# How Early Childhood Interventions Can Reduce Inequality: An Overview of Recent Findings

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# Foreword

ECI programs represent an important area for government intervention since they have the advantage of "killing two birds with one stone" in the fight against poverty. Participating children are provided critical extra support and attention, which improves their school readiness and affords them a better chance of breaking the cycle of poverty. Custodial care services offer participating women opportunities for increased labor force participation and higher earnings.

Furthermore, ECI programs represent a growth area for the Inter-American Development Bank, with more than US$ 2.7 billion — about 4% of the value of the portfolio of loans approved since 1985— supporting early childhood initiatives. IDB investments in ECI programs can be found either as freestanding projects or as components of other social projects. Interventions run the gamut from construction of day-care centers to support for specific early childhood health and nutrition programs, institutional strengthening, or parental education campaigns. This paper provides a much-needed inventory of the various benefit streams that result from such programs, as well as a carefully considered rationale for increased government support to the sector. The paper's conclusion offers some guidelines for policy design, implementation, and evaluation that we hope will be of use to IDB project teams as well as to governments throughout the region interested in establishing or evaluating ECI programs.

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# I.
# The Rationale for Early Childhood Interventions

Early Childhood Interventions (ECI) are ideally designed to achieve a series of mutually reinforcing objectives with the overarching goal of helping to improve equality of opportunity for children in poverty. The best programs aim to improve school readiness and reduce the risk of future social exclusion of children at risk through providing their families with support in the areas of custodial care for preschool children, child health and nutrition, early childhood education, and guidance and education on effective parenting techniques. While a broad range of interventions can be considered under this umbrella,[1] in this discussion we will be considering programs targeted to overcome some or all of the cognitive, emotional, and resource limitations that may characterize the environments of disadvantaged children during the first several years of life.

Public support for early childhood interventions has grown in recent years due primarily to two factors - the demonstrated importance of environment and effective care in supporting early childhood development, and the growing need for custodial care given female labor force participation trends. Recent scientific findings have illustrated the crucial role played by care givers in stimulation and nurturing during the preschool years, and the existence of windows of opportunity in the ways that children develop (or fail to develop due to inadequate stimulation) crucial skills and capabilities. If the appropriate inputs are not provided during these early years, particularly during the period of 0 to 3 years of age, these missed opportunities for stimulating the development of mental, emotional, and motor skills cannot be easily retrieved in later years. At the same time, ever more widespread female labor force participation has been accompanied by increased social awareness of the need to provide custodial child care services, especially, but not only, for children in poverty. Box 1 provides a summary of the range of investment approaches currently followed by the Inter-American Development Bank in its support to Early Childhood Interventions.

The paper is divided into five sections. This introductory discussion is followed by Section II, which presents a review of findings that attempt to measure the short-term or immediate benefits of early childhood interventions. These include direct benefits such as improved health, nutritional, and developmental status of participating children. They also include indirect benefits for nonparticipants, such as increased labor force participation and earnings possibilities for the parents (usually mothers) of children who participate in child care programs and the substitution effects that child care programs can have in increasing the schooling of older children in the household. Section III reviews the literature that addresses the longer term benefits of early childhood interventions, such as program participants' improved school performance and earnings opportunities in later years, and a reduced probability for program participants to later engage in criminal or violent acts. These longer term effects benefit not only the individual participants and their families, but

[1] "The term early childhood intervention is a broad concept. It covers programs concerned with low-birthweight babies and those concerned with toddlers in low-income families, interventions targeting children as well as those targeting their mothers; services offered in homes and those offered in centers; programs aimed at improving educational achievement and those aimed at improving health; and services as diverse as parent skills training, child health screening, child abuse recognition, and social services referral." (Karoly, et al., 1998)

**Box 1**

**SIX APPROACHES TO ECCD**[1]

***1. Attending to Children in Centers***

The immediate goal of this direct, center-based approach, focused on THE CHILD, is to enhance child development and learning by attending to the immediate needs of children in centers organized outside the home. These centers serve as alternative environments for both care and development. A center-based approach can involve formal or non-formal preschools; childcare centers and crèches; home day-care arrangements, in which one person cares for several children in her home; co-operative programs and playgroups; or programs for pregnant mothers and young children carried out through health centers.

***2. Supporting and Educating Family Caregivers***

This approach focuses on FAMILY members and is intended to educate and enable parents and other family members in ways that improve their care for and interaction with the child. Family members are part of a child's social-emotional environment and are also responsible for the physical environment that affects a child's development. Family caregivers can be educated through home visit programs, adult education courses, Child-to-Child programs, nutrition, health, or literacy programs, mass media campaigns, or as part of a general community development strategy.

***3. Promoting Child-Centered Community Development***

Here, the focus is on working to change COMMUNITY conditions that may adversely affect child development. Thus, the strategy uses children's welfare as a motivating force for fostering community initiative, organization, and participation in a range of interrelated activities. These activities are aimed at a) improving a community's physical environment, knowledge, and practices, and b) providing a medium for common action and empowering the community. Results should benefit both children and the community.

***4. Strengthening Institutional Resources and Capacities***

In order to do their job properly, the myriad INSTITUTIONS (public, private, and CSOs) involved with early childhood development need adequate financial, material, and human resources. Relevant programs might involve institution-building, training, providing materials, or experimenting with innovative techniques and models.

***5. Strengthening National Commitment***

National commitment is expressed in the quality of a country's LEGAL, REGULATORY, AND POLICY FRAMEWORKS related to young children and their families, and in the incentives provided for establishing and sustaining relevant programs. Accordingly, commitment can be strengthened by reforming a national constitution, passing new laws, establishing national committees, or incorporating an early childhood dimension into regular planning processes.

***6. Strengthening Demand and Awareness***

This program approach concentrates on the production and distribution of KNOWLEDGE in order to create awareness and demand in the population at large and promote social participation. This approach attempts to affect the broad cultural ethos that influences child development.

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1 Summary of approaches as presented in Morán and Haefeli, 1998.

society at large. We therefore go on to examine the social benefits of ECI programs such as the contribution that healthy, educated, citizens can make to economic growth, and the fiscal savings derived from intervening at an early stage to help avoid future, more costly, problems. Table 1 offers an overview of the complete range of benefits to different groups at the individual, household, and community level which result from ECI programs. The present paper only provides data for those benefit streams that have been measured as part of scientific evaluations which unfortunately, do not cover the full gamut of benefits outlined in Table 1. As such, the findings presented in this paper are a conservative and incomplete view of the full range of benefits associated with ECI programs.

Nonetheless, the empirical literature reviewed in Sections II and III covering a subsection of potential program benefits does substantiate the claims raised by ECI advocates. In the short term, participating children have higher levels of well-being as measured by nutritional, health status, cognitive and emotional development indicators. Labor force participation rates and earnings streams do increase for participating mothers; and although not directly measured, there is evidence to suggest that ECI programs also free up the time of older siblings, allowing them to continue with their education. The body of evidence on the

**Table 1**

**Benefits of ECD Programs by Beneficiary Groups**

| *Benefits Group* | *Type of Benefit* | *Indicators of Change* |
|---|---|---|
| **Children** | *Psychosocial Development* | Improved cognitive development (thinking, reasoning)<br>Improved social development (relation to others)<br>Improved emotional development<br>Improved language skills |
| | *Health and Nutrition* | Increased chances of survival; Reduced morbidity;<br>Improved hygiene; Improved weight/height for age;<br>Improved micronutrient balance |
| | *Progress and Performance in Primary School* | Higher chance of timely enrollment (for siblings also);<br>Less chance of repeating;<br>Higher learning and better performance |
| **Adults**<br>program staff/<br>parents &<br>older<br>children | *Changes in General Knowledge* | Health and hygiene; Nutrition<br>Leadership skills |
| | C*hanges in General Attitudes and Practices* | Health and hygiene; Preventive medical monitoring<br>Opportune treatment; Nutrition; Improved diet; Improved self-esteem. |
| | *Changes in Relationships* | Husband-wife; Parents-older children; among children |
| | *Improved Employment* | Caregivers freed to seek or improve employment; New employment opportunities created by program; Inreased market for program-related goods |
| **Communities** | *Changes in Physical Environment*:<br>*Greater Social Participation*<br>*Improved Solidarity*<br>*Community Projects Benefiting All* | Sanitation; spaces for play; new multipurpose facilities<br>Increased social capital |
| **Institutions** | *Improved Efficiency* | Better health attention through grouping or changed user practices; Reduced repetition and dropout rates in schools |
| | *Improved Effectiveness* | Greater coverage |
| | *Improved Capacity* | Changes in ability/confidence or organization |
| | *Improved Practice & Content* | Methods; curriculum content |
| **Society** | *A Healthier Population*<br>*A More Literate, Educated Population* | Reduced days lost to sickness<br>Increased tax base<br>Lower rates of crime and violence |

Source: Adapted from Myers, 1995 and Morán and Haefeli, 1998

longer term benefits of ECI programs is not as substantial, due to the lack of longitudinal studies that employ control group or matched comparison methodologies. However, the few studies that have been undertaken do provide strong evidence on better rates of learning and earning for program participants across their life span. They also indicate lower rates of antisocial and criminal behavior for program participants and net government savings arising from the fact that initial investments in preventive services help to avoid more costly remedial social services later in life.

Section IV summarizes the economic rationale for *public* support of ECI programs. While the discussion of benefit streams clearly demonstrates that these programs offer economic rewards, they do not necessarily make the case for public subsidies. In particular, to the extent that benefits such as increased earnings accrue to individuals, a full public subsidy may not be justifiable on efficiency grounds. This fourth section of the paper thus explores the case for public investments in ECI programs. We argue that private incentives, particularly for the poor, are to invest less in ECI programs than would be socially desirable from a pure efficiency perspective for human capital investments. The difference in private and social incentives for investing in ECI programs is likely to be much larger for the poor for three reasons. First, gains from positive externalities are likely to be concentrated among the poor. Second, imperfect capital markets that result in weaker private than social incentives for human resource investments are likely to be important constraints primarily for the poor.[2] Third, the poor are less likely to have access to information (either through their own previous experience or through social networks) about the value of ECI investments than do higher income groups. After describing the various market failures that justify a public role for subsidizing ECI programs, the section concludes with a summary of existing evidence demonstrating that such programs should be given priority in the policy hierarchy.

In the final Section V we address some of the policy and operational issues involved in designing and implementing early childhood intervenion programs. A wide array of different interventions can be put together in an almost infinite number of combinations under the rubric of early childhood interventions. Public financing of ECI interventions does not immediately imply that public delivery of such services is the most effective option. Much remains to be learned about the specific interactions of the different types of interventions and delivery mechanisms, and how they contribute to the benefit streams described in this paper. Here we review the existing literature as well as some recent operational experience in the Inter-American Development Bank to assess the current state of knowledge on how to design, implement, and evaluate early childhood interventions so as to promote their maximum effectiveness.

[2] A very similar argument was made for investments in child health and nutrition in Behrman (1996).

# II.
# Immediate Benefits

Immediate benefits from ECI programs can be grouped into three categories: direct benefits of improved welfare for participating children; indirect benefits of increasing labor force participation and earnings for mothers who have access to child care services; and indirect benefits for older siblings of program participants, who may be relieved of child care duties and enabled to continue further with their schooling. Evidence from both developing countries and the United States for each of these benefit streams is summarized below.

*Improved Welfare for Participating Children:* The stated goals of ECI programs usually focus on well-being of children as measured by improved health, nutritional, and developmental status during the period when they participate in the program. Sometimes, a resulting improvement in future opportunities for learning and earning is also mentioned. Evidence from tracer studies in developing countries from Myers and a recent review by Rand of ECI programs in the United States demonstrates that they can yield measurable benefits in the short run (Karoly, 1998; Myers, 1995).

Myers reviews a set of tracer studies (concentrating mainly on outcomes in the 0 to 3 age bracket) that assess the effectiveness of ECI programs on child health and nutrition. The author presents a strong case for building synergies by combining nutrition and non-nutrition interventions in promoting both growth and psychosocial development – a key feature of most ECI programs. He draws upon evidence from studies of children who are able to thrive despite being "at risk," studies of children in nutritional recuperation centers; and studies of planned interventions with children at risk.

Specific findings include results from experiments in Chile and Jamaica which compared the progress of undernourished children who received treatments of stimulation and play as well as food with those who received only food (Chile) or were well-nourished (Jamaica). For the Chilean stimulated children, the weight gain was higher, the physical growth was better, and there were significant differences in these indicators as well as the psychomotor quotient after 50 days of treatment. For the Jamaican children, the intervened group had also improved the most, and was no longer significantly behind the well-nourished control group. Interestingly, the results for Chile were lost over time as no additional action was taken following departure from the recuperation center. In contrast, in Jamaica implementation of a program of active follow-up including home visits by community health workers maintained the gains in psychological development and weight recuperation over a period of 36 months.

Additional findings from the developing world that emphasize the need for an interactive approach come from a three-country study on food intake and human function being carried out in Mexico, Egypt, and Kenya. In sum, the evidence reviewed by Myers finds a "spiral effect in which food intake, providing energy and needed nutrients, increases the physical activity of the child and hence the child's ability to interact. In interaction, the child attracts the attention of the caregiver and demonstrates its needs. The caregiver re-

sponds, providing food and affection, further energizing the child."[3]

Initial results from an evaluation of a Bolivian ECI program also point toward heartening trends. Forty percent of the children who enroll in the program in urban Bolivia show stunted psychosocial development. After one year in this program the percentage is reduced to 20 percent. After two years it is cut to five percent. Child mortality rates of program participants are extremely low (less than 1 percent), contrasting with the high child mortality rate of the target population in the absence of the ECI (about 20 percent). These indicators should be treated with some caution, however, as the results, as presented, do not account for selection into the program, and although comparative indicators are presented for the overall target population the authors fail to present the same indicators for the control group in this study (Van der Gaag, Jacques and Jee-Peng Tan, 1998).

For the United States, the authors at Rand examined a set of nine programs in which evaluations had been performed that assessed developmental indicators, educational achievement, economic well-being, and health for program participants and compared them with the same measures for matched controls. In most of the programs, controls were selected by random assignment at program outset. Short-run benefits included gains in emotional or cognitive development for the child, and improved parent-child relationships; improvement in educational process and outcomes for the child; and improvements in health-related indicators, such as exposure to child abuse, maternal reproductive health practices, and likelihood of maternal substance abuse.

*Effects on Female Labor Force Participation and Earnings:* In actuality, labor market benefits for participating mothers are rarely stated as an explicit objective of most early childhood interventions, in the region and in other countries. They have, however, been the subject of research by labor economists. Attention to the interrelationships between child care usage and female labor force participation can be found in Heckman's (1974) path-breaking article which analyzed the effect of government child care programs on women's employment decisions. Initiating a series of research efforts in the U.S. which focussed on the demand for and costs of child care, the essential insight of the paper was that the implicit costs that families face for child care depend on the availability of alternative care options, including the presence of relatives or friends willing to provide low-cost care. Later attempts at modeling included explicit estimates of the costs of child care based on household characteristics, and modeling of the simultaneous labor market participation decision of both the mother and the potential alternative care giver.[4]

Due to the complex nature of the household decisions involved, the existing empirical literature on child care usage and labor force participation reflects the need to focus on partial aspects of the choices involved. The literature to date can be divided into three camps. First, some studies focus on the demand for child care, paying close attention to the effects of price and quality on a household's choice.[5] These studies take the mother's labor force participation and other household income as a given. They pay more detailed attention to the definition of the range of child care options or modes and dedicate

[3] Myers, 1995, p. 184. He goes on to note that "The spiral applies to the caregiver as well. A better nourished and healthier caregiver who is also free from social and psychological stress will be better able to energize and respond to the child, helping the child demand more food, increasing the food intake…."

[4] See Blau, 1991a for a recent overview of the U.S literature

[5] Studies examining the determinants of household demand for child care include works by Robins and Spiegelmen, 1978; Lehrer, 1988; Robins, 1988; Leibowitz et al, 1988; and Hofferth and Wissoker, 1992.

considerable effort to the careful definition of measures of the price and quality of these modes. A second group of studies examines the labor force participation decision of the mother, taking child care usage as given. These studies have as a primary focus the examination of how usage of different modes of child care results in varying degrees of labor force participation.[6] Finally, a third body of literature models the simultaneous nature of the mother's choice to participate in the labor force and to utilize nonmaternal child care.[7]

The literature reviewed thus shows a wide variety in the ambitiousness of authors in tackling the various types of endogeneity which arise when addressing questions of female labor force participation and choice of child care mode. Trade-offs arise and as the complexity of the empirical modeling increases, the level of detail of results regarding specific aspects declines. Nonetheless, some results are surprisingly robust on several counts. Studies agree that child care and labor force participation are competing uses of the time of mothers. Lowering the cost of child care, either through increased supply or forms of price subsidization, is shown to increase the usage of "market care" (as opposed to care by the mother or a near relative), and, by lowering the reservation wage of women, also leads to an increase in female labor force participation. Individual characteristics of the mother, household composition, and supply-side characteristics of the child care market in which the household takes part are all shown to influence the jointly determined outcomes of mode of child care usage and labor force participation. In general, studies have found that married women's labor supply is more elastic with respect to child care costs than that of single women, given married women's access to the husband's income.

Research on the effects of child care on labor force participation and earnings for poor women in the *favelas*, or slums, of Rio de Janeiro confirms these general findings (Deutsch, 1998). Study results indicate that increasing the supply of low-cost child care in the *favelas* of Rio de Janeiro would increase the labor force participation of mothers and their probability of utilizing publicly-financed day care centers. When they work, women who avail themselves of external child care services are also likely to earn more. Estimates for earnings' elasticities for usage of publicly funded day-care centers range from negligible negative effects up to a twenty percent increase in earnings, depending upon model specification and sample definition. The positive effect on earnings is least for women who work more than 40 hours per week.

Results from the same study also indicate that women who pay more for child care in the private sector are compensated by greater returns in the labor market. The elasticity of earnings (corrected for selection into the labor force or child care market) with respect to the use of higher cost market care ranges from 12 percent to 29 percent. Higher returns to market care are most likely due to its greater flexibility in operating hours. Limited hours of service available in the public centers reduces their utility and net impact on earnings for women who work longer hours and/or have long hours of commuting to their places of employment. Despite the difficulties of interpreting the results due to the many endogeneities involved in the joint decision process, increased earnings are consistently associated with use of child care outside the home, independent of model specification and sample definition. This finding has clear policy implications. Increased access to child care services not only offers developmental benefits for the children receiving care, as has been

[6] Analyses of female labor force participation which explicitly take account of the availability or actual use of child care as an exogenous factor in the participation decision include Gustaffson and Jacobson, 1985; Berger and Black, 1992; Engle, 1991; and Blau and Robins, 1988.

[7] Joint decision models of child care usage and labor force participation can be found in Connelly, 1992; Connelly, et al., 1996a and b; Gustaffson and Stafford, 1992; Michalopoulous, et al, 1992; and Ribar, 1992 and 1995.

documented by previous studies, but also expanded economic opportunities for their mothers.

Recent findings from the United States provide further corroboration for the strong labor supply effects of access to child care. Through the use of detailed data and an ingenious design, the analysis is able to circumvent many of the endogeneity problems that plague this body of literature. By using school enrollment as a source of variation in child care costs, and quarter of five-year-old's birth to construct instruments for school enrollment, the author relies on a plausible natural experiment. This approach allows him to avoid potential selectivity bias arising from joint determination of child care and labor supply decisions without relying on statistical assumptions regarding the distribution of unobservables. The author finds that free public schooling has a significant positive effect on labor supply and a significant negative effect on receipt of public assistance by single mothers. Specifically, he finds that for single mothers whose youngest child is five, access to free public schooling raises labor supply by 8 percent to 18 percent, raises wage and salary income by 27 percent, and reduces receipt of public assistance by 18 percent (Gelbach, 1998).

*The "Brother's Keeper Phenomenon" - Effects on Schooling of Older Siblings*: Indirect effects of ECI programs can include increased education for older siblings, as the existence of alternative child care options can free them from these tasks and allow them to continue schooling. While increased school enrollment of older siblings is not an outcome variable that is typically measured in ECI program evaluations, it is something that can be deduced from a reexamination of the empirical literature on female labor supply decisions. Studies in Brazil, Mexico, and Guatemala indicate that older siblings, particularly females, tend to serve as mother substitutes, with their presence in the household increasing female labor force participation rates, all other things being equal (Connelly, 1996, Deutsch, 1998, Engle, 1991, and Wong and Levine, 1992).

Similarly, the presence of older siblings within the household reduces the likelihood of using market-based child care services outside the home. Both of these findings, while not direct measures, have troubling policy implications. They indicate that household survival strategies include the use of older siblings as caretakers for their younger brothers and sisters, with a decline in school attendance the likely result. It is thus probable that increased availability of low-cost child care services would reduce the demand for older siblings to be their "brother's keeper," liberating them to continue with their schooling. Unfortunately, existing evidence on this important phenomenon is weak and indirect, demonstrating the importance of substitution effects between use of formal child care services and siblings' presence in the home. Further research on this topic that would directly measure the likelihood of siblings' school attendance based on the availability of additional child care options would be welcome. Such empirical work should be fairly straightforward to examine working with some of the same data sets used to explore questions of maternal labor force participation.

# III.
# Longer-Term Benefits

In this section we provide a review of findings on benefit streams that occur over the medium term or longer to participants in ECI programs, their family members, and society at large. Evidence from the developing world and from the United States is provided on how participation in ECI programs enhances performance in primary schooling, and to the extent longitudinal data allow, beyond. We then go on to examine even longer term benefit streams, as measured by increased earnings and lower welfare dependency ratios for program participants. At present, such results are only available for a small number of programs in the United States, given the absence of good longitudinal data in general, and particularly in developing countries. The section closes with some estimates of how private benefits also translate into government savings. Improved social outcomes for program participants also result in fiscal economies given the lower cost to governments of preventive programs versus the more costly alternatives.

*Future Schooling and Earnings of Participants*: An overview of more than a dozen tracer studies in the developing world done by Myers found generally positive results in terms of the effectiveness of ECI programs for improving school performance. In the vast majority of studies, ECI programs were found to have a positive effect on the probability of enrollment, on school progress, and on achievement in the early years of primary school. In some cases the effect can be very large. Consider for example the case of an ECI program in Choco, an extremely impoverished area in Colombia, where 60 percent of the program participants reached the fourth grade of primary school versus only 30 percent of the comparison group. Similar results were obtained in the PROAPE program in Brazil, repetition rates were only 9 percent for participants compared to 33 percent for controls. In general, studies found that these differences in school performance attributable to early childhood interventions were most pronounced for the most disadvantaged children (Myers, 1995).

Program evaluations also found that observed improvements in school performance appeared to be related to a combination of factors, including early enrollment, improved school readiness, and changes in parental expectations (and involvement) regarding children's schooling. On a more cautionary note, similar to that found in the nutritional status benefits, these intermediate term benefits can be attenuated through poor quality primary schooling and other structural conditions. In general, the evaluations in the developing world have yet to benefit from a longitudinal data set of sufficient duration to provide the final word on longer term effects such as secondary school completion rates or increased future earnings.

Working with better longitudinal data sets, a range of studies in the United States has also shown that participants of ECI programs perform better in school, and that the longer they participate in ECI programs, the larger the improvement in school performance indicators (Karoly, et.al., op. cit. and IRP,1997). These findings derive from the relatively few longitudinal studies that track program participants and control groups over time. The effects of higher educational attainment translate into increased earnings capacity. In the Perry Preschool program, for example, children's earnings when they reached age 27 were 60 percent higher among program participants.[8] In addition to promoting positive

[8] This difference in earnings is controlled for selection between treatment and control groups and

outcomes in terms of increased education and earnings, ECI programs in the United States have been shown to reduce the probability of negative social outcomes. Although results vary depending upon program design and duration, the mix of interventions, and the target age group, evaluations of different ECI have found program participants exhibiting fewer instances of juvenile delinquency, significantly lower incidence of antisocial behavior, and significantly fewer lifetime arrests.

*Fiscal Savings:* A lower incidence of criminal behavior can translate into eventual savings to the government from reduced levels of social service expenditures on participants following the end of the program (as well as additional private savings to individuals who are spared the costs of being victimized by criminal acts). The Rand study attempted to estimate these savings for two ECI programs that provided the necessary data - the Perry Preschool program and the Elmira Prenatal/ Early Infancy Project (PEIP). Results showed that for all participants in the former, and only the higher-risk families of the Elmira PEIP, (conservative) estimates of the savings to government were much higher than the costs (about $25,000 versus $12,000 for each participating Perry family; $24,000 versus $6,000 for Elmira). Estimates of the additional benefits to society beyond the government include the tangible costs of the crimes that would eventually have been committed by participating children (if they had not participated in the program), and the extra income generated by participating families. Their estimates showed the combined return from these two benefit sources to be roughly $3,000 per family for lower risk Elmira participants, $6,000 per family for the higher risk Elmira participants, and over $24,000 per family in the Perry case (Karoly, et al.).[9]

was significant at the 5% level, as were similar findings in the lower incidence of welfare recipients among Perry program participants as discussed in Schweinhart, et.al. 1993, as cited in Karoly, op.cit. Appendix B. It should be noted however that the 60% difference is based on average earnings of *all* members of treatment and control groups, including those not participating in the labor force. Thus earnings differentials as reported present the *combined* impact of differences in labor force participation and returns to human capital of treatment and control groups.

[9] Higher risk families are defined as those with single mothers *and* low socioeconomic status.

# IV.
# The Economic Case for Public Support of ECI

*Why Should Governments Intervene in the Market for Child Care?:* Economists usually make the case for government intervention in the operation of "free" markets on either efficiency or equity grounds. Efficiency arguments are predicated on the existence of previous market (or policy) failures. Governments need to intervene in order to "fix" problems that arise because the conditions for "first-best" perfectly operating markets do not hold. Equity arguments are based upon the premise that governments also perform an important redistributive function.[10]

The market for early childhood intervention programs has many inperfections which, for the most part, lead to underinvestment in such programs by and for the poor. Before detailing these market failures, however, we will first discuss the positive social externalities of ECI programs that provide additional support for a role for government. The externalities from investing in ECI are multiple. First, ECI programs have been shown to increase returns to existing government investments in primary schooling. Secondly, there are public health externalities, as lower disease incidence among program participants reduces the spread of disease for the public at large. Third, and generally speaking to encompass a wide range of externalities, are the benefits brought about from a healthier, better-educated workforce, in terms of long-term productivity effects for the economy, social cohesion, and overall social welfare.[11] In sum, social returns to these investments are as important, if not more so, than the private returns.[12]

[10] Under strict neoclassical assumptions, efficiency and equity can be conflicting goals: a trade-off between equity and efficiency goals ensues when the economy is at its most productive, and no one individual can be made better off without reducing the welfare of another individual or group. However, the efficiency/equity dichotomy raised in neoclassical economics does not always stand. There are many scenarios in which it is possible to envision both goals being achieved in a mutually reinforcing fashion. For starters, it is enough to believe that the economy is not at its most productive due to market or policy failures that prevent the market from operating at full efficiency. Informational constraints often imply that markets are not operating at full efficiency. Instead, policy-makers, and the economists who attempt to aid them, are operating in a world of second best, wherein the same informational and incentive constraints that prevent the successful implementation of lump-sum transfers also cause the invisible hand to result in inefficiencies. In sum, in the real world of second- or third best, ample room exists for policies that enhance both efficiency and equity. See Putterman, et al. (1998), for a broader theoretical discussion of these issues.

[11] An additional argument is that broadly speaking, ECI programs can be classified as what economists call "merit goods", that is, goods that governments could compel individuals to consume, taking on an overt paternalistic role. It could be argued that there is a role for government in increasing coverage independent of short-term efficiency concerns. In democratic societies, the definition of what constitutes a merit good is the result of a constantly evolving political process – witness, for example, the case of environmental protection or car safety legislation.

[12] Similar cases have been made for individual elements of ECI programs that promote human capital development. See Behrman, 1993 and Strauss and Thomas, 1998 for evidence on health and nutrition. Schultz, 1998 provides an excellent review of the economic returns to female education. Evidence on potential synergies which lead to greater returns to combined investments than to individual actions in each sector, in addition to what is presented in this paper, can be found in Behrman, 1996.

The market imperfections that prevent adequate investment by the private sector in these services are equally numerous. First and foremost are the credit market imperfections resulting in liquidity constraints faced by lower income households that prevent them from investing the optimum amount in human capital development in general and ECI programs in particular. Specifically, if parents cannot borrow against their children's future earnings, poor parents will often be unable to invest optimally in their children's human capital. This begins a self-perpetuating vicious cycle, in which the children of the poor will have depressed levels of human capital and earnings relative to the children of the rich with the same ability. Social mobility for the poor will thus be impeded, and existing inequality further entrenched.[13]

A second set of constraints that is specific to the market to ECI programs is informational in nature. The lack of perfect information, in the words of one economist, "is the most striking difference between the child care market and the idealized perfect market (Walker, 1993)." Imperfect information exists for several reasons: (a) parents do not know the importance that ECI interventions have for promoting future growth and development; (b) they also do not know the identity of every potential supplier, but must search to locate an adequate provider of ECI services; and (c) quality of care is difficult to measure – even the most informed consumers, after long periods of use, are often in doubt about the quality of the services that their children are receiving in ECI programs. The first constraint in particular, regarding the lack of information on returns which is necessary to appropriately value investments in ECI services, is most binding for poor households, who are less likely to have prior experience or examples from their social networks about the effectiveness of such programs.

A final source of market imperfection for ECI services is that of incomplete markets. Suppose, for example, that women will enter the labor force only if child care is available. However, given the time costs and planning involved in the start-up of ECI services, no such investment in supply will occur unless women can reveal their future demand for services. If no mechanisms exist to capture the existence of such potential demand, services will not be provided, the women will not participate in the labor force, and an incomplete market will result (not only for child care, but for female labor force participation). In principle, a futures market for ECI services would resolve the problem, but only for households not subject to liquidity constraints. In sum, markets are not complete – there is not adequate supply for existing demand due the inability to arrange trades across time periods. There is thus lower than optimal investment in ECI services, particularly where liquidity constraints are binding.

In summary, there is ample scope and rationale for government intervention in the market for ECI services. Due both to positive externalities and market failures, the invisible hand leads to a less than socially optimum allocation of resources for ECI programs. What priority the government should give to such interventions, and how governments can most effectively intervene in the market for ECI services serve as the guiding questions for the remainder of this paper.

*Ranking ECI Programs Within the Public Policy Hierarchy*: While the case has been made above for a government role in the market for ECI services, what should be the relative ranking of such investments within an overall menu of public policy choices? We attempt to answer this question here. The results presented in the previous section on government savings versus government costs for the U.S. Elmira and Perry programs represent one piece of evidence for positive social returns for ECI programs. In other words, ECI programs save money for governments, independent of the private benefit streams generated by these programs. But other programs

[13] Gaviria, 1998, provides an excellent review of the literature on this topic as well as empirical evidence demonstrating the importance of borrowing constraints for the poor.

also increase government revenues – how do ECI programs compare? Limited evidence exists from developing countries, which, although based upon different methodologies and working with less than complete data sets, suggests that investing in early childhood should be a priority for governments.

For example, Van der Gaag and Tan (1998), using data on an ECI program in Bolivia, find benefit cost ratios ranging from 1.38 to 2.07 attributable to increased lifetime productivity expected from the human capital investments made during the program. When the benefits of direct service delivery and reduced fertility are added, these benefit-cost ratios increase to range from 2.38 to 3.06.[14] How do these ratios compare to benefit-cost ratios from other public investments? Drawing upon a selection of World Bank-financed projects in the "productive" sectors, the authors find that public investments in ECI well outperform these more traditional investments.[15]

Applying a completely different methodological approach, and working with Colombian household survey data, Vélez also finds evidence for prioritizing ECI programs within a menu of government public spending – this time focusing on the allocation of funds *within* the social sectors. Relying on an innovative approach, the author uses the intersectoral allocation of social services consumption by middle- and high-income individuals as an efficiency indicator for allocating additional public spending. This approach is based on the premise that these individuals are not subject to the same types of liquidity constraints as are poorer members of society. The analysis allows for the derivation of the optimum allocation of additional social spending between sectors. It also demonstrates that the priority sector for service expansion will be the one registering the greatest relative difference in access probability between high- and low-income groups. For Colombia, working with 1992 data, Vélez found that the sector most urgently need of action based upon this approach was child care.[16]

Thus, pure efficiency considerations place ECI programs high on the list of possible policy interventions. When equity concerns are also brought into the picture, the strong positioning of ECI programs becomes even stronger. The concluding section of this paper addresses some of the issues that arise in the design, implementation, and evaluation of ECI programs. Our premise is that the principal concern of governments in their support for ECI programs should be to maximize the cost-effectiveness of government interventions while pursuing social equity goals.

[14] Lower benefit-cost ratios assume a less-targeted group of beneficiaries and therefore less dramatic improvement in social indicators. Some of their assumptions are overly sanguine (such as the increase in school enrollments attributable to the PIDI program in environments where primary coverage is nearly universal). However, it is important to note that they undercount, or ignore, other potential benefit streams such as increased enrollments for older siblings and increased labor force participation and earnings of participants' mothers.

[15] In the selection of eight projects in developing countries, the benefit-cost ratios range from a low of 1.18 for a Hill Forest Development Project in Nepal to 2.27 to the Kunda Cement Factory in Estonia. (Van der Gaag and Tan, 1985, op.cit.).

[16] Vélez, 1997. Note that Vélez's methodology can be questioned in that it makes the assumption that spending patterns by upper- and middle-income groups can be said to be socially optimal.

# V.
# Policy and Operational Issues

The many sources of benefits described earlier, and the estimated magnitude of some of them, combined with the efficiency and equity arguments of the previous section, more than justify a role for government in ensuring access to ECI programs. However, there is no prescribed or predefined role for state involvement. Delivery mechanisms in the region run the gamut from publicly financed and administered full-service day-care centers to the provision of financial support to locally run neighborhood initiatives. Each program and mix of interventions faces its own set of costs and benefits. Additionally, as will be discussed below, we do not yet know enough about how to design an optimum mix of interventions, nor can we measure the elasticity of program benefits with respect to changes in program design. Nonetheless, a few basic precepts can be drawn from experiences in the region, and from the evolution of IDB support to ECI programs, that can help contribute to more cost-effective programs.

*Leverage Public Resources:* One effective way to leverage government funds is to avoid the mistake of starting from scratch. When contemplating government financing for ECI programs, particularly in places where the government has yet to play an important role, it is important to assess the current dynamics of the existing child care market before determining how the government will intervene. As discussed in the 1998 Economic and Social Progress Report of the IDB, female labor force participation rates have been increasing historically throughout Latin America and the Caribbean. Rates have increased across the income distribution, but to a lesser extent for women from poor households. Household survival strategies have thus already developed to care for the children of working mothers, with or without government support. The challenge becomes working with the existing options to ensure the desired levels of quality for the custodial, emotional, cognitive, and nutritional support that is provided to participating children. The best option may not always be building new government day-care centers. Instead, it can be cheaper, and perhaps yield greater benefits, to support informal initiatives that are already underway-working both to improve their quality, and to provide needed information and financial support to the poorest families to guarantee demand and access.[17]

Cost recovery is another possibility for leveraging public resources, given the fact that there are private benefit streams generated from ECI programs in terms of increased earnings for participating mothers. However, any cost recovery or user fee policies need to be adequately designed to avoid negative incentive effects, and carefully targeted so as not to exclude the poorest households. To the extent that ECI programs are well-targeted and intended not only to benefit children in the long-term but to provide an implicit transfer to disadvantaged families (through increasing market earnings potential) then cost recovery would play a lesser role.

One further way to leverage scarce public resources is to build partnerships with community groups, NGOs, religious organizations, existing social service agencies, and the private sector. Governments should avoid "bureaucratic creep" such as adding large numbers of employees to the public payroll or enlarging public plant and facilities and can do so by entering into partnerships with these groups. Recent IDB investments in Bolivia and Ecuador exemplify this approach to program design which aims to foster the increased

[17] This appears to be the case in the favelas of Rio de Janeiro. There, child care provided by the informal network and private sector appears to offer higher returns in terms of increased earnings for participating mothers, most likely due to the greater flexibility of operating hours than in the public day-care centers (Deutsch, 1998).

involvement of nongovernmental actors in the financing and provision of child care services.[18] In such partnerships it is essential for governments to treat nongovernmental actors as equal and to avoid imposing restrictions or conditions which might limit the very efficiencies that encouraged governments to build partnerships in the first place.[19]

*Be Flexible and Promote Choice*: An additional feature of thoughtful ECI program design is the provision of support to a series of different ECI programs, allowing demand-driven mechanisms and market forces to match households, communities, and local governments with the appropriate services. Given the panoply of possible interventions available, the as yet limited state of technical knowledge as to which interventions are most effective, and the wide array of family structures, tastes, and concerns (all within national settings characterized by extreme variation in regional incomes and implementation capacity of local governments) it would seem almost impossible to provide a unique nationwide solution. In short, there is no "one size fits all" approach that is valid for ECI program design. The IDB loans to Bolivia and Ecuador provide support to a flexible menu of alternative ECI programs. Using careful selection and eligibility criteria, these loans provide the framework and incentives necessary to match clients and services, taking into account household differences, differences in local availability of child care services and the variation in implementation capacity of different local governments.

It is important to emphasize, however, that demand-driven market based approaches run the risk of excluding the poorest of the poor. Such implementation strategies assume a certain degree of knowledge or information on the part of potential beneficiaries that may need some minimum survival level assured in order for decisions to be valid. For the lowest income levels, additional measures may be necessary to ensure program participation.

*Remember the Intrahousehold Effects*: Independent of the specific intervention mix, it seems clear that ECI programs need to provide incentives and appropriate support to families so that intrahousehold effects do not undo the benefits generated by the program interventions that take place outside of the household. For example, studies of some programs have shown a drop in weight and nutritional status for participating children over the weekends and during vacation breaks. This occurs because households fail to continue the same level of nutritional support provided during the ECI program. In other research, maternal depression has been demonstrated to mitigate the positive benefits of ECI programs in the United States (IRP, 1997). Parental education, guidance, and the provision of the right mix of incentives and support to encourage effective child nurturing behaviors within the household form critical elements of ECI programs for families at risk.

*Target Well*: Targeting the use of public funds to expand child care options is important if governments are going to be able to increase the options for a significant number of households without creating fiscal problems. Targeting of ECI programs to families more at risk may be a crucial element in determining their cost-effectiveness as well as meeting social equity goals. While short-term costs may be higher due to compounding social and economic problems faced by the poorest families, the savings generated by the avoidance of more costly future, problems are likely to outweigh the initial program costs.[20] As revealed

[18] Bolivia Program of Comprehensive Services for Children Under Six (BO-0130) approved June, 1997 and Ecuador Comprehensive Services for Children Under Six (EC-0157) approved October, 1997.

[19] For some examples of effective social programs partnerships in LAC region, see Fiszbein and Lowden, 1998.

[20] In their analysis of the Elmira PEIP program, the Rand study found clear evidence of this phenomenon. While government savings for higher risk participants more than outweighed the program costs, "in the case of the lower risk participants of the Elmira PEIP, the savings to government are unlikely to exceed the costs. In fact, our best estimate of the net savings is that they are negative: The government savings, while positive, are not enough to offset program costs. This result illustrates the importance of targeting programs to those who will benefit most if the hope is to realize

in the evidence presented earlier on ECI program benefits, not only social returns but also private returns are likely to be greater for more disadvantaged participants.

Targeting of ECI programs poses a challenge given the potential for middle class families to commandeer government funds for services which they also can benefit from (particularly the custodial care aspects of ECI programs, as female labor force participation rates are higher along the income distribution). There is also a risk that expansion of the public network of ECI services will be used to generate short-run political support rather than long-term social gains. Effective targeting is also hampered, for ECI programs and other interventions, by lack of adequate information and beneficiary identification systems. Finally, very narrow targeting can be overly costly, and in general needs to be appropriately devised to avoid negative incentive effects, such as undermining the work efforts of households who might choose to relinquish income in the short-run in order to qualify for program participation. It would hardly help to reduce income inequality and poverty if subsidized child care for families below a particular income level led women to leave the labor force in order to gain or maintain access to the program. Effective targeting requires designs that can clearly identify the target group (through selection or self-selection) and criteria that do not encourage counterproductive behavior. One fairly common design for meeting these criteria is to target subsidies or child care programs geographically to low income neighborhoods.

*Build Knowledge Through Better Evaluations*: Although research conducted on ECI interventions to date has told us much about the benefits of these programs, unfortunately, there is still much that we do not know. This lack of knowledge limits the degree to which the conclusions drawn from careful evaluations of specific programs can be generalized to other interventions. The biggest unknown is why some programs work, and others don't. Specifically, we need to know more about whether there are optimal program designs; how ECI can best be targeted to those who would benefit most; whether the model programs evaluated to date will generate similar benefits once they've "gone to scale," and, what the full range of program benefits is.[21] Similarly, we need to know to what extent program results from the United States and other more developed countries are replicable in a developing country context.

Also frustrating to the policy maker interested in supporting ECI programs is our lack of knowledge concerning the relative effectiveness of different types of programmatic approaches. Limited information exists to rank different types of interventions according to the benefit streams that they yield, or to assess trade-offs between costs and benefits of adding on additional interventions across sectors or over time in the quest for the "ideal" mix of interventions. In a world where governments and the agencies that provide financing for public policy have to make tough decisions regarding the cost-effectiveness of public spending, ECI programs pose a special challenge given the many parameters involved in program design and the absence of widespread and comparable evaluation results. While there is a strong consensus as to the economic (and social) rationale for government support to ECI programs, the literature has yet to draw firm conclusions regarding the effectiveness of different types of interventions. The challenge thus is to introduce design elements, as outlined above, which include mechanisms to adequately respond to the unique circumstances of each project, and which include incentives for households, institutions, and communities to work together to promote the well-being of participating children. Monitoring and evaluation activities not only provide information needed during project execution to help keep the operation "on track," but also will provide information about the effectiveness of different approaches to ECI.

Recent ECI projects financed by the Inter-American Development Bank have taken steps to fill this gap in our knowledge, with more careful

government savings that exceed costs." Karoly, et al., op.cit., p. 5.

[21] These are some of the factors identified by Karoly, et al. which are relevant for the US ECI programs.

attention to monitoring and evaluation components than is the norm for other social investments. However, much remains to be done, particularly in the application of control group methodologies, and the long-term commitment to undertake longitudinal studies of program participants and their controls, which is the only way to yield careful estimates of benefit streams. In the absence of such evaluations, ECI programs in Latin America and the Caribbean must continue to rely upon the results of evaluations from the United States and other regions. These evaluations from outside the region, in addition to the problems outlined above, also take place in a completely different context of economic development and availability of social safety net programs. Thus, while the case has been made that ECI programs are likely to contribute to the reduction of poverty and inequality in Latin America and the Caribbean, we await future evaluations to tell us with more precision how effective such programs can be in the specific regional context.

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