%	17%	25%
\$3.00 and over	3%	4%	3%	2%	4%	9%
Total	100%	100%	100%	100%	100%	100%

SOURCE: Adapted from Table 50, Cleveland and Hyatt, 1994. Based on data from the 1988 Canadian National Child Care Survey, Statistics Canada.

Families would love to be able to afford the best of everything for their children, but choices have to be made. One of the easiest ways to save money when the mother is entering the labour force is to avoid paying \$4000 to \$8000 a year or more for good quality child care, and to spend \$2000 to \$4000 instead for an untrained, but convenient, neighbourhood sitter. Many families avoid child care costs altogether by stitching together various family arrangements, such as off-shifting of parents' work schedules. Goelman and Pence (1987) have found strong evidence that low-income, low-resource families are likely to end up with poor quality family child care.

### **Inability to Judge Accurately the Quality of Child Care**

The factors which are important in making a centre or family child care home a good one rather than a poor one are not always obvious, especially to a parent trying to judge out-of-home child care for the first time. A high ratio of staff to children, well-trained staff, small group sizes, clean, well-equipped facilities — all of these are important indicators of good care in centres. They are at least partially observable, but you will have to probe to find out and know what you are looking for. In family home child care, the training, attitudes, philosophy and facilities of the caregiver are important. These are difficult things to judge in one or two meetings. Once a child is in a child care arrangement, it is often difficult to monitor the quality of care adequately. Preschool children may not be able to communicate well, and parents are apt to consider problems to be part of a stage of development rather than a result of the caregiving situation.

*The Cost, Quality and Child Outcomes Study* (1995) found that parents substantially overestimate the quality of child care received by their children compared to the rankings of trained observers in the same classrooms. Results of the parent survey found that parents placed high importance on the same quality features valued by early childhood professionals. However, 90 percent of parents rated their child's classroom as being very high quality (developmentally appropriate), while trained observers rated most classrooms as poor to mediocre. The differences between the ratings was found to be highest for those aspects of care most difficult for parents to regularly observe.

Lamb (1998) confirms that this is a general problem: 'parents' ratings of quality and satisfaction are often uncorrelated with researchers' estimates of quality (p. 50). This problem has been observed by Clarke-Stewart, Gruber and Fitzgerald, 1994; Galinsky, 1992; Mason and Duberstein, 1992; and Phillips, 1992.

The difficulty parents have in accurately judging child care quality is compounded by its effects on the quality of child care services that are produced. University of Wisconsin economist James Walker (1991) explains that two related problems emerge as a result of the difficulties of judging the quality of child care arrangements. The first is called "adverse selection", the second is known as "hidden action" (or "moral hazard"). Family home caregivers with some relevant training and experience in early childhood education want to earn a reasonable wage for providing care in their homes. Family home caregivers who have little training or education will be willing to work for less. If parents are uncertain which caregivers are providing good quality family home care, few will be willing to pay the higher price for care. Good quality caregivers will get driven out of the market, leaving an "adverse selection" of only lower quality family care available.

"Hidden action" compounds the problem. Knowing that parents are anxious to have higher quality care, but that quality is difficult to judge, many caregivers will masquerade as good quality even if they are not. This may particularly be a problem in child care centres, where parents may judge quality by the brightness and cheerfulness of the centre. These characteristics are obvious, and therefore easy to judge, but the fundamental determinants of quality are the number and abilities of the staff, the quality of the programming, etc., which are more difficult to observe and judge. "Hidden action" makes it even more difficult for parents to judge true quality, and makes it more difficult for higher quality child care arrangements to survive in a competitive market. Walker's analysis suggests that since it is difficult for parents to judge the quality of child care, there is little good quality care available — and there may be lots of mediocre child care masquerading as good quality.

These problems have led some parents to prefer non-profit suppliers. As Hansmann (1986; see also Weisbrod, 1988 and Nelson and Krashinsky, 1973, on this same issue) has written:

Children are not very discriminating consumers, nor even, in many cases, good sources of information about the nature of the services they receive. In such circumstances, it is natural for a parent to turn to a nonprofit provider on the assumption that such an institution will be less likely to abuse the trust that must necessarily be placed in it

(p. 72).

## Parents' Priorities in Choosing Child Care

This is a touchy issue. The recognition that parents' priorities may sometimes diverge from those of their children is unlikely to be warmly received by most parents. It is probably useful to set the record straight, then, before beginning discussion of this issue. Parents, good loving parents, are essential to children's healthy development. No factor has such a key influence on the development and education of children as the degree of devotion, interest, encouragement and love that their parents show to them every day in a thousand myriad daily activities.

Nonetheless, parents make choices for their children in very constrained circumstances. The choice of a child care arrangement is a balancing act — balancing the cost of the care, the convenience of the arrangement to a parent who has to drop off and pick up every day, the apparent quality of the care, the special needs and expressed feelings of the child, the degree of contact with the child's current friends, and many other factors. The point here is, in a sense, obvious, but it may have profound implications. Parents do not choose care of ideal quality; rather they try to choose child care with the ideal mix of cost, convenience, quality and other factors (See Blau, 1991).

Another way of discussing this problem is under the heading of "externalities". This is economists' shorthand for a problem that arises when the purchaser of a particular product or service does not get either all the benefits or all the costs of the commodity purchased. We are familiar with the effects of externalities when we look at how a market economy encourages pollution. Pulp and paper mills, to use one example, do not have to pay the cost of cleaning up the water or air that they foul during the production process, so these costs are not passed along to the final purchaser. As a result, pulp and paper mills are notorious for their destructive pollution of the environment. The market economy fails to prevent pollution because the cost of pollution is "external" to the purchaser — does not affect him/her.

A similar problem, but in reverse, occurs with child care. High quality child care is good for children, but many of the benefits go, in a diffuse way, to society as a whole, rather than to the parents who pay the shot. One way of thinking about this problem is to compare the role of children fifty or a hundred years ago to today. In those times, parents wanted children because children could perform essential labour on the farm and around the home and also because children were expected to look after their parents when they were old. Parents received benefits directly from anything which made their children more productive in their current or future working lives. So parents had strong incentives to put a lot of family effort into the rearing of children. Child care, training and education are still important for children. Now, however, parents often do not receive many direct economic benefits from their children; children are a financial drain on their parents rather than an asset. The economic benefits of raising children properly still exist, but these benefits are now more diffuse, spread around society as a whole (e.g., making our economy more productive, reducing costs of social assistance and delinquency, etc.). As Qvortrup notes:

(The) intergenerational reciprocity has been lost at the family level. We must however assume that it is kept at the societal level because the value of children's activities has gained in importance at this level — an assumption human capital researchers seem to confirm. Materially the losers are families with children, since the pay-off of their investments is shared by the whole community. Consequently, from the parents' point of view, children have not only lost their value, but have also become extremely costly (Jens Qvortrup "*Childhood as a Social Phenomenon - Implications for Future Social Policy*," in *Canadian Seminar on Childhood Implications for Child Care Policies*, p.9, quoted in Powell (1990).

In other words, children are getting more and more expensive and parents are getting less and less out of having children, beyond, of course, the pure joy of having offspring. It's not that investment of time and effort in children bears no fruit; children still develop and learn rapidly when they are well cared for and educated. The point is that a substantial portion of the economic benefits of better quality early childhood education are not received by the parents in any direct way. As a result, parents undervalue good quality child care and are less willing to invest in it than society would like. We, in society, gain more of the benefits of good quality child care than ever before; we should now be willing to pay a larger share of the cost of caring for young children. Some public financial support of quality child care is necessary to encourage parents to buy higher quality child care for their children.

All four of the factors mentioned in this section act together to lower the quality of child care used by families in Canada. Families' incomes are squeezed, making the purchase of higher quality care difficult. In any case, many parents do not judge well the quality of care available. Even for those who do, quality child care is often unavailable, because adverse selection and hidden action conspire to make the provision of high quality care uneconomic for caregivers. Finally, even for parents who have the income and the knowledge and can find good quality care, they have the incentive to invest less in good quality child care than would be ideal from society's point of view. As a result of these four factors, child care quality is too low. Government action — subsidization of better quality forms of care — is necessary to make the private market for child care work in the social interest.

## The Effect of Child Care on Mothers

### INTRODUCTION

It is a biological fact that men cannot have babies. Nor can they suckle their young. Beyond these limitations, it is not obvious that men could not, given sufficient encouragement and early training, share equally in the burdens and joys of childrearing. However, the way our society has evolved, it is nearly always the mother's role to take the primary responsibility for both the provision of care to young children and the making of day-to-day decisions about their lives. Accordingly, it is nearly always the mother's career that is foregone if someone stays home with the children; it is the mother who works part-time when children are young, who declines opportunities for advancement, who neglects the acquisition of skills that might permit moving to a higher income. Of course, young children make life forever different for fathers as well; often they may work harder or longer hours, and there is a considerable amount of off-shifting, where fathers and mothers adjust work schedules to avoid having to hire paid caregivers while both work. The evidence, however, seems overwhelming that changes in child care policy will have more dramatic direct effects on the daily lives of mothers than on fathers.

Gunderson (1986) has identified six dimensions of female labour market behaviour that are potentially affected by changes in child care policies: A(1) labour force participation; (2) hours of work; (3) acquisition of general labour force experience and company specific seniority; (4) human capital acquisition; (5) earnings; and (6) occupational status (p. 2). There is a considerable research literature on the effects of child care costs on mothers' labour force participation, much less on hours of work, and very little on other dimensions of labour market experience.<sup>11</sup> There is only sparse evidence on the effects of the convenience and quality of child care on any aspect of mothers' labour market decision-making.

There has been a revolution in the labour force participation of women since the Second World War. In 1946, the female participation rate (the percentage of all women of labour force age who are currently either employed or unemployed and seeking work) was 20.2 percent, and women constituted about 22 percent of the labour force. By 1997, the female participation rate was 57.4 percent and women comprised 45.1 percent of the labour force. Over the same period, the male participation rate fell from 85 percent

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<sup>11</sup> Hofferth and Collins (1997) have studied the effects of children and child care on mothers' job stability. Among other things, they found that mothers relying on parental or self care of children were more than twice as likely to leave a job than mothers using centre care. Further, mothers who did not have convenient local access to centre-based child care were almost twice as likely to leave their jobs as those who did. Hofferth and Collins found particularly strong effects of child care problems on job stability for mothers with moderate, rather than low or high wages.

to 72.5 percent. The growth in participation rates has been particularly strong among married women with children, including those with preschool children. For instance, 31.2 percent of all mothers with the youngest child under three years were in the labour force in 1975 compared to 64.1 percent in 1997; 40.0 percent of mothers with youngest child from three to five years were in the labour force in 1975 compared to 68.8 percent in 1997; 48.2 percent of mothers with youngest child from six to 15 years were in the labour force in 1975, compared to 77.7 percent in 1997.

While labour force participation rates have increased rapidly, nearly all studies of mothers' employment decisions have found that the cost of child care is one key element of that decision. Cleveland, Gunderson and Hyatt (1996) and Powell (1997) provide recent summaries of this literature from a Canadian perspective (see Table 5 below), as well as reporting the results of their own work. For instance:

The Canadian results confirm those found in most US studies, indicating that child care costs exert a significant negative effect on the labour supply of women with children and on their decision to purchase child care. Specifically, a 10 per cent increase in the expected price of child care is associated with a 3.9 per cent reduction in the mother's probability of engaging in paid employment, and an 11 percent reduction in the probability of purchasing market-based care. (Cleveland, Gunderson and Hyatt, 1996, p. 147). Notice that a rise in the price of market-based or paid child care affects different mothers differently; some who do not have good child care alternatives will leave the labour force, others will abandon their current child care arrangement but find an unpaid alternative that permits them to stay in the labour force.

The current cost of child care for many Canadian families is considerable. Nearly half of families with preschool children use non-market forms of child care (off-shifting by the child's father, care by other relative inside or outside the child's home) to allow mothers to work. Although the monetary cost of these arrangements is generally zero, this is misleading. The use of non-market care is strongly and inversely associated with the mother's income, suggesting both that women are more likely to take only a part-time job when using family members to care for children and that women with low earning capacity may be compelled to use unpaid care. Cleveland and Hyatt (1994) have calculated the annual monetary cost of child care for those families using paid arrangements; on average, child care costs eat up 7.9 percent of family income. Since the mother's work decision frequently involves a comparison of her potential income to the expected cost of care, it may be more relevant to consider child care costs as a fraction of the mother's income alone; on average, child care costs amount to 17.9 percent of the mother's annual income. Another source of information on child care expenditures is Statistics Canada's Family Expenditure Survey. Surveying major metropolitan areas in Canada in 1990, they found that there were about 500,000 families with substantial (over \$250) annual child care expenses. On average, these families spent over \$2,700 annually on child care. Increased expenditure was strongly and positively associated with the number of preschool children in the family, the mother's participation in full-time work and family income. There were over 200,000 families spending an average of nearly \$5,400 annually on paid care. Since the typical mother of young children might have an expected full-time full-year pretax income of \$25,000 or less (Canadian Census, 1991), it



seems obvious that the price of child care is sufficient to affect both decisions about labour force participation and hours of work.

There is not much evidence about how child care costs, convenience and quality affect whether a mother works full-time or part-time. Powell (1997) reports on Canadian evidence suggesting that full-time work is quite sensitive to child care costs, while part-time work is less so. Simulation results show that if all child care costs were fully subsidized, the rate of full-time employment (as a percent of all mothers) would increase from 29 percent to 52 percent, suggesting that child care subsidies will have a particularly strong positive effect on full-time work (p. 12). As Powell notes, this finding is even more significant in a lifetime context, because substantial experience of part-time working has been shown to affect a mother's career path, leaving her with a permanently lower lifetime income stream. Heckman (1974) and Averett, Peters and Waldman (1992) using US data, and Gustafsson and Stafford (1992), using Swedish data, provide complementary evidence that child care costs have a substantial negative effect on hours worked. Michalopoulos, Robins and Garfinkel (1992) find effects, in the US, which are statistically significant, but small in magnitude.

Nearly all the statistical evidence cited above comes from cross-sectional studies (with data from a single point in time) in which the decisions of mothers facing different opportunities and having different characteristics are compared with one another. These studies do not, by their nature, consider the lifelong effects of changes in the anticipated cost, availability and quality of child care. However, decisions about the acquisition of labour force skills through education and job training, about marriage and having children, about whether a mother will stay at home while children are young, are long-term decisions which are, at least in part, made when mothers (and fathers) are still girls (and boys). Only a part of the effect of any permanent change in child care policy is contemporaneous. Much of the effect, for instance, of the comprehensive family and child care policies of France or Sweden is on the lifelong plans that young people make. These effects are hard to capture and measure with any statistical precision, but we know they are there.

Indirect evidence about the importance of these type of effects is provided by Gunderson (1986, 1992) when he decomposes statistically the male-female earnings gap. As is well known, women earn on average, and comparing annual full-time earnings, about 60 percent to 70 percent of what men do (depending upon the year of measurement). The earnings gap is thus somewhere between 30 percent and 40 percent. Only a relatively small proportion of this gap (about 5 percentage points) can be considered pure wage discrimination. The majority of the difference arises from the different labour market decisions women have made, nearly all of which are associated with their primary responsibility for the rearing of children. For instance, about 10 percentage points of the difference is due to occupational segregation. In other words, women are concentrated in sales, service and clerical female-dominated occupations. These jobs may be easier to enter and exit, may offer more part-time employment, may offer more flexibility in hours of work than other occupations but there is a considerable wage penalty suffered in both the short and long term. About 7 percentage points of the average wage differential is statistically related to differences in unionization and the accumulation of human capital (experience and education). Close to 15 percentage

points is due to differences in the number of hours typically worked (even among full-time workers). As Gunderson (1986) notes, "Differential childraising responsibilities is a crucial determinant of each and every one of these components". In fact, it is difficult to think of any other factor that is so important in influencing the various components of the earnings gap (p. 2).

Most of the data cited above refer to married mothers only (including common-law) or are a combined result in which the effects on married mothers are numerically predominant. The labour force situation and the labour force decisions facing lone mothers (i.e., never-married, divorced, separated or widowed) are quite different from those of married mothers. There is a distinct economic literature on the effects of child care on lone mothers (e.g., Connelly, 1990; Berger and Black, 1992; Dilnot and Duncan, 1992; Ermisch, 1991; Jenkins, 1992; Kimmel, 1994 and 1995; Robins, 1988; Cleveland and Hyatt, 1996a, 1996b, 1997; see Table 6 below). It is virtually a consensus in this literature that the effects of child care costs (and availability) are strong; the decisions of lone mothers are likely to be more sensitive to changes in child care policy than are the decisions of married mothers. So, for instance, Cleveland and Hyatt, using data from the Canadian National Child Care Survey, find that a 10 percent increase in child care costs would lower the employment rate of lone mothers by about 6 percent (about 2 percentage points). In the US, Connelly finds that use of social assistance would fall from 20 percent to about 11 percent if child care costs were fully subsidized for unmarried mothers. In self-reported evidence, lone mothers in the Canadian National Child Care Survey who are currently working and paying for child care were asked whether they would change child care arrangements or leave their employment situation if the price of child care were to rise by 25 percent or more. Nearly 70 percent of single mothers reported they would change child care arrangements under these circumstances, while nearly 40 percent reported that they would quit their jobs. On both counts, lone mothers were found to be considerably more sensitive than married mothers. Similarly, on both counts, never-married mothers were found to be more sensitive than divorced, separated or widowed mothers.

The effects of child care costs and availability on lone mothers may be strong but so too are numerous other factors; there has been a dramatic decrease in employment rates of single mothers in the last number of years in Canada, while the employment rates of married mothers have continued to rise. Many lone mothers with young children are potentially eligible for social assistance and other federal and provincial tax benefits. These payments are not exceedingly generous; for a single parent with one child, and ignoring the Yukon and North West Territories, they varied from about \$11,000 in Alberta, New Brunswick, or Manitoba to about \$16,000 in Ontario in 1995 (National Council of Welfare, 1997). Nonetheless, many lone mothers do not have extensive job experience or education and many have spent time out of the labour force with young children. Their anticipated employment earnings may supplement these social assistance and other payments, but given the almost punitive rates at which employment income is taxed-back from welfare recipients, the returns from employment will be meagre unless hourly wages are quite high. Child care costs may well be the straw that breaks the lone mother's back; unless child care expenses are fully

subsidized, there will be little incentive for most lone mothers to work (see the discussion in Cleveland and Hyatt, forthcoming).

## 4

### **Employment Provided by Government Child Care Assistance**

#### THE CURRENT SIZE OF THE CHILD CARE SECTOR

In sharp contrast to the situation thirty or forty years ago, most preschool children currently use some form of out-of-home child care as they are growing up. In 1967, only 17 percent of mothers with preschool children were employed. Today, about 65 percent of mothers of preschool children are in the labour force. In 1967, nearly 40 percent of their preschool children (about 140,000) used paid child care services, most often through informal arrangements (only 2 percent used licensed child care or nursery school). Today, about 54 percent (over 700,000) of the much larger number of preschool children whose mothers are in the labour force or students use paid child care.<sup>12</sup> In other words, there has been a 400 percent increase in the use of paid child care services by preschool children of families having employed mothers over this thirty-year period. About 250,000 of these children use licensed services, including child care centres, licensed family home care and nursery schools.

Similar historical data are not available for preschool child care use in families in which the mother is not currently employed. However, we know, based on the 1988 Canadian National Child Care Survey, that over 300,000 such children regularly use paid child care services. Further, the use of child care by school-aged children is also significant. Of nearly two and a half million children from 6 to 12 years of age, about 450,000 use some form of paid child care before or after school. In total, close to 1.4 million children use paid child care services.

Based on the 1988 data, we can estimate that there are currently a total of over 300,000 caregivers providing child care in Canada. Over 50,000 provide care in licensed facilities. Another 100,000 provide in-home child care; approximately 150,000 more provide unlicensed family home care (neighbourhood sitters). Child care is therefore a surprisingly substantial employer, providing paid work for nearly 2.5 percent of Canada's workforce or close to 5 percent of the female workforce.

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<sup>12</sup> For 1967 data, see House of Commons (1987). Current data on child care use are from Cycle 1 of the National Longitudinal Study on Children and Youth.

## EMPLOYMENT EFFECTS

Estimating the eventual size of the child care sector, if generous public financial assistance were to be provided, depends, of course, on what assumptions we make about the nature of the assistance itself, and on what we assume about the take-up rate among eligible parents. We also need to make some assumption about the types of child care that will be eligible for public financial assistance; in particular, we need to know what kinds of staff-child ratios will prevail.

There are two general ways to estimate the size of the sector. We can construct an estimate downwards from the total number of children likely to receive financial assistance. Or we can build upwards from the current regulated child care sector.

Beginning with the first approach, there are about 1,400,000 children in Canada between the ages of two and five years of age, inclusive. Current staff-child ratios in Canada for this age group vary from about 1:5 to 1:10, with 1:8 being typical for most children in this group. Since regulated child care is provided each day for a period longer than the average work day, additional staff may be required to cover the full child care day. Further, additional staff are required for other functions not involved in the direct supervision of children. Current practice suggests that we should count on about one adult worker for every five or six children. That would imply that if child care is provided to every child in this target age group, between 235,000 and 280,000 child care workers would be required (or slightly more, if a substantial number of children use licensed family home care, where the ratio of staff to children is higher). This number is about four to five times larger than the current numbers employed in providing licensed child care. And since somewhat less than half of the workers in the sector are currently involved with providing care to children outside this two-to-five age group, this suggests that an additional 205,000 to 250,000 workers would have to be hired in licensed facilities to serve all these two- to five-year-old children.

This estimate assumes that all children in the two-to-five age category will use child care. If we assume, instead, that about 75 percent of the children will use child care (that number assumes that all currently employed mothers with children in this age range will use publicly subsidized child care, that some of those who are not currently employed will seek employment and use child care, and that other mothers will use half-day child care or nursery school), then new employment in the licensed child care sector for these children will total about 170,000 full-time jobs.

We can also get at a number for employment in the sector by building upwards from the current size of the sector. Assume 60,000 current employees providing licensed child care, and that about 12 percent of all children ages two to five currently use licensed care. If we again assume that these children account for somewhere close to half the current employment in the sector, this represents 30,000 workers. Multiplying by six will increase take-up in the program to about the 75 percent figure used earlier. This generates employment of about 180,000 - 150,000 of which is new. This number is lower than the estimate in the previous paragraph, but given the approximations used to generate both numbers, the two estimates are roughly the same.

## THE ECONOMIC PERSPECTIVE ON DIRECT EMPLOYMENT EFFECTS

It is clear that significant public financial assistance to licensed child care would result in a significant expansion of that sector, and hence a large increase in direct employment of child care workers. However, we argue that this should not be considered as a benefit to be added in to our benefit-cost analysis. Why not?

First, notice that while there will be something like 170,000 new jobs for child care workers in licensed child care, most of the 250,000 unlicensed caregivers will be out of a job. This, of course, is intentional. In general, licensed care is presumed to be of better quality, with trained caregivers, excellent learning materials and child-designed facilities; we believe there are benefits to children of this move to higher quality care. But the net effect on employment is a loss of jobs, rather than a gain in jobs.<sup>13</sup>

Second, this argument about employment effects can be a two-edged sword. Making funding for child care dependent on its employment generation raises the spectre of that funding being removed when society sees unemployment rates drop. The short-term employment benefits of public funding to child care and our current high rates of unemployment mean that such a program would be useful for that reason in the short run. But long-term funding will depend upon the more general case that good child care is an excellent way to employ our scarce resources because of the continuing significant public benefits of that child care, both in recessions and in booms.

On the other hand, it is true that the licensed child care sector can be a significant source of good and reasonably permanent jobs in our economy. With unemployment rates stubbornly high through the 1990s, and with even higher rates of unemployment facing young Canadians in particular, the expansion of a labour-intensive industry like child care is welcome. Licensed child care workers require a level of training which is attainable by many of our unemployed young people, and the jobs are both pleasant and permanent ones. A major child care program would create about 170,000 good jobs and replace a substantial number of bad jobs providing child care for low remuneration with no employment benefits.

Further, there are supplementary reasons why the government may be pleased to replace unlicensed child care jobs with licensed child care jobs. Many informal caregivers do not pay taxes. Responses to the Canadian National Child Care Survey indicate that only about one-third of parents using unregulated care, either in-home or out-of-home, get receipts from their caregivers. The primary reason for not giving a receipt may be that revealing one's social insurance number makes it easier for the tax department to trace income. Since most caregivers providing unregulated family day care are married, their spouses would be eligible for the Spousal Credit if they apparently earn zero net income. The Spousal mount in 1996 was \$5,380 and the tax

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<sup>13</sup> Of course, these newly employed child care providers will be better compensated than those who are now without jobs; this may also affect our evaluation of this change

saving for the spouse would be \$5,380 multiplied by his marginal tax rate. So, many unregulated caregivers have strong incentives to avoid handing out receipts in order to save on family tax payments. Other caregivers who collect social assistance or unemployment insurance may not give receipts in order to avoid declaring earnings that will reduce their payments under these programs. Besides higher quality care for children, this implies that government will gain extra tax and other revenues as children move towards licensed forms of child care.

## 5

### **Adding up the Benefits and Costs of Good Child Care**

#### INTRODUCTION

In this chapter, we present estimates of the different benefits and costs of child care discussed in previous chapters. Children benefit from good child care and so do their parents; many of the benefits are collective gains to society as well.

It is important to state clearly a caveat to the calculations below: research in Canada and other countries on child care/early childhood education is not yet sufficiently advanced to allow this assessment of the benefits and costs of a major public financial commitment to expanded preschool care to be completely definitive. In particular, the evidence on the magnitude of the long-term benefits of child care on children's development, education and social abilities is suggestive more than it is certain. One of the key messages this report tries to convey is that there is now an accumulation of persuasive evidence that the multiple benefits of good child care are considerably larger than its costs. Our vision of Canada's future includes a new and substantial public financial commitment to early education; one of the logical corollaries is that a considerable research effort is needed to prepare intelligent public policy for that future.

The second section of this chapter provides calculations of the likely costs of a comprehensive child care program, similar to that recommended in the Child Care Advocacy Association of Canada brief.

The third section takes a number of different approaches to approximating the benefits to children and society from the developmental/educational effects of good early childhood education. The first approach tries to link up the evidence about child development from Chapter 2 with information about the ultimate effects of better schooling on success in later life. The state of current research ensures that this approach can only provide a general indication of the magnitudes of benefits. The second approach examines the behaviour of well-off parents who are not constrained by income

in their decision to use preschool child care, and draws conclusions about the benefits of good child care. A third approach, recognizing that early childhood education is perhaps equally or more effective than education in later years, bases an estimate of the value of good child care on the current cost of a year of primary or secondary school. Taking the evidence from these three approaches together allows us to make an approximate calculation of the likely magnitude of developmental benefits from early childhood education, which is done in the sixth and final section of this chapter.

The fourth section of this chapter measures the benefits of good child care to parents (and through them to society). These benefits are measured in increased incomes, increased taxes, decreased poverty and social assistance, reduced likelihood of poverty in old age or after divorce, and improved equality of women in the workforce and in society.

The fifth section discusses whether the benefits to mothers and to children are in opposition to one another or whether they are complementary. The sixth and final section compares the total incremental costs and the total incremental benefits of the proposed new child care program and concludes that early childhood care provides a very sound social bargain for the expenditure of scarce public funds.

## THE COSTS OF EARLY CHILDHOOD EDUCATION

We have focussed our review of research on children in the two-to-five age range. There are about 1.6 million children in this age range in Canada, and given projected future fertility rates, this number is expected to stay reasonably stable. Of course, a program of good early childhood education would probably have some effect encouraging future fertility, but we have not tried to take account of this in our calculations.

Good child care is more expensive than poor child care, largely because wage and benefit levels have to be higher in order to attract and retain a well-educated, stable, dedicated staff. Required average skill levels of child care providers would be higher than what is presently mandated in Canadian child care facilities. The average salary level of a child care worker in the new system would presumably be about \$30,000. Fringe benefits are important; employer-paid pensions have been found to have an important effect in reducing turnover (Cleveland and Hyatt, 1997). Fringe benefits will add about 20 percent to salary costs for a total compensation cost of \$36,000 per worker. For this age of child, desirable staff-child ratios vary between 1:5 at the lower ages and 1:8 at the upper ages. Most of the children would be three and above; let us say that the average ratio is 1:7. Since the child care day is longer than the work day, we need extra workers to cover the beginning or end of the day; let us say that this adds another 25 percent to costs. In that case, the total staff compensation cost per child would be slightly less than \$6,500. If staff compensation costs are typically about 75 percent of the total costs of operating a child care centre, we can adjust this figure to find that the total annual cost of good quality child care would be about \$8,500 per child. Of course, there would be provincial/regional variations, but this figure would represent the country-wide average cost.

The \$8,500 figure represents the typical annual cost of full-day, full-time child care. Not all parents would want to or need to use full-day child care. We will presume, for the purpose of these calculations, that families who keep one parent out of the labour force to care for a young child and those with a parent currently unemployed will use the new, publicly financed part-week nursery school/kindergarten. These facilities would operate, presumably, three hours per day, five days a week, without lunch and might cost about \$3,000 per year.

In a somewhat similar situation would be families in which the primary caregiving parent (often the mother) continues to work part-time after this child care program is instituted. We presume that, on average, the care for children in these families is able to be provided at slightly over half the cost of full-day, full-week care, that is, for about \$4,500 per child. Children who currently attend part-day senior kindergarten (at age five) would, similarly, only need care for the remainder of the day, even if their parents work full-time (presumably, with some integration of child care and kindergarten services).

The total cost of the proposed program of early childhood education depends on the number of children who will use full-time versus part-time versus nursery school types of care. The number of hours of child care usually depends on the employment status of the mother; however, the program will gradually change the proportion of mothers who work full time or part time. Table 7 shows the current number of children who would be eligible for the child care program, by age of child and by labour force status of mother. Table 8 shows the projected<sup>14</sup> numbers of children, by age of child and labour force status of mother, after the proposed child care program is in operation. Since children currently in kindergarten need different amounts of additional care than other children, it is useful to do the cost calculations separately for children two to four years of age and those who are five years of age.

TABLE 7: NUMBER OF CHILDREN BY AGE AND BY LABOUR FORCE STATUS OF MOTHER BEFORE PROPOSED CHILD CARE PROGRAM

Years	Employed Full-time	Employed Part-time	Unemployed	Not in labour force	Total
2-4	370,000	270,000	80,000	480,000	1,200,000
5	130,000	90,000	30,000	150,000	400,000
Total	500,000	360,000	110,000	630,000	1,600,000

Source: See Appendix B

<sup>14</sup> Appendix B provides further details about the projections upon which the calculations of costs and benefits in this chapter are based.



TABLE 8: NUMBER OF CHILDREN BY AGE AND BY LABOUR FORCE STATUS OF MOTHER AFTER PROPOSED CHILD CARE PROGRAM

Years	Employed Full-time	Employed Part-time	Unemployed	Not in labour force	Total
2-4	525,000	285,000	80,000	310,000	1,200,000
5	180,000	92,500	30,000	97,500	400,000
Total	705,000	377,500	110,000	407,500	1,600,000

Source: See Appendix B

Based on calculations above, we estimate the cost for two-to-four year-olds of full-day care in good quality early childhood education to be \$8,500; for part-time care, the cost of care is \$4,500 per year; for those children with mothers not in the labour force or currently unemployed, the cost of care is \$3,000 per year. For five-year-olds, most of whom are already using kindergarten for two and a half hours per weekday, we assume that those with mothers working full time will need part-time supplementary developmental care at a cost of \$4,500 per year; those with mothers working part time will get a small amount of daily additional care at a cost of \$2,000 per year; those whose mothers are not in the labour force or are currently unemployed will not need any additional care, beyond kindergarten. Table 9 tabulates the total cost of the new program for each group of children and as a whole.

TABLE 9: TOTAL COST OF PROPOSED EARLY CHILDHOOD EDUCATION PROGRAM BY AGE OF CHILD AND LABOUR FORCE STATUS OF MOTHER.

Years	Employed Full-time	Employed Part-time	Unemployed	Not in labour force	Total
2-4	\$4,465m	\$1,280m	\$240m	\$930m	\$6,915m
5	\$810m	\$185m	\$0	\$0	\$995m
Total	\$5,275m	\$1,465m	\$240m	\$930m	\$7,910m

Source: See Appendix B for detailed calculations

These cost estimates assume 100 percent take-up of the program, and reasonably generous estimates of the cost increases due to the enhanced quality of service provided to children in comparison to current regulated child care programs. There may well be judicious ways of providing good quality care for a somewhat lower total cost. Costs are also likely to be considerably lower than suggested in these estimates if the program is phased in gradually (e.g., by age). The estimated gross cost (ignoring current government expenditures on child care) is \$7.9 billion.

Of course, because some government funds are currently spent on child care and because parents are presumed to continue to contribute towards child care costs, net costs of providing child care services for two-to-five year-olds are lower than gross costs. We assume that about \$1 billion of current expenditures on child care (through the Child Care Expense Deduction, child care subsidies to low-income families and child care assistance provided to parents in training programs) will be redirected into this program. Further, we assume that on average, parents will pay 20 percent of the full cost of the high quality child care services provided under this new program. The net, or incremental, cost of the new program will be about \$5.3 billion annually or less than 1 percent of Canada's annual GDP.

For the purpose of comparison, Denmark spends about 1.2 percent of GDP on child care services for children less than six years of age. Sweden allocates about 2 percent of GDP to services for preschool and school-age children. In France, the cost of services for

those under six years of age is slightly less than 1 percent of GDP (European Commission Network on Childcare, 1995).

## MEASURING THE BENEFITS TO CHILDREN

Stimulating early childhood experiences are critical for children's development; good quality child care can be a very significant part of early education. Those benefits are enjoyed by the child and the parents who make the decisions about care. In that sense, they have a private component. But, as we have emphasized, there is also a significant collective benefit from good child care. When children are better educated, then, as adults, they are more productive, their health is likely to be better, they pay more taxes and are less likely to require welfare and other social transfers. There is also a significant public interest in equal opportunity, which is strongly promoted when children get a more equal start in their early years.

To leave out the long-term benefits to children as other benefit-cost analyses have often done is to omit the most important part of the equation. Of course, these developmental/educational benefits are the hardest to measure. But this is no reason to leave them out. Rather, as we have discussed in Chapter 1, the fundamental bias in benefit-cost calculations against hard-to-measure outcomes can only be resisted by providing our best current estimate of the benefits, and then leaving to others the job of criticizing these estimates and providing better ones. There are several possible ways of getting an approximate measure of the benefits to children.

### Projecting Benefits to Children from Studies of Child Development

The benefits for children depend upon their ages, upon the type of care they are currently using, and upon the type of care they are projected to use after this program of early childhood education is implemented. Table 10 shows the types of care currently used by children of different ages in Canada. Table 11 shows the projected use of different types of good quality developmental care, assuming 100 percent take-up and full implementation of the proposed program.

TABLE 10: CURRENT USE OF CHILD CARE BY AGE OF CHILD

Years	Regulated Child Care	Informal Child Care (full-time)	Informal Child Care (part-time)	Nursery School	Mother Only	Total
2-4	180,000	190,000	270,000	260,000	300,000	1,200,000
5	48,000	82,000	90,000	—	180,000	400,000
Total	228,000	272,000	360,000	260,000	480,000	1,600,000

Note: Cost calculations assume that 5 year-olds are in kindergarten. Due to lack of information, no allowance has been made in these cost calculations for 4 year-olds in junior kindergarten (or 4 year-olds in senior kindergarten).

TABLE 11: PROJECTED USE OF GOOD QUALITY REGULATED CHILD CARE BY AGE OF CHILD

Years	Full-time Child Care	Part-time Child Care	Nursery School	Kindergarten	Total
2-4	525,000	285,000	390,000	—	1,200,000
5	180,000	92,500	—	127,500	400,000
Total	705,000	377,500	390,000	127,500	1,600,000

Note: At age five, because most children attend kindergarten two and a half hours per day, full-time child care implies that the rest of the maximum 10 hour child care day is covered; part-time child care implies that a total of five hours per day are covered by kindergarten and child care combined. We ignore the effect of junior kindergarten and of four year-olds in senior kindergarten.

In Chapter 2, we reviewed a series of empirical studies about the effects of child care on the development of children. For children from two-parent families and lone parent middle-income families, we found evidence of decreased grade repetition due to increased attendance at good quality early childhood facilities, and evidence of improved academic and school performance in later grades for those with preschool child care experience relative to those without. For children from low-income, lone parent families, particularly those with additional risk factors, there is good evidence that early education, especially when combined with supplementary parent programs, can have substantial payoffs. This is not only confirmed by the well-known Perry Preschool results, but also by a careful evaluation of Head Start’s effectiveness and RAND’s assessment of reduced incidence of serious criminal activity.

For the majority of children who already use some form of non-parental child care on a regular basis, the key issue is the effects of low versus high quality early care. Although there is not definitive evidence in Canada about the prevailing quality of child care, what we do know suggests that generally, the quality of care is not high. Evidence from the United States suggests that child care of inadequate to poor quality is widespread. Evidence from Sweden suggests that variations in quality of early child care make a substantial difference to children even if the current quality of child care in Canada is not as poor as that in the United States. The preliminary evidence from longitudinal studies suggests that the quality of early childhood care does matter for a child’s further development, particularly for social and language development. Future research in this area should be designed to facilitate: (a) making causal inferences about the effects of child care, and (b) calculating the size of those types of effects which themselves can be linked to young adult and adult outcomes.

The large majority of children aged two to five would be in a position to benefit from the developmental/educational effects of either a switch from lower quality to higher quality child care, or an initial introduction to early childhood education. What would the benefits to the average child be? A number of the main studies we reviewed

provided two different types of estimates of the effects of child care on children: estimates of the effect of child care on future grades or test scores (e.g., an improvement in school performance at age 10) or estimates of the effect of child care on the likelihood of finishing school or dropping-out of school.

The Currie and Thomas, Osborn and Milbank, and Andersson studies provide estimates of the first type: they suggest that there is a 4 percent to 10 percent improvement in various indicators of the skills, abilities and productivity of the children studied<sup>15</sup> due to stimulative preschool experience in early years. These increased abilities would affect both the quality of life and eventual income-earning capacity of each child. A 4 percent improvement in income earned would average \$1,000 per year at current average earned annual incomes of about \$25,000 per person, or about \$40,000 over a working lifetime. A 10 percent improvement would imply an increase of \$100,000 in average lifetime earnings. The value of this would have to be discounted back to the present, but over a child's lifetime these benefits, part of which accrue to the individual and part to society as tax payments and reduced need for social programs, would be substantial. If, by affecting the ability to learn, preschool experiences were to affect the rate of growth of the individual's income level over time, the results would be even more substantial, but we have no information on this.

The second type of effect measured in these studies was a reduction in school-dropout or grade-repetition rates. For instance, Currie and Thomas cite research showing that children who perform poorly in early grades are more likely than other children to eventually drop out of school altogether (Stroup and Robins, 1972; Lloyd, 1978; Barrington and Hendricks, 1989; Cairns et al., 1989; Grissom and Shephard, 1989; Ensminger and Slusarcick, 1992). The relationship between high school completion and future wages is well-established; most studies, indicate Currie and Thomas, show that an additional year of high school is associated with an 8 percent increase in lifetime wages (Angrist, 1990). In particular, Murnane et al. (1993) indicate that the mastery of skills by the eighth grade of school, measured by achievement on standardized tests, is an important determinant of future wages. High school graduates are also less likely to be unemployed (Markey, 1988), are likely to be in better health (Grossman, 1973) and are likely to experience greater job satisfaction (Michael, 1982; Haveman and Wolfe, 1984).

These potentially large effects are reflected in the Conference Board of Canada's estimates of the potential gains from reducing high school drop-out rates in Canada (Lafleur, 1992). The national secondary school drop-out rate in Canada is high - 34 percent in the 1988-89 academic year - substantially above the rates in the United States, Germany and Japan. In other words, nearly 137,000 students who were enrolled in grade nine in the 1985-86 academic year failed to graduate. The high drop-out rate is costly now and likely to be more costly in the future. As the Conference Board study reports, nearly two-thirds of all jobs created between 1990 and 2000 will require a minimum of 12 years of education up from just over 50 percent a number of years ago. Of course, the reasons for the high drop-out rate are complex, but we believe that high quality

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<sup>15</sup> Children in the Currie and Thomas study were low-income families eligible for Head Start. The Osborn and Milbank study looked at an entire cohort of children born at a certain time in England and estimated the effects of different types of care. The Andersson study considered Swedish children and the effects of different types of care.

preschool education, available to children from all social classes, would address a number of them.

To calculate the magnitude of the losses due to dropping-out of school, the Conference Board created typical age-income profiles of a high-school graduate and of a drop-out and adjusted them to reflect the influence of socioeconomic factors other than high-school completion on income. Haveman and Wolfe's (1984) research was used to calculate the value of non-market benefits foregone when high school is not completed. The total loss due to high school non-completion is estimated to be \$4 billion, composed of a \$2.7 billion cost to the drop-outs themselves and a \$1.3 billion loss to society. The \$2.7 billion loss represents the reduced amount of after-tax income earned over a lifetime and the loss of non-market benefits. The \$1.3 billion loss to society is composed of the loss of tax revenue, the extra public administrative costs related to crime and social welfare programs and costs related to a broad community-based quality of life, including the costs of decreased social cohesion, less participation in political issues and lower educational attainment among offspring. This \$4 billion is the present discounted value of the net losses out over the future lifetimes of these drop-outs. This cost becomes even more staggering when we realize that the amount represents the lifetime loss to society of only one school year of students who drop out (Lafleur, 1992, p. 1). If good quality early childhood education were able to cut drop-out rates by about 10 percentage points (see Richardson and Marx, 1989), the overall benefit would be about \$1.2 billion per year. Improvements in school performance of other students would be supplementary to these benefits.

### **Imputing Benefits From the Actions of Well-off Parents**

A considerable number of more affluent parents provide preschool experiences for their children, whether or not parents work outside the home. And when mothers do work, these parents usually make relatively high-cost arrangements for the care of their children. Presumably they do this because they believe that the benefits to children of these arrangements exceed the cost. Thus we could conclude that the additional cost of these arrangements gives us a lower bound on the value of preschool education.

It is worth noting that we cannot draw this conclusion for most commodities. For example, if a well-off person chooses to buy a sportier car and spends an additional \$15,000 to do so, we can conclude that the extra "sportiness" is worth at least \$15,000 to that consumer. But we cannot conclude that the same is true for other poorer consumers. Poorer consumers do not spend the extra \$15,000 to buy more "sportiness" because they have less money, and each dollar is more important to them. Thus it would be incorrect to argue that the government ought to spend \$15,000 for each consumer to upgrade the "sportiness" of their cars, because the value of this to the consumers would be well below \$15,000.

What makes child care different is that the decision about quality care is not a matter of taste or personal consumption by the parent, but rather an investment in the future productivity and well-being of the child. Wealthier parents make this investment because they can afford to. Poorer parents do not, for the same reason that they do not have significant amounts of money in RRSPs or the stock market. The pressures of

everyday life on most parents make every dollar scarce, and investment in children, like investment in any other asset, has to take second place to food, housing, clothing, transportation and other daily essentials.

Because this kind of investment is indeed productive, children, if they could borrow money and properly assess the benefits, would be willing to make the investment themselves in their future productivity. But no child can make such an assessment, nor can he or she borrow money using future earnings as collateral. Neither can parents carry out this kind of transaction, pledging the child's future earnings against a loan for child care. However, the state can make such an investment. And the fact that many parents who can afford to do so regard this investment as productive suggests that the state should also regard it as having a positive value.

In measuring the appropriate cost justified by this reasoning, we should look at two separate cases. For families in which the mother is not currently employed and where the mother cares for her children in the home, any expenditures on preschool education represent an investment in the child. This kind of care costs about \$3 per hour (Centre for International Statistics, 1993) or perhaps \$45 per week for part-time care. Since the value of this investment must be at least equal to its cost, this number - approximately \$2,400 on an annual basis - represents a lower bound on the value of this care in terms of the child's future well-being and productivity. If we suggest that there is some additional value of child care to the average family, similar to "consumer surplus" (economists use this term to account for the fact that consumers of any commodity usually derive more in value than is spent on the commodity), then this figure is clearly a minimum estimate.

Similarly, for those parents who work in the paid labour force and purchase child care, the additional expenditures on better-than-custodial-quality care also represent an investment in the child. This difference in cost between the average neighbourhood sitter across Canada (about \$70 per week or \$3,700 per year - Centre for International Statistics, 1993) and the kinds of high quality child care purchased by well-off working families may average about \$4,000 per year. Since the value of this investment again must be at least equal to its cost, this number represents a lower bound on the value of this care in terms of the child's future well-being and productivity.

### **Imputing Benefits from the Cost of Education**

Educators often argue that education is far more effective for younger children. By the time children enter high school, their basic skills and attitudes have already been developed, and their future success is fairly predictable. Dollars spent on young children can have real payoffs by modifying these skills and attitudes (see Carnegie Task Force 1994; Keating and Mustard, 1993; Hertzman, 1992; Cynader, 1992). Of course, education in this country has traditionally started full time only at age six (or slightly before). In large part, this has been rooted in a belief that mothers, caring for children at home full time, could provide the best possible early educational experience. Several factors suggest that investment in early education is becoming more critical.

First, many families with mothers who stay at home with their children understand the value of early education in formal arrangements. As mentioned above, those families, when they can afford it, generally pay for early preschool experiences. Second, many children now do not experience the idealized, traditional kinds of home care. Increased family breakup means that many children are raised by single parents, who almost inevitably have lower incomes and increased stress. Good quality early childhood education experiences can be extremely effective in raising the later educational and social achievements of these children. Most important of all, the majority of young children in Canada are not cared for at home during the day. About two-thirds of mothers of young children are employed in paid work; labour force participation rates of mothers of young children have been rising rapidly for decades, and a decrease in employment rates is highly unlikely. The effective choice for these children is not, as some would have it, between care in the home and care in an institution, but between good quality out-of-home care and bad quality out-of-home care.

Since children are going to be cared for outside their homes in any case, the issue becomes a proper assessment of the value of additional dollars devoted to early childhood education. The data are inadequate to make a firm estimate. But a starting point would be to assume that dollars for early education are as productive as dollars spent on education in later years. The average cost of a year of education in the public school system is about \$7,000 (Globe and Mail, 1996). If we assume that we are obtaining value for money in those expenditures, then the value of a year of education to the average student is at least \$7,000. If educational expenditures on preschoolers are at least as productive, then the educational component of good child care is worth at least \$7,000 per year.

In fact, the current cost of a year of education may be a low estimate of the value of investments in education. For instance, the Conference Board study cited above (Lafleur, 1992) finds that the return to Canadian society for investing in high school education is 19.0 percent for males and 17.8 percent for females. Vaillancourt (1995) finds, based on a careful analysis of 1986 Census data, that the total annual return on the public dollars spent to finish high school is 33.4 percent for men and 38.5 percent for women. The annual returns to society of this investment in education, separated from the purely private income-enhancement returns to individuals, are estimated at 11.9 percent for men and 9.1 percent for women. This suggests that money spent on increased educational completion may well be a good private and social bargain.

## MEASURING THE BENEFITS TO PARENTS

In this section, we ignore the important benefits to children and only consider the effects of good child care on parents. The immediate benefit to working parents of child care is the value of their time freed up for employment or other purposes. We assume, for the purposes of this discussion, that only mothers will have their labour force participation affected by a child care program; in some families, where fathers provide the majority of care, the employment of fathers could be changed.



To discuss the effects on mothers' employment, we can consider three types of families. First, we consider the effects of good child care on families in which the mother is already employed full-time and the child is already using regulated care. Second, we look at the effects of good child care on families in which the mother is already employed full-time and the child is using some kind of informal care. Third, we evaluate the benefits of good child care for those mothers not currently employed full-time in the paid labour force.

### **Mothers Already Employed Full-time and Using Good Quality Child Care**

In this case, there would be no change in employment behaviour caused by government policy. Although this means that there are no new employment benefits, it should also be emphasized that there are only modest net additional costs. All that may have happened is that some costs have been shifted from parents to the state. However, it is likely that this shift will be quite small. About 40 percent of parents currently using licensed care already receive significant subsidies because of low income or need. The rest of the parents who pay full fees are reasonably well off. The Child Care Advocacy Association of Canada proposals envision that parents will pay, on average, about 20 percent of the cost of their child care services, on a geared-to-income scale, so the increased subsidization of these families will not be substantial.

### **Mothers Employed Full-time and Using Lower Cost Informal Arrangements**

In this case, if we are not considering the additional benefits to children implicit in higher quality care, then there would appear to be a net cost to society in moving parents from use of cheaper custodial care to higher cost arrangements. Of course the primary argument for such a policy would be precisely the additional educational and developmental benefits to children. The point here is that the labour force effects of child care appear to be purchased at a higher price than is strictly necessary. However, it is worth noting that tax considerations do reduce the additional cost of using licensed child care.

Specifically, a significant part of the informal child care sector is part of the invisible economy. Care providers work for cash, do not provide receipts and do not pay tax on their earnings. The loss of tax revenue implicit in this arrangement represents a hidden cost to the government of parental use of informal care. Evidence suggests that about 65 percent of informal paid arrangements generate no tax receipts and are thus unreported on the income side. Assuming tax rates of about 25 percent of income (including federal and provincial income tax, and employment taxes like CPP and unemployment insurance) means that there is an implicit government subsidy of about 15 percent to 20 percent provided currently to the average unregulated care arrangement. Shifting children to regulated child care eliminates this subsidy; this reduces the net cost of the proposed public financing of child care.

## Mothers Who Increase Labour Force Participation

In this case, we are discussing both mothers who enter the labour force and mothers who move from part-time to full-time work. For these mothers, the additional income earned is a benefit. However, because they were not employed (or at least, were not employed full time) before the child care program was introduced, we might be tempted to conclude that, for these families, the value of the additional earnings they could make must have been less than the cost of the child care. Two factors make this conclusion questionable.

First, these working mothers now pay higher taxes on their additional earnings. Because they do not benefit immediately from the income that goes in tax payments, they do not take them into account when making their decisions. The value of these taxes to the state serves to partially underwrite the cost of child care directly. It also may serve to make the total value of child care, even ignoring benefits to children, greater than the cost.

This is especially true for mothers who would be on welfare in the absence of such a program. The implicit tax-back rates in most social assistance programs approach 100 percent. Tax-back rates act to create a welfare wall keeping single mothers out of the labour force (Caledon Institute, 1990). Full subsidization of the cost of good quality child care can, at least partially, overcome this adverse incentive (Cleveland and Hyatt, forthcoming).

Second, however, we have already discussed a major benefit to working parents that is often ignored, both by governments and by the parents themselves. Mothers with preschoolers who stay home to care for their children face significant interruptions in labour force participation. They lose not only current wages, but the salary increases that are available to those who stay in their jobs. A British study (Joshi, 1993) finds that the loss in lifetime earnings because of lower experience is of the same rough order of magnitude as the loss of earnings because of the years out of the labour force. We do not have the data to do such an analysis for Canada, and of course the experience of the two countries might be different. Nevertheless, if we assume that mothers do not take this loss into account (for reasons discussed earlier), then this loss must be added to the gains to employment in any cost-benefit analysis.

Retrospective data collected on Norwegian women in 1988 (Kravdal, 1992) show that a mother who bears two children will lose about 6.6 full years out of the labour force up to age 37, in comparison to a childless woman with the same level of education. Exceptionally complete income data allowed the author to calculate lost gross income at just over US\$150,000 at 1990 values, or about US\$100,000 after taxes. These data refer to women who were in their peak child-bearing years in about 1975, when 46 percent of Norwegian women with children three to six years of age were employed. The typical number of full-time-equivalent years of labour force participation lost depends on the number of children, the mother's age at first birth, the interbirth interval and the education level of the mother. A mother with 12 years of education, having her first child at age 23 or 24 is likely to lose about two and a half years of labour force experience

as a result. Kravdal's estimates of years lost are lower than Calhoun and Espenshade's (1988) for the United States but similar to Joshi (1990, 1993) for the United Kingdom.

If, following Joshi, we assume a one-for-one relationship between current lost earnings and future losses due to atrophied skills and lost productivity (i.e., one dollar of lost current earnings will also mean one dollar of lost future earnings), and adding in the gains to government in terms of high tax revenues from working mothers, we then should take roughly double the gross earnings of employed mothers as the benefit when those parents are moved into the labour force or increase their hours of work. The average gross full-time wage for women in Canada is more than \$25,000 per year. This suggests a benefit of \$50,000 per year in both take-home pay and additional tax revenue for each average wage earner moved full-time into the labour force. In calculations below, we use the more cautious estimate of \$40,000.

In fairness, it should be pointed out that this is a high estimate for lost productivity. However, it has some support in the literature. For example, Mincer and Polachek (1974) suggest that human capital depreciates much faster when it is unused than otherwise.

Furthermore, one explanation for the male-female wage gap is that women have been shunted into low wage jobs because they suffer from prolonged interruptions in labour force participation when they raise children. Reducing these interruptions can help eliminate that gap and increase Canadian productivity.

#### ARE THE BENEFITS TO MOTHERS AND CHILDREN COMPLEMENTARY?

So far, we have analyzed the impacts of publicly financed child care separately for mothers and children. But this approach might suggest that these effects are somehow in conflict, and that the interests of mothers (or parents) and children are antagonistic. This would not be correct.

Most mothers choose to work in part because they believe that this choice is in the best long-term interests of their children. That is, although mothers generally receive satisfaction from their jobs and benefit from the income they earn, the effect of these additional earnings on their children are generally an important part of the decision to work.

In most two-parent families, women's earnings are an important part of the family budget. Thus, when a mother chooses to leave work, the effect on family income is dramatic, and the lowering of the family's standard of living is an important factor in making that decision. That standard of living, of course, has a major impact on the child's welfare. Families who want to own their own homes or send their children to college or university often depend on the mother's income to carry out these plans.

Furthermore, the father's employment is, especially today, far from an entirely sure thing. Having two incomes in the family is a form of insurance that protects the family (and by necessity, the children) if the income of one parent is lost.

And of course, there is the risk of divorce and family breakup. We know that divorce has a dramatic negative effect on the standard of living and economic well-being of women and children. A mother who protects herself by continuing to work and maintaining her position and ability to advance in salary and responsibility, is also protecting the economic welfare of her children.

Thus all of the economic benefits that we have discussed earlier in terms of labour force participation are also important to children. What this report has attempted to do however is to consider these economic effects linked to the labour force separately from the direct child development effects provided by high quality licensed child care.

#### ADDING UP THE BENEFITS AND COSTS OF GOOD CHILD CARE

We have calculated the incremental cost of good child care to serve all two-to-five year-olds in Canada at a total of \$5.2 billion per year (a little less than 1 percent of GDP).

As described above, the benefits of good child care accrue, in the first instance, to either children or to their parents, and through them to society at large. The benefits to children come in their greater social, language, cognitive and other forms of development, which lead, among other things, to improved school performance and decreased likelihood of dropping out of school. These effects in school lead to increased incomes, greater probability of employment, better health and more job satisfaction. For society, this translates into increased productivity, higher generation of tax revenues, decreased social assistance and health costs, and improved citizenship.

#### Child Development Benefits

Let us calculate the child development benefits first. For those two-to-four year-old children who newly enter nursery school as a result of the program, we assume that a good full-year nursery school is worth the value that affluent parents place on it. This is at least the \$2,400 cost, plus a 50 percent allowance for consumer surplus,<sup>16</sup> or \$3,600.

TABLE 12: CHILD DEVELOPMENT BENEFITS OF PROPOSED PROGRAM

Moving From	Moving To	Millions of dollars	
		2-4 years	5 years
Mother only	Nursery School	\$799	0
Mother only	Part-time	\$173	0

<sup>16</sup> Economists presume that most goods and services are of more value to consumers than their market price. Therefore, in benefit-cost analyses, the additional value of consumer surplus must be estimated.

Mother only	Full-time	\$108	0
Nursery School	Nursery School	\$302	0
Nursery School	Part-time	\$103	0
Nursery School	Full-time	\$63	0
Part-time Informal	Part-time	\$648	\$48
Part-time Informal	Full-time	\$324	\$24
Full-time Informal	Full-time	\$1,140	\$197
Full-time Regulated		\$360	\$19
<b>TOTAL</b>		<b>\$4,020</b>	<b>\$288</b>

See Appendix B for details.

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Many children currently use informal care, paid or unpaid, while their parents work. Under the proposed program, they would move to planned and well-staffed arrangements which typically would be of better quality than those currently used. In the discussion above, we suggested using the extra cost paid for higher quality care by well-off parents as an indicator of the true value of this additional quality. This extra cost is about \$4,000 per year. This figure does not allow for the value of consumer surplus to these well-off parent purchasers. To allow for this, we presume the developmental value of additional quality is equal to \$6,000 per child in full-week child care.

For those children who currently use regulated care, the developmental gains will be smaller. The annual price of regulated care is currently about \$5,000, with considerable variation according to prevailing wage levels and the generosity of provincial grant programs. The proposed child care program would provide care with a higher proportion of well-trained staff, costing \$8,500 for a full-time child. Chapter 2's discussion about the value of higher quality regulated care suggests considerable child development benefits of the enhanced quality to children. Some of the benefits of higher costs will go to staff working in the regulated sector. However, to be very conservative in our benefit calculations, we will estimate the extra developmental benefits to children at \$2,000 per child.

Using these figures for child development benefits, and adjusting them appropriately for part-time child care and for part-week additional care of children who currently use kindergarten, Table 12 summarizes the calculated child development benefits of the proposed child care program. Appendix B provides greater detail about the calculations.

## Benefits To Parents

The benefits to parents come in the form of increased attachment to the labour force for mothers of young children. This increased attachment will take the form of a movement from part-time to full-time work for some, increased willingness and ability to accept promotion and career-development opportunities, movement from outside the labour force to part-time work for others, and because of increased job experience when children are young, increased incomes, decreased prospects of poverty at time of divorce or widowhood, and increased financial independence.

Table 13 provides estimates of the effects of provision of good quality, convenient child care with a modest parental co-payment on the employment of mothers of young children.

The benefits of these changes in employment status depend upon the changes in lifetime gross income that occur as a result. For each mother, the effects will be somewhat different. The average gross wage of a full-time woman worker in 1990 was about \$25,000. Let us conservatively assume that these new workers only receive \$20,000 per annum. The full benefit of the change in employment status will be larger than this, however, because, as was argued above, increased job skills and experience will themselves increase future productivity and future income. We suggested that the net benefit of an extra year's full-time employment was double the actual salary received, or \$40,000. Some of this benefit accrues directly to the individual worker, but a considerable amount is social benefit through increased collection of tax revenue, decreased poverty, decreased use of social assistance, etc. Table 14 provides estimates of the total value of employment benefits due to the proposed child care program.

TABLE 13: PROJECTED EMPLOYMENT STATUS OF MOTHERS

Moving From	Moving To	Number of Mothers
Not in Labour Force or Unemployed	Same	390,000
Not in Labour Force	Part-time Employment	104,000
Not in Labour Force	Full-time Employment	65,000
Part-time Employment	Same	156,000
Part-time Employment	Full-time Employment	78,000
Full-time Employment	Same	507,000
<b>TOTAL</b>		<b>1,300,000</b>

See Appendix B for details.

TABLE 14: PROJECTED EMPLOYMENT BENEFITS

Moving From	Moving To	Benefits Millions of dollars
Not in Labour Force or Unemployed	Same	\$0
Not in Labour Force	Part-time Employment	\$2,080
Not in Labour Force	Full-time Employment	\$2,600
Part-time Employment	Same	\$0
Part-time Employment	Full-time Employment	\$1,560
Full-time Employment	Same	\$0
<b>TOTAL</b>		<b>\$6,240</b>

See Appendix B for details

It is not clear that these approximate calculations adequately capture the breadth of potential benefits discussed in the chapters above. We have, for instance, presumed that the large potential benefits of decreased drop-out rates at high school are captured by our methods, but they may not be fully reflected. Similarly, although the child development benefits to children in lone mother families and the savings in social assistance and other public costs are likely to be particularly large, we have not attempted to account for this. Further, we have not presumed that the developmental/educational benefits of early childhood education are as large as the \$7,000 cost of a year's education in Canada's primary or secondary school system, even though that figure might be reasonable. We have also been fairly conservative in estimates of the likely earnings of mothers now working in full-time employment. On the other side, some might complain that we have not compensated adequately for the lost home production of mothers who move from full-time home care into the paid labour force. We have accounted for lost work caring for children, but not time spent doing community and volunteer work, housekeeping, laundry, etc.

### In Summary

The point is that these estimates are approximate, but not, we think, unreasonable. We calculate the net additional cost of the proposed child care programs at about \$5.3 billion per year and the value of the additional benefits to children and parents at about \$ 10.6 billion per year. The Child Care Advocacy Association of Canada calls for moving half-way towards the goal of providing care for all these children over the course of the next ten years. This gradual implementation of a major child care program would clearly reduce the immediate costs. In any case, we believe that public provision of a high quality early childhood education system for Canada is well worth the cost. Table 15

summarizes the calculations presented in this chapter.



TABLE 15: ANNUAL BENEFITS AND COSTS OF CHILD CARE PROGRAM FOR TWO TO FIVE YEAR-OLDS.

	Millions of dollars
<i>Costs of Program</i>	
Gross cost of child care for 2-5 year -olds	7,910
Subtract: 20% parental contribution (scaled to income)	1,581
Subtract: current government expenditures on child care	<u>1,000</u>
Net cost of program	5,329
<i>Child Development Benefits</i>	
Benefits to children already in licensed child care	379
Benefits to children in informal child care	2,381
Benefits to children in maternal care	<u>1,548</u>
Total child development benefits	4,308
<i>Labour Force Benefits</i>	
Part-time employment	2,080
Full-time employment	<u>4,160</u>
Total labour force benefits	6,240
Total child development and labour force benefits	10,548
<i>Net Benefit of Child Care Program</i>	<b>5,219</b>
<p>Note: We have not included as a benefit the value of new employment provided to child care workers (see Chapter 4). Similarly, we have not included as a benefit the value of additional taxes collected due to moving child care out of the underground economy. Including these would increase the ratio of benefits to costs. Furthermore, cost (and benefit) estimates assume 100% take-up of the program.</p>	

## 6

## Conclusions

In a Darwinian sense, any society can be evaluated by its success in reproducing itself. Successful communities reproduce and flourish; unsuccessful ones fall by the wayside. A society reproduces itself by raising children, educating them so as to endow them with high levels of human capital, and providing them with social infrastructure and with places to work and live.

By many measures, this responsibility to our children is not being adequately discharged. Dramatic changes in labour force participation by mothers with young children have not been matched by public programs to ensure that those young children receive both adequate care and the kind of attention necessary to prepare them for later life.

Many experts in child development believe that the most critical years in the raising of a child are those before the child enters school. Until relatively recently in Canada, the vast majority of those children were cared for in their homes by their mothers. Thirty years ago, about 80 percent of mothers with young children cared for those children at home. But the cost to society of this arrangement - essentially the loss to the labour force of the talent of an enormous number of young women - was considerable. And, for a variety of reasons, it is not a situation likely to reoccur in the near future.

Labour economists suggest that mothers have entered the labour force in such large numbers in the last thirty years because of higher salaries and greater opportunities, and because of the social changes that accepted working mothers. But we can also make the same observation in reverse. The prior arrangement for caring for young children - that mothers stayed home and in many cases never reentered the labour force - could be sustained only because of low salaries for working women, significant restrictions on the types of jobs available for those women, and enormously strong social norms that viewed the primary role of women as housekeepers and mothers. In effect, society provided care for its young children by making half the population - women - responsible for child care, and by placing considerable obstacles in the paths of those women who became, over time, less than thrilled with this role.

For many very good reasons, most Canadian women today reject the old norms. And we have gone a considerable distance in removing the limits of salary and opportunity that have constrained women in the past. Some limits remain, but the momentum in our society is, as it should be, towards removing those obstacles, not restoring them. However, we have not yet come to terms with the fundamental need to reorganize our approaches to child care to reflect and support this changing reality.

The problem, as we see it, is in some ways quite simple. The future of our society absolutely requires good care for young children. That care is, by its nature, labour-intensive. The old labour-intensive way of caring for children - by mothers in the home full-time until those children are completely grown up - is no longer viable. The current levels of care for most children outside the home are inadequate.<sup>17</sup> We must do better. We can do better.

Under any conceivable early childhood education program, parents will continue to provide the key elements of child-raising. Thus it is self-evident that the essence of an effective public strategy for ensuring the reproduction of our society - what the previous paragraph referred to as “doing better” - will centre on the family. But because mothers and fathers are in the labour force and will remain there, doing better requires that we find ways to make effective child-raising compatible with the reality of working mothers and fathers.

### THREE KEY ELEMENTS IN A CHILD CARE STRATEGY

We see three quite different elements that are necessary in order to “do better”. All are essential, and no single one works well without the others.

The first key element is a comprehensive good quality child care policy for all preschool children between the ages of two and five. Most mothers and fathers of these children work, so the central element of such a policy is provision of licensed child care of different types. This has been the focus of this report.

The other two key components of a child-focused child care strategy deal with children on both sides of the two-to-five year-old age range. Thus the second key element is a comprehensive social policy towards parental leave. No publicly financed child care program, no matter how well-designed, can replace the key bonding that occurs between parents and children in the first months of life. This bonding is critical for the physical health and well-being of the child and for the emotional health of the family. And high quality child care for very young children is also expensive. Thus, for both cost and benefit reasons, a well-designed family leave and benefit policy is a critical element in any child care strategy.

The precise design of such a policy is beyond the scope of this report. It is unclear, for example, the precise age of the child at which licensed child care by those with

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<sup>17</sup> Expenditure on early childhood education in Canada is quite low compared to other countries (OECD, 1996a, 1996b). Less than 10% of 3-year old Canadian children were enrolled in early childhood education in 1994. The average across all OECD countries was 40.4% of 3 year olds (in the United States 27.6%, Japan 57%, Denmark 61%, France 99.3%, United Kingdom 43.7%). At age 4, 48.2% of Canadian children are enrolled in some kind of early childhood education. The OECD average is 67.9% with 80%-100% rates being typical in all the major OECD countries except Canada and the US. Because of kindergarten availability and eligibility for grade one at 5 years, eight months, the large majority (89.5%) of Canadian children at age 5 do receive early childhood education - although this is typically part-day (OECD average 82%, generally full-day).

special training and aptitude in the care of infants should supplement parental care. Combining maternity and parental leave, approximately six months of remunerated leave is now available in Canada to eligible mothers. The Child Care Advocacy Association recommends one year of parental leave, with enhanced remuneration. Sweden allows for about fifteen months of leave, divided between mother and father. We would tend to favour the Swedish policy (although different families will use different amounts of the available leave); this helps to explain the focus of this report on children aged two and above. We also note that it is not enough simply to require employers to provide and pay for this leave, since this would encourage firms to discriminate against prospective parents when hiring. Thus parental leave must be paid for publicly, with employers required to hold open positions for returning parents, and there should be strong encouragement to the sharing of parental leave between mothers and fathers.

Extensive remunerated parental leave is, of course, expensive. High quality licensed child care for infants is perhaps equally or more expensive. The point, of course, is that however it is configured, the effective care of very young children is both very costly and a vital undertaking for any society. A society in which women and men have important jobs and which wants effective child-raising must make the work place "family-friendly". This has implications which have been discussed well elsewhere.

The third key element is care for school-age children. This element, too, is outside the scope defined for this study. Related research is relatively skimpy; in addition, there are several alternative ways of providing after- and before-school care. Furthermore, the school day and the school year were designed at a time when most mothers were not employed, and when those mothers saw their children off to school, fed them lunch at home and then greeted them when they came home after school. We suspect that in the long run, the most effective solution to the child care needs of school-age children will rest with a redefinition of the school system to include such care, with the exact nature of that care varying with the age of the child. In our minds, the first priority is for society to accept responsibility for providing better care alternatives for preschool children. Redesigning school-age care should proceed after an effective preschool program has been accepted.

## CAN WE AFFORD TO PROVIDE HIGH QUALITY CHILD CARE ?

This report has demonstrated that good child care has a favourable benefit-cost ratio. But even though the benefits of good quality care may outweigh the costs by two-to-one, the calculation is made at a time when Canada is obsessed with deficit reduction, when transfers to support social programs have been cut to finance an attack on the debt, and when talk of tax reduction dominates the editorial pages of many Canadian newspapers. Can we really afford a child care strategy under these circumstances, even if its benefits dominate its costs?

The answer is not trivial. First, it should be noted that most projections of the future course of the federal budget show the appearance of a fiscal surplus in the next couple of

years. This gives us some room to operate. The cost of good child care is significant, but it is not overwhelming.

It is important to keep in mind that caring for children has always been extraordinarily expensive. In public dollars, we currently spend far less caring for young children than we do educating older children, despite evidence that dollars spent on the education of young children have a much greater payoff than dollars spent on the same children when they are older. Given the essential nature of the raising of children, the better question perhaps is whether we can afford not to provide high quality care to our children.

We derived an estimate of \$5.3 billion annually for a quality child care program for children aged two to five. This cost is less than one percent of Canada's annual GDP. While this is not a small number by any means, it is important to keep it in perspective.

Consider a preschool child cared for by a mother in the home. That mother, of course, carries out other household tasks. But even if we assign only half the mother's time during the day to child care, the implicit cost of child care is enormous. In 1997 terms, if we assume that the mother would have earned 80 percent of the average industrial wage in Canada, then the cost of child care would be about \$12,000 a year. Assigning only a third of the mother's time to child care still generates a cost of about \$8,000 a year. By any measure, we are spending less than this caring for most preschool children today when they are in child care - according to the Family Expenditure Survey of 1990, the average expenditure on child care of the top quarter of families who used paid care was \$5,400 per year.

Further, the cost of care for preschool children is far less per hour than what is spent on the same children when they reach public school. In Toronto, the cost of primary education is about \$7,000 per pupil and students are at school for about six and a half hours during the day from September through June. The cost of licensed child care in Toronto is close to \$7,000 for about 10 hours care per day, 12 months per year. The hourly cost is therefore considerably higher in public school. Yet we know that children who enter school behind their peers tend to stay that way, and that dollars spent on preschoolers can make a difference.

Thus by any measure the issue is not how Canada can afford to pay for child care, but how Canadians have allowed the total share of society's resources devoted to the care of young children to decline so precipitously. That question restates a related one asked by US. Senator Daniel Patrick Moynihan: *"Will we be the first species that forgets how to raise our young?"*.

What, then, are the key arguments for public investment in good child care? A significant number of children of working parents are receiving inadequate care. Partly because of this, they enter school behind other children and never catch up. This causes two problems. First, there is an unacceptable inequity among young children who have no choice in the matter and no voice. The government must speak for these children. Any argument for equal opportunity must start with high quality child care.

Second, these children are not prepared to participate in the advanced economy of the twenty-first century. If Canada is to maintain and improve its competitive position internationally, it must invest in the human capital of today's children. Dollars spent on education for young children are far more effective than dollars spent at any other time in a person's life. Thus any reasonable industrial and educational strategy requires high quality child care.

We believe that these arguments are potentially the most persuasive economically and politically. Although the benefits are difficult to measure, these arguments find resonance in most of the well-accepted public arguments for education and training. They suggest part of the long-term solution for the long-term problem of productivity, and they also open up a new potential source of funding for child care. Specifically, it can be argued that some of the relatively high level of expenditures in Canada today on education and training can be more effectively directed at younger children.

Canada depends for its economic well-being on its ability to function well socially and economically. Its competitiveness rests above all on the talents and efficiency of its workforce. Mothers need good child care because their future productivity depends on an early and continuing connection to the labour market. No one can take off 6 to 12 years or more to raise children and still retain and continue to develop the desired workforce skills. And children need good child care because their future social and economic productivity depends on their entering school ready to learn at least as much as the children in other countries. We believe that many children cannot make effective use of the educational resources that we provide because they do not have enough resources devoted to their care during their preschool years.

Somehow the last few years have seen the disappearance from the public agenda of issues central to the needs of children and families. These debates seldom surfaced in the 1997 federal election, although past elections have seen commitments to child care made by party leaders. Returning those issues to the centre of public debate is the goal of this report, and of those committed to quality child care.

## Appendix A

### Problems With Studies on Child Development

#### KEY METHODOLOGICAL ISSUES

It is, perhaps, difficult for those outside the child care field to appreciate why there is controversy among researchers about the developmental effects of child care on children. Measuring the beneficial effects of good child care on children is not easy. There are at least three major difficulties. First is data collection. The primary issue for our purposes is the long-term effects of good child care on children; this implies a longitudinal study that tracks children from their child care years through grade school and perhaps beyond. A retrospective study, where the parents of older children provide information about the types and qualities of child care experienced by their children is an alternative, although an imperfect one.

The second and most difficult issue is isolating the effects of child care from all other potential influences on children. In the real world, child care, even when full-day, is only one influence on how children learn, grow and develop. There are at least three other key factors, as important or more important perhaps than child care. First, there are the inherent abilities and emotional makeup of the child, given at birth, which vary greatly from one child to another. Second, there is the nature of family life (and the nature of the family is itself made up of the emotional, educational, financial, psychological, ethnic, neighbourhood and other aspects of the background of the family). Third, there are the other educational/developmental services and experiences enjoyed by the child, from music lessons to summer camp to religious classes to international travel to the quality of his/her elementary and primary education. Child care may interact with, support or counteract the effects of each of these factors.

It is possible to isolate the effects of child care from other effects by running an experiment in which a sufficiently large number of children are randomly assigned to good quality child care or to not using child care at all (or perhaps to poor quality child care, to do a slightly different experiment) and kept there for a number of years. Few families, however, are happy to experiment with their children in this way, so one or another of two problems arises. First, the experiment may be very small, with few children in the "treatment" group receiving good child care, and few children in the "control" group. In this circumstance, the statistical significance of estimates from the experiment is often lacking. The second problem, frequently encountered, is that the "control" group and the "treatment" group are not really chosen at random. For instance, in evaluations of Head Start programs, the "control" children might be chosen from those who had applied to Head Start but had not been accepted. In a case like this, "control" children are likely to differ systematically in native abilities or family background from "treatment" children and no valid inferences are possible from the experiment (see Valerie Lee et al., 1988, for a review of some Head Start studies with this

problem).

The other main way of controlling the effects of other possible influences on child development in order to isolate the effect of child care is to do so statistically. Multiple regression analysis offers tremendous potential here. Regression analysis estimates the separate effects of a series of different factors in a data set on the variable of interest (a measure of child development or education). Since we are really only interested in one factor (participating or not in good quality child care), we can alternatively say that regression analysis estimates the effect of child care on child development conditional on or controlling for the effect of a set of observed factors.

In order to analyze statistically the long-term educational/developmental effects of good child care, what we need is a set of data on individual children that has: (a) information about the dependent variable of interest (i.e., some measure of the development of the child); (b) information for each child on all of the other potential observable factors that might have affected his/her development (e.g., inherent ability, family income, family education, other child development programs attended, degree of support in the family, other indicators of family situation, etc.); and (c) information about the type and quality or amount of child care attended. This could be a longitudinal or a retrospective data set. The data set must have children from both child care and non-child care experiences (or, for a different experiment, from a range of different qualities of child care experiences) in order to isolate statistically the effect of the type and/or quality of child care on the dependent variable.

There is another issue we need to discuss here, because the terminology will come up later in reviewing evidence from existing studies. This is the issue of "sample selection bias"; good studies will consider and try to control for this potential problem. Otherwise their estimates of the child development impact of child care may be contaminated and untrustworthy.

It is virtually impossible to find a data set with information on all of the factors which could affect child development for a large group of children. Every good statistical study is missing some variables of interest; in a statistical study, the effect of these missing variables becomes part of the "error" term. Sometimes the error term is referred to as the "unobservables", because the influence of the factors in the error term is unobserved by the researcher. The fact that information on some variables is missing is not necessarily a big problem. However, there is one situation in which this problem could become important for studying the effects of child care. Let us say that children who have, for instance, greater inherent ability or greater family income or education are more likely to use out-of-home child care. These factors, then, have two influences on child development, one through encouraging the use of child care, and the other, directly on the child, whether or not he/she goes to child care. Let's say that we are evaluating statistically the effect of child care on children and we have controlled for (included in the regression) the child's inherent ability and family income, but not the parents' education level. The effects of parents' education on child development therefore becomes part of the unobservable error term. The problem is that this error term is not random. It is more likely to be a big positive number for those children who went to child care and it is likely to be small for those who did not attend child care. In



other words, those who attended child care were more likely to come from families with higher education and this higher education has a stronger positive impact on child development. If we ignore this problem and do a simple regression of child development on three factors (attendance at out-of-home child care, child's inherent ability, and family income), we will get a "biased" (too high) estimate of the effects of child care on child development. In effect, we will attribute to child care some effects which were partly due to parents' education. There are various ways of controlling for sample selection bias; none is very perfect. Controlling for these unobservable selection factors is often quite difficult, and there is legitimate debate over various ways of controlling for selection. This issue will be discussed further below.

It is not even clear which direction of bias will result from sample selection problems - overestimation or underestimation. If those children who are more able to benefit from child care are selected into it or those children who will also be encouraged and developed in other complementary programs are selected into child care, regression analysis will overestimate the true effects of child care on a randomly chosen child. However, subsidy and other programs may select into child care those children who have learning disadvantages. If these disadvantages are not statistically controlled in the regression, the developmental effects of child care may be underestimated due to sample selection bias. All we know is that regression estimates that do not take account of selection due to unobserved factors may be biased.

The importance of these measurement issues is that we are, in this paper, trying to determine the effects of a more-or-less universal child care program on child development. If, to go back to our first example, we have attributed to child care developmental impacts that are largely due to "parents' education", we will expect universal child care to have a very strong positive impact, but we will be disappointed. By subsidizing good quality child care, we may be able to encourage large numbers of parents to use good child care for their children, but we will not have encouraged these parents to act in the different ways towards their children that more highly educated parents do. The new users of child care will only, therefore, get half a loaf - the benefits of good quality child care but not the complementary benefits of more highly educated parents.

What kind of studies do we need to find in order to make a child development case<sup>18</sup> for child care? These studies must have several characteristics:

- they must measure the effect of preschool child care on the later development (in grade school or later) of children;
- the child care must be of good quality, but not be so highly resourced that it could not readily be replicated in a country-wide program;
- the developmental measures must be tangible and quantitative (increase in PPVT scores or decrease in grade repetition, rather than child is more cooperative or able

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<sup>18</sup> Given that current assessments have not reached consensus estimates of the size of the various effects of child care on children, it is not our intention in this study to choose which studies are "most correct". Rather, considering studies that are methodologically sound and careful about their conclusions, we try to estimate how big these child development effects might be.

- to negotiate well with peers);
- these quantitative developmental measures must be correlated with future earnings, likelihood of getting and keeping employment, likelihood of dependence on social assistance, or similar measures (i.e., must be correlated with an outcome whose impact can ultimately be measured in dollars lost or dollars gained);
  - the statistical problems discussed above must have been dealt with convincingly, so that the link between child care and later developmental outcomes is clearly causal (i.e., that it is reasonably certain that investment in more good child care would bring about enhanced levels of child development, if no other factors are changed).

Unfortunately, this is a very tall order. There are a large number of studies of the effects of child care on children; few of them match up to our requirements. In the discussion in the text of this study, we give a guide to the literature in this area, indicating why many of the studies are of little use for our specific purposes. We then focus on the relatively small group of studies that meet most of our criteria, discussing their strengths and weaknesses. From this we draw some reasonable estimates of the size of child development benefits based on existing studies.

## **Appendix B**

### **Methodology of Calculation of Costs and Benefits**

This appendix provides details about the numbers behind the calculations in Chapter 5. Most numbers are based on current data about working parents and their young children, along with evidence from economic studies of the effects of changes in child care policy. Assumptions adopted for the calculations are made explicit and explained in what follows.

We begin with the 1.3 million mothers who have children ages two to five (source: interpolation of numbers provided by Statistics Canada's Labour Force Survey). Of the 1.3 million mothers:

- 39 percent are working full-time;
- 18 percent are working part-time;
- 6 percent are unemployed;
- 37 percent are not in the labour force.

These mothers have 1.6 million children aged two to five (source: special runs of 1996 Labour Force Survey), and the data show that there are roughly the same numbers of children in each age category - that is, approximately 400,000 in each year (age two, age three, etc.). The numbers of children, by age and by the labour force status of their mothers, are provided in Table 7.

We then make the following assumptions about the changes in labour force status that will result from the child care program that we are examining. In general, we expect the program to shift some part-time workers to full-time work, and to shift some parents who are not working into either full-time or part-time work. We have made reasonable assumptions about the magnitude of these shifts based on economic studies of the effects of child care on mothers' labour force participation and hours of work (Cleveland and Hyatt, 1994, 1996; Powell, 1997; see discussion in Chapter 3).

Of the 1.3 million mothers:

- the 39 percent working full time continue to do so;
- of the 18 percent working part time, one-third or 6 percent switch to full time under the program; two-thirds or 12 percent continue to work part-time;
- the 6 percent unemployed remain unemployed;
- of the 37 percent not in the labour force, 5 percent switch to full-time work under the program; 8 percent switch to part-time work under the program; 24 percent continue to stay at home.

We further assume that these switches are not affected by the ages and numbers of children. Thus, for example, when 5 percent of the 37 percent of the mothers who were not in the labour force turn around and work full time under the child care program, we assume that the children of those mothers not in the labour force are affected and require full-time child care. This is of course not strictly correct, but it generates estimates that are unlikely to vary significantly from what would actually happen. The calculations in Table 8 follow from these assumptions.

Applying these percentages to the mothers themselves, we obtain the estimates in Table 13 of how mothers move from one category to another.

We discuss the costs of various types of high quality child care in the text and multiply these numbers appropriately by the numbers in Table 8 in order to get the costs in Table 9. We treat unemployed mothers in these calculations as if they were at home full time caring for their children. They therefore require some child care in order to actively seek jobs. We assume that 3 hours of nursery school provided under the program being discussed will be enough for this, which may be debatable.

The information on the current use of child care is provided in Table 10. The use of regulated care by employed parents is based on special runs from Cycle 1 of the 1994-95 National Longitudinal Survey of Children and Youth. The remaining children of employed parents are cared for through some type of informal care. Data on nursery school use is provided by the Canadian National Child Care Survey. Slightly less than one-half of children two to four years who are at home with their mothers are enrolled in nursery school.

Table 11 follows directly from Table 8, assigning the children of working parents from Table 8 into either full-time or part-time child care under the program.

Table 12 computes the child development benefits according to the assumptions made explicitly in the text. These benefits per child are important to the calculations and are reviewed below. The exact numbers we assign to these benefits are somewhat arbitrary. Our reading of the child development literature (Chapter 2) makes it clear that the correct number is not zero. We have tried to adopt very conservative assumptions about the magnitude of child development benefits wherever controversy is likely.

For children between the ages of two to four, we assume the following:

- children currently in maternal care full-time are, on average, receiving reasonably good care but would benefit from the child development stimulus similar to that provided by good nursery schools or kindergartens. We have assessed that benefit at \$3600 per child. If the children are not currently in nursery school, the benefit is \$3600 per child. If the children are currently in nursery school, then we assess the benefit at \$1800, because of the increase in the number of hours per week of our nursery care and the high quality of programming. We assume the same benefits if the mothers continue to stay at home or if they choose to be employed either part time or full time (we make the conservative assumption that beyond the enrichment value equivalent to that given by good nursery school, good day care simply replaces mother's care of equal benefit).
- Children whose mothers currently work part time are in informal arrangements. If the mothers continue to work part time after a comprehensive child care program is implemented, we assess the value of formal child care to be worth the same as assumed above for nursery school (\$3600 per child). If these mothers are employed full time after the child care program is implemented, the extra time in regulated care replaces maternal care, so the incremental value is conservatively assessed at \$3600, as well.
- children whose mothers work full time are cared for either in formal or informal child care. For children in formal child care, we are moving them into somewhat better and more expensive arrangements. We assess the incremental value of child development at \$2000 per child. For children in informal child care, we are moving them into arrangements that offer far better care with significant developmental advantages. We assess the value of that change at \$6000 per child.

For children aged five, we assume the following:

- children currently being cared for by their mothers are receiving reasonably good care as well as the developmental advantages of kindergarten. Whatever the decisions about work made by their mothers under our program, we assume no additional child development gains.
- children whose mothers are employed part time are currently in informal arrangements for the time not accounted for by kindergarten. If the mothers continue to work part time, we assess the value of formal child care to be worth \$800 because of the improved continuity and stability of integrated arrangements. This number is arbitrary, but at the same time relatively unimportant in the overall total. If mothers are employed full time in the paid labour force, then we likewise assess the incremental value of formal child care at \$800.

- children whose mothers are employed full time are cared for either in regulated or informal child care. For children in regulated child care, we are moving them into better and more expensive arrangements. We assess that value at \$400 per child. Again, this number is arbitrary but relatively unimportant in the overall calculations. For children in informal child care, we are moving them into arrangements that offer far better care with significant developmental advantages. We assess the value of that change at \$2400 per child. Although these children are spending about two-thirds as much time as the younger ones in day care (the rest of the time is in kindergarten), we assess the benefits at about 40 percent of those for younger children in order to be relatively conservative.

Using these numbers, we can now calculate the child development benefits of the program. Since these calculations are important, we will review them each here for children ages 2-4:

300,000 children are now cared for by their mothers, and are not in nursery school; of these, 222,000 stay at home and get nursery school under the program; we assume a benefit of \$3600 per child (see text):

$$\$3600 \times 222,000 = \$799,200,000;$$

similarly, 48,000 have mothers working part time and get part-time day care under the program; we again assume a benefit of \$3600 per child:

$$\$3600 \times 48,000 = \$172,800,000;$$

similarly, 30,000 have mothers working full time and get full-time day care under the program; we again assume a benefit of \$3600 per child

$$\$3600 \times 30,000 = \$108,000,000;$$

260,000 children are now cared for by their mothers, and are in nursery school; of these, 168,000 stay at home and get nursery school under the program; we assume a benefit of \$1800 per child because of the improvements in the nursery school care, and an increase in the hours of care  $\$1800 \times 168,000 =$   
\$302,400,000:

similarly, 57,000 have mothers working part time and get part-time day care under the program; we again assume a benefit of \$1800 per child:

$$\$1800 \times 57,000 = \$102,600,000;$$

similarly, 35,000 have mothers working full time and get full-time day care under the program; we again assume a benefit of \$1800 per child:

$$\$1800 \times 35,000 = \$63,000,000;$$

270,000 children now have mothers working part time, and the children are cared for informally; of these, 180,000 continue to have mothers working part time, but they move to good quality formal part-time child care; we assume a benefit of \$3600 per child, assuming that the improvement in quality is worth the same as the benefits of nursery school care:

$$\$3600 \times 180,000 = \$648,000,000;$$

similarly, 90,000 have mothers who switch to full-time work and the children move into full-time day care under the program; we assume a benefit of \$3600 per child (see text):

$$\$3600 \times 90,000 = \$324,000,000;$$

370,000 children now have mothers working full time; of these, 180,000 are already in formal regulated child care; we assume a benefit of \$2000 per child, assuming that the improvement in quality is worth that amount (see text):

$$\$2000 \times 180,000 = \$360,000,000;$$

similarly, 190,000 are cared for in the informal sector; we assume a benefit of \$6000 per child (see text):

$$\$6000 \times 190,000 = \$1,140,000,000.$$

The computations for children aged five proceed in a similar fashion.

Table 13 was discussed earlier in this appendix.

Table 14 is derived from Table 13, simply by applying the gains discussed in the text (that a mother moving from no paid employment to full-time paid employment gains \$40,000 while a mother moving either from no paid employment to part-time paid employment, or from part-time to full-time paid employment gains \$20,000).

Table 15 simply summarizes all the numbers derived in the earlier tables.

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TABLE 1: POTENTIAL BENEFITS AND COSTS OF PUBLICLY FINANCED CHILD CARE

Type of Effect	Potential Benefits	Potential Costs
<b>EFFECTS ON CHILDREN</b>		
Stimulates the development of children in the important early years	Enhanced brain and social development of children in early years can increase school-readiness and have long term payoffs in abilities, income, productivity and economic growth, reduced delinquency and criminal activity, improved population health, higher tax revenues and better citizenship.	The cost of providing public funding to good quality childhood education for children 2-5 years, some part-day and some full-day, is less than the excess burden cost of higher taxation.
Ensures use of high-quality child care	Good quality licensed child care provided by trained and dedicated child care professionals is better for children than many current informal non-parental child care arrangements. There is evidence that, either because of inadequate incomes or difficulty judging accurately the quality of child care, too many parents choose inadequate care.	The cost of funding high-quality child care.
Provides a more equal start in life for children.	All children can benefit from early childhood education. Children from low-income families incur especially large benefits. Experts emphasize the organic functioning of societies in which abilities to cope with change are widely distributed.	Additional funding for low-income families or at-risk children. Enhanced parental supports, too.
<b>EFFECTS ON MOTHERS AND FAMILIES</b>		
End tax discrimination against working mothers	Some mothers are currently discouraged from employment by the tax treatment of child care costs. Increased public funding will reduce this effect. Higher government tax revenue from these newly employed..	Lost tax revenue from currently employed mothers.
	Government funding when parents are young, and higher taxation when older, acts like a long-term loan program to allow parents to make better lifetime decisions about work and children.	Assistance to young families and more family-friendly leave and benefit policies. Encouraging work, may encourage

<p>Encourage mothers to maintain labour force attachment, continuity of job experience, take job promotions, work full-time rather than part-time.</p>	<p>Mothers are encouraged to make work decisions in long horizon framework to permit reasonable financial independence, avoid poverty if divorced, in old age, etc.</p>	<p>fertility, which will raise child care costs somewhat. Mothers may suffer tension from isuper-momî work family activities, unless gender roles continue change and family policies are supportive.</p>
<p>Change young womenís assumptions about future job paths and prospects</p>	<p>Young women make education and other human capital decisions based on opportunities available to their mothers. Public financing of child care for young children expands mothersí opportunities, allowing their daughters to make long-lasting early human capital investments based on ability rather than gender.</p>	<p>Have to work on changing young menís assumptions about gender roles too</p>
<p>Reduce the job disincentive effects of social assistance and child care costs</p>	<p>Reduced immediate and longer term social assistance costs, effective reduction of child poverty, end of poverty cycle. Increased future education, productivity, self-esteem of children and tax revenue for governments.</p>	<p>Costs of good quality care, perhaps home-visiting programs, training programs, changes in social assistance policy.</p>
<p><b>EFFECTS ON EMPLOYMENT</b></p>		
<p>Encourage employment in the licensed/regulated child care field</p>	<p>Additional incomes, tax revenues, decreased social assistance of those newly employed in regulated sector.</p>	<p>Decreased incomes, decreased tax revenues, increased social assistance for those who lose employment in unregulated sector.</p>



TABLE 5: STUDIES ESTIMATING EFFECT OF CHILD CARE COSTS ON LABOUR SUPPLY OF ALL MOTHERS OR MARRIED MOTHERS

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Study (Year)	Data	Estimation Procedure	Measure of Child Care Cost	Measure of Labour Supply	Effect of Increase in Child Care Costs	Estimated elasticity
Heckman (1974)	1967 National Longitudinal Survey of Work Experience	MLE of marginal rate of substitution (MRS) between income and leisure	Proxies like number of older children, relative at home, hours of husband's work and length of time in community	Indirect; MRS between income and leisure	Reduces probability of participating in labour force and reduces hours worked because increases MRS between income and leisure	Not available; dependent variable is MRS
Blau and Robins (1988)	1980 Baseline Household Survey of Employment Opportunity Pilot Project	Multinomial logit	Average community cost from those who purchased care	Mother not employed versus 4 combinations of mother employed/ child care type/ employment status of other relative	Reduces likelihood of working and purchasing market care	-0.38, calculated at means
Blau and Robins (1989)	1980 Baseline Household Survey of Employment Opportunity Pilot Project	Hazard estimates of transition probabilities out of various labour supply and fertility states	Selectivity-corrected predicted costs by community	Employed versus not employed	Reduces probability of entering employment and increases probability of leaving employment	0.47 for rate of leaving employment; -0.77 for rate of entering employment
Blau and Robins (1991)	1982-1986 National Longitudinal Survey of Youth	Quasi-MLE of probits on employment, child status and nonrelative child care	Selectivity - corrected predicted costs from employed who purchased care	Employed versus not employed	No effect on employment decision or decision to use nonrelative care <sup>a</sup>	No effect
Connelly (1989)	Wave 5 of 1984 Panel of Survey of Income and Program Participation	Tobit	Selectivity - corrected predicted costs from employed who purchased care	Hours worked	Reduces hours of unmarried women, but no effect on married women	Unavailable

Connelly (1992)	Wave 5 of 1984 Panel of Survey of Income and Program Participation	Probit	Selectivity - corrected predicted costs from employed who purchased care	Labour force participation	Reduced probability of participating	-0.20, calculated at means
Hotz and Kilburn (1991)	1986 National Longitudinal Survey of High School Class of 1972	Bivariate probit on work and child care choice decision	Selectivity - corrected estimates of costs, from households purchasing care	Employed versus not employed	No significant effect on employment decision	No effect
Leibowitz, Klerman and Waite (1992)	1986 National Longitudinal Survey of Youth	Probit	Indirect measures like presence of grandmother, spouse and tax credits	Employment state at 3 and 24 months after childbirth	Mixed <sup>b</sup>	Not available; indirect measure of child care cost
Ribar (1992)	Wave 5 of 1984 Panel of Survey of Income and Program Participation	Simultaneous MLE Probit of labour force participation and tobits on paid and unpaid child care	Selectivity - corrected estimates of child care costs, from households purchasing care	Employed versus not employed	Reduces probability of employment	-0.74 calculated at means
Ribar (1995)	Wave 5 of 1984 Panel of Survey of Income and Program Participation	FIML estimation of discrete choice model with five alternatives	Selectivity and endogeneity - corrected estimates of pre-tax part-time and full-time child care costs	Mother employed full-time, part-time or not employed	Reduces probability of employment	-0.024 to -0.088 in different specifications. Elasticities are mean of effects evaluated at each observation
Michalopoulos Robins and Garfinkel (1992)	Wave 5 of 1984 Panel of Survey of Income and Program Participation	Non-linear least squares for estimation of Stone-Geary utility function	Indirect measures through tax credits	Hours worked	Reduced child care tax credits reduce hours of work for currently employed mothers	Estimated elasticity of hours worked to changes in tax credit conditional on participation and child care purchase is negligible
Averett, Peters and Waldman (1992)	1986 National Longitudinal Survey of Youth	ML estimation of dual-error term model for non-linear budget sets	Selectivity corrected predicted cost per hour from employed using paid care, with appropriate tax credit deducted	Annual hours of work	Increased tax credits increase annual hours worked through effect on wage net of cost of paid child care	-0.52, elasticity of labour supply to cost of paid child care, calculated at means
Gustafsson and Stafford (1992)	1984 Swedish Household Survey	Logit	Average community cost per space, adjusted for income-conditioned subsidy	Work full-time and purchase full-time child care	Where public child care is not rationed, cost reduces probability of working and purchasing full-time child care	-1.88, net elasticity of full-time work to price of unrationed public child care

a)However, the size of the maximum available child care credit is found to have a significant positive effect on mother's employment and a marginally significant negative effect on the conditional demand for non-relative child care.

b)Subsidy: increased probability of returning after 3 months but not after 24 months;

Presence of grandmother: reduced probability of returning after 3 months, but increased probability after 24 months; esence of husband: increased probability of returning after 3 months.

Source: Cleveland, Gunderson and Hyatt (1996)

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TABLE 6: STUDIES OF CHILD CARE AND EMPLOYMENT FOR SINGLE PARENTS

Author and Date	Title	Data Set and Sample	Estimating Technique	Results	Comments
Robins (1988)	Child Care and Convenience: The Effects of Labor Market Entry Costs on Economic Self-Sufficiency Among Public Housing Residents	Survey of 796 families resident in public housing projects with children under 14. Over 80% single parents. Some projects have a full-day child care centre on the premises.	Unknown, presumably OLS. Six different measures of self-sufficiency are used alternately as the dependent variable (annual hours of work, annual earnings, worked in year, total family income, total welfare benefits, received welfare benefits in year). The size of child care centre is the key explanatory variable.	Strong significant effects of centre size in the anticipated direction. The elasticity of hours of work to size of centre is .26 and the earnings elasticity is .39. The welfare participation elasticity is -.05. For families with children under 5 years of age, these elasticities are notably larger.	There may be reverse causality if increase for centre care increases the likelihood of the premises. Also, Robins has no information on subsidization, but increased availability of increased availability of subsidies are likely correlated.
Connelly (1989)	Determinants of Weekly Child Care Expenditures: A Comparison of Married and Unmarried Mothers	1984 Panel of SIPP (fifth wave); 2781 married and 730 single mothers, 21-55, with children <13.	Simultaneous estimation of a tobit on hours of work and tobit on child care costs corrected for select sample of labour force participants.	Paper investigates determinants of child care expenditures and effect of expenditures on hours of work. Predicted child care expenditures have significant (but small) negative effect on hours worked for unmarried mothers, but not for married mothers. Married mothers child care expenditures are positively affected by education level, but not unmarried mothers; therefore higher child care costs for married women mean higher quality, and will have less negative impact on hours worked.	"the labor supply of married women is more responsive with respect to child related factors while the labor supply of unmarried mothers is more elastic with respect to earnings related variables."
Connelly (1990)	The Effect of Child Care Costs on the Labor Force Participation and AFDC Reciprocity of Single Mothers	1984 Panel of SIPP (fifth wave); single mothers, 21-55, with children <13. 724 mothers, 27% on AFDC. 16% of AFDC recipients are employed and 80% of non-recipients.	A bivariate tobit on hours worked and expenditure is used to predict child care expenditure; probit on participation in AFDC; bivariate probit on AFDC participation and labor force participation; because the effect on labor force participation of child care costs and expected wage may differ for those receiving AFDC, a switching probit is used to estimate effects in each state.	Probit on participation in AFDC finds that predicted child care expenditures have significant positive effect on AFDC reciprocity, and that number of children in each age category has no effect on reciprocity once child care expenditures are controlled. In bivariate probit, child care cost has significant positive effect on AFDC but is negative but not clearly significant in labor force decision. The switching probit shows that the effect of variables on labor force participation depends strongly on AFDC reciprocity status. Most observable variables (including deductible child care costs) do not affect labor force participation conditional on AFDC participation. Child care costs have no effect on labor force participation for non-recipients, while the number of children 0-2 does have a significant negative effect. Estimates indicate cutting child care costs in half reduces AFDC participation from 20% to 13%. Cutting child care costs and AFDC benefits simultaneously results in further reductions. Estimated net cost of child care subsidies is only 1/3rd of gross cost.	"almost the entire effect of young children on increasing AFDC reciprocity and decreasing labor force participation is the result of increased expenditures faced by these women and not of differences in the preferences of women for young children to work at home...."

TABLE 6: STUDIES OF CHILD CARE AND EMPLOYMENT FOR SINGLE PARENTS

Garfinkel, Meyer and Wong (1990)	The Potential of Child Care Tax Credits to Reduce Poverty and Welfare Dependency	1987 Current Population Survey (U.S.) Families with children <18. 10,165 families. SIPP is used to estimate probability of free child care and cost of paid care.	This paper uses a range of estimated net wage elasticities from other studies, together with data from C.P.S., to simulate the effect of changes in Child Care Tax Credits. The budgetary cost of tax changes and the reduction in poverty and welfare recipiency are calculated.	Modelling changes in the Child Care Tax Credit as if they were equivalent to changes in the net wage, the authors find that both the costs and the benefits of these changes are modest. The largest cost is \$2.2 Billion and the largest effect is a reduction of poverty and welfare by about 5%.	
Berger and Black (1992)	Child Care Subsidies, Quality of Care, and the Labor Supply of Low-Income Single Mothers	Telephone survey of single mother subsidy recipients and those on waiting list for two Kentucky programs subsidizing the cost of licensed child care for poor single mothers working >20 hours per week	Probits on labour force participation and MLE on hours worked as a function of subsidy receipt and the predicted prices of formal and informal care. Probit on labour force participation to determine size of selection effects.	Participation in the licensed child care subsidy program is estimated to increase labor force participation by 12%, but have no effect on hours worked. This will not be an accurate estimate if there is selection into the program. The authors attempt to determine the creaming, sign-up, waiting list and subsidy effects. Creaming reflects selection into the program of those with higher probability of labor force participation; sign-up reflects selection onto both the waiting list and the program of those with higher probability of labor force participation; waiting list effects refer to changed labor force participation likelihood due to being on the waiting list. The (net) subsidy effect is the estimated effect of child care subsidy on labor force participation for a randomly selected eligible single mother. The creaming effect is estimated to be 4-6%, the sign-up effect is 19-23%, the waiting list effect is 16-17%, and the (net) subsidy effect is 8-9%. If the latter two reflect the effect of child care subsidy, then a full subsidy increases labor force participation by 25%. An ordered probit finds that use of licensed subsidized care increases parental satisfaction with child care arrangements dramatically. There was evidence of increased quality and convenience of care as well.	Valuable study because it allows comparison of behaviour of those actually receiving child care subsidy in a defined program, with those on the waiting list.
Dilnot and Duncan (1992)	Lone Mothers, Family Credit and Paid Work	Family Expenditure Survey (U.K.) 1981-88. 2593 lone parents (42% working).	Probit on labour force participation. (Also hours of work estimation, but with no child care variables).	In probit results, presence of a preschool child is the single most important factor discouraging labour market participation of single mothers. Variables which proxy the availability of formal and informal child care (regional density of child care spaces, and mother's mother lives in household) indicate strong positive effects (sufficient to offset the effects of age of child, in simulations).	No child care price variable. Note also regional density of child care spaces may be exogenous. Useful discussion of constraint faced by lone parent mothers.

TABLE 6: STUDIES OF CHILD CARE AND EMPLOYMENT FOR SINGLE PARENTS

Jenkins (1992)	Lone Mothers' Employment and Full-Time Work Probabilities	1989 Lone Parents Survey (U.K.); 1235 lone parents, no widows, 42% employed.	Probit on labour force participation and on full-time work (>24 hours). Principal variables are wage, social assistance guarantee, predicted weekly child care costs, non-labour income (incl. maintenance), work-related welfare benefits, availability of jobs.	Predicted child care costs are negatively significant (at .001) in both the labour force and full-time work decision (no allowance for child care costs in social assistance program). Also younger children strongly and significantly reduce work and full-time work probabilities. Ethnic differences, health status, religious affiliation, the availability of jobs, education, work experience and wages are all significant. Regularity of maintenance payments is found to strongly encourage full-time work. Welfare benefits significantly discourage full-time work. Never-married lone parents are significantly less likely to work or work full-time. The elasticity of labour force participation to predicted child care cost is -.18, and for full-time work is -.24.	Probit on full-time work in order to determine most likely to end welfare dependence (work and receipt of welfare are compatible).
Kimmel (1994)	Child Care Costs as a Barrier to Employment for Single and Married Mothers	Sixth Wave of the 1987 Panel of SIPP (U.S.) with revised child care questionnaire. Mothers 18-55 with children <13; 2350 married, 697 single (58% of each in L.F., 29% of lone mothers on AFDC)	Probits on labour force participation for married and single mothers separately, with predicted child care price and wage as regressors. For single mothers also, a bivariate probit on labour force participation and AFDC participation.	Child care price has a significant negative effect on employment in both married and single probits, with elasticity to child care price being -.488 for single parents and -.338 for married. Controlling for the endogeneity of AFDC participation yields a child care price elasticity (of employment) of -.328. Single mothers' labour force participation is found to be much more responsive to the wage than that of married mothers. Simulations show that a subsidy of 50% of the cost of child care for single parents raises employment rates by about 20%. A similar subsidy for AFDC recipients only is predicted to nearly double their employment rates.	This paper has good price data, careful use of price instruments, and the author reconciles findings with other results.
Kimmel (1995)	The Effectiveness of Child Care Subsidies in Encouraging the Welfare-to-Work Transition of Low-Income Single Mothers	Sixth Wave of 1987 Panel and Third Wave of 1988 Panel of SIPP. Sample of mothers "in poverty". About half are on AFDC.	Labour force participation probits of full sample, and of white and black mothers separately. Controlling for AFDC participation does not affect price elasticities.	Child care price elasticity in the joint sample is -.346. For white single mothers it is -1.362 and black mothers -.345. For white single mothers, a 50% subsidy increases the probability of employment from 30% to 50%. Elasticity estimates for black lonemothers are much smaller and not statistically significant (small sample).	Parameter estimates are not provided in this paper, prepared for AEA Papers and Proceedings.