

*A case study from*

Reducing Poverty, Sustaining Growth—What Works, What Doesn't, and Why  
A Global Exchange for Scaling Up Success

Scaling Up Poverty Reduction: A Global Learning Process and Conference  
Shanghai, May 25–27, 2004

# A Better Start in Life: The Early Childhood Development Program in the Philippines

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Note: Able research assistance provided by Owen Haaga and Jennica Larrison at the World Bank is gratefully acknowledged. The authors' names are listed alphabetically.

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## Executive Summary

In recent years there has been expanded interest in early childhood development (ECD) in low- and middle-income developing countries, as in developed countries. Increasingly, problems seen in schooling such as high repetition, early dropout rates, and poor learning, as well as poor health of youths and adults, are being traced to malnutrition, poor health, and abuse very early in the lives of children.

Many studies have examined the consequences of child malnutrition and its impact on child schooling decisions and academic achievement; investments in preschool children improve later school success and therefore adult work productivity and incomes. Statistically significant positive associations are found between family background and schooling and child health, and a positive relationship between mother's schooling and child immunization rates has been observed across world regions.

### A better start in life

A potentially effective way of alleviating poverty and engendering economic development is through policies that promote better nutrition, health, and skills development in young children. Governments in several countries have introduced preschool programs for improving nutrition and providing children with home and other environments conducive to learning.

In 1999, the Philippine Government launched a five-year Early Child Development (ECD) Project to attain the country's human development goals and to reduce poverty; as an instrument to meet the government's commitment to the international Convention on the Rights of Children; and as a pilot for testing ECD structures and delivery systems. ECD is part of a broader program to promote the development of Filipino children and to address the great risks that children from poor and disadvantaged families face.

In 2002, the government institutionalized the program by legislating the Early Child Care and Development (ECCD) Act, which established governance structures and delivery systems for children ages 0–6 years. It created the Council for the Welfare of Children (CWC) as the highest policymaking body for children's concerns.

The ECCD program's overarching goal is to maximize the survival and developmental potential of children, particularly those most vulnerable and disadvantaged. It aims to minimize the health risks to very young children; to contribute to the knowledge of parents and the community about child development and encourage their active involvement; to advocate for child-friendly policy and legislation; to improve the ability and attitude of child-related service providers; and to mobilize resources and establish viable financing mechanisms for ECCD projects. The ECCD program set specific quantitative goals, such as decreasing the child mortality rate and increasing the proportion of children immunized.

The program uses health, nutrition, early education, and social services programs that provide for the basic needs of young children. It uses a multitude of instruments, among them a

national child surveillance and referral system; investments in essential, child-focused services for parents, caregivers, and service providers; expanded community participation and local ownership to ensure sustainability; and the establishment of ECCD Coordinating Councils at all levels of government to monitor implementation.

The program is an interdepartmental partnership of many national agencies. Each has been assigned functions; representatives are members of a national ECCD Coordinating Council. The program recognized the need for a full partnership with local government units (LGUs) and also with nongovernmental organizations. LGUs could choose a set of investments according to their particular needs and administrative capacity. The national agencies provide counterpart funding for the establishment and expansion of ECCD programs in poor and disadvantaged communities. The ECCD Act explicitly allows resource mobilization from intergovernmental donors and financial institutions for the support of poor areas.

Research, testing, assessment of innovative approaches, and the establishment of service standards are tasks that have been given to the CWC. An evaluation study is assessing the impact of specific interventions included in the service delivery package.

### Evaluating impact

Three sets of questions are asked in considering the impact of the program. The first set includes questions about how a municipality has chosen the package of services funded by the project, how it finances its part of the cofinancing scheme, how it disseminates information about the new ECD services, and how it selects project staff. The second set relates to how the project is changing the access to and the quality of service delivery. The third set of questions refers to the impact of the project on its specific goals regarding children's development. Many of the specific project interventions are not new, so these questions concern the impact of additional financial and technical resources and the effectiveness of the integrated form of the project.

Two surveys of the same 5,000 households were conducted in 2000 and again in 2002. The overall response rate for the surveys was high, at 96 percent. The total number of children aged 0–4 years in 2000 was approximately 8,000. The Philippine ECD project is not yet complete, so the evaluation itself remains ongoing. Nonetheless, the selected findings presented suggest that the program is benefiting children in the program areas.

The ECD project has been providing expanded support for existing programs. We focus on three programs: feeding programs meant to supplement the food intake of children; Vitamin A supplementation, where the largest increase in vitamin A supplementation is seen among children 6–12 months; and child immunization. There was virtually no change in the availability of an immunization program, and the program appears to have increased the percentage of children who are fully immunized by 3.6 to 4.8 percent, depending on the age of the child.

The project collected information on a Revised ECD Checklist designed to measure child development in several domains. The data showed a definite positive impact from the program. (Measured weight and height of children ages one to four, however, indicate that the program has not produced gains in this area.)

## EARLY CHILDHOOD PROGRAMS IN THE PHILIPPINES

Evaluation from comparable programs, including four in the United States, have found increases in cognitive test scores, at least over a two-to-three-year interval after the program. Long-term assessments find lasting effects in terms of higher educational attainment, higher earnings, lower welfare participation levels, lower arrest records, and lower out-of-wedlock births. Bolivia's PIDI is an early childhood development program that provides 70 percent of children's nutrient inputs and systematic learning environments for poor children aged 6–72 months in urban areas. That program has had positive effects on child growth and larger, more significant effects on children's psychosocial development. Projecting to adulthood, the effects mean gains in lifetime earnings that suggest fairly high benefit/cost ratios of 1.7 to 3.7.

To scale up the reach of the program, an increase in general public awareness of available ECD-related services is necessary, and significant resources have been allotted for intensive information drives and parental education services. One important innovation is that the program links sectoral policies and integrates multisectoral interventions in center-based and home-based programs. To support this integrated approach, the program trains service providers accordingly.

The results of the program are greater availability and better quality of services at the local levels, increased use of these services by families, and, ultimately, gains in the measures of child development. The evaluation results already point to increased service utilization, and a few ECD indicators already illustrate gains.

## A Better Start in Life

IN recent years there has been expanded interest in early childhood development (ECD) in low- and middle-income developing countries, parallel to the expanded attention in developed countries. Increasingly, problems seen in schooling such as high repetition, early dropout rates, and poor learning, as well as poor health of youths and adults, are being traced to malnutrition, poor health, and abuse very early in the lives of children. For example, accumulated evidence supports strong associations between nutritional and health status and cognitive and psychosocial skills measured at young ages and later educational attainment, earnings, and employment outcomes.<sup>1</sup> These life-cycle links suggest that a potentially effective way of alleviating poverty and engendering economic development is through policies that promote better nutrition and health and skills development in young children. Accordingly, governments in a number of countries have introduced preschool programs for improving nutrition and providing children with home and other environments conducive to learning. The World Bank and other international agencies have also devoted increasing resources to support such efforts.

*Early childhood investments and subsequent schooling success.* An extensive literature has examined the consequences of child malnutrition on subsequent school outcomes. Malnutrition tends to be most common and severe during periods of greatest vulnerability: pregnancy (about an eighth of babies are malnourished at birth, with a birth weight of 2.5 kg or less) and the first two to three years of life. But the diets that young children in developing countries have to complement breast milk often are of low quality in terms of energy and nutrient concentrations; as a result, multiple nutrient deficiencies are common. Both as a result and cause of this malnutrition, young children are also very susceptible to infections. Their immature immune systems fail to protect them adequately from contaminated foods and liquids; at the same time, as a result of poor diets and frequent infections, young children frequently are malnourished. One consequence is increased mortality. About one-half of all deaths in developing countries in children under five are due to the interaction between malnutrition and common infections such as diarrheal diseases, respiratory infections, and measles; these infections kill malnourished children easily because malnutrition impairs immune function and lowers resistance. In addition, motor and mental development are affected negatively by poor nutrition, such as micronutrient deficiencies. For example, iodine deficiency and anemia cause poor cognitive development, particularly in children under two. Available studies found that unhealthy children do not perform well in school. For instance, Costa Rican children with moderately severe anemia were shown to have lower scores for mental and motor functioning at school entry (Lozoff et al., 1991).

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<sup>1</sup> See Currie and Thomas 1995, 1999, Karoly, *et al.* 1998, Murnane, Willett and Levy 1995 and Neal and Johnson 1996 for the United States; Alderman, Behrman, Lavy and Menon 2001, Deutsch 1999, Glewwe, Jacoby and King 2002, Glewwe and King 2000, Martorell 1995, 1999, Martorell, *et al.* 1994, 1999, Myers 1995 and Young 1995 for developing countries.

Glewwe, Jacoby and King (2000) examined the impact of child nutrition on child schooling decisions and academic achievement,<sup>2</sup> and found that malnourished children enter school later and perform more poorly on cognitive achievement tests.<sup>3</sup> Their results indicate that a one standard deviation increase in child health increases achievement test scores by about one-third of a standard deviation of that score, or about the equivalent of spending eight more months in school. These results imply a benefit-cost ratio of three or more. In another study using the same data, Glewwe and King (2000) find that malnutrition in the first six months does not have the greatest adverse effects on child cognitive development, as argued by some observers, because it can be reversed. Instead, they find that the second year of life is most critical once there is control for the behavioral determination of child nutritional status at the start of each period of a child's life. Similarly, Alderman, Behrman, Lavy and Menon (2001) relate investments in pre-school children with subsequent schooling. Using longitudinal data from rural Pakistan for 1986-1991, they find that child health is three times as important for determining school enrollment than suggested by studies that have assumed child health to be predetermined.

These three studies strongly reinforce the belief that investments in preschool children affect later school success and thus adult productivities, and that these returns may be much larger than would have been perceived without proper evaluation.

*Early childhood development and adult productivities.* One channel through which early childhood development affects adult life is through schooling's impact on work productivity and incomes. Hundreds, if not thousands, of studies have estimated the relationship between schooling and various representations of wages, incomes, profits, and productivities for developing countries (see Psacharopoulos 1994, and Glewwe and Jacoby 2002 for reviews). Most of these studies treat schooling attainment as a given, instead of being the result of the availability of schools, parental tastes and choice, household background, and whether children are able and ready to learn when they start school. A growing number of studies for developing countries have also examined the direct impact of health and nutrition on productivities in farm production and in labor markets.<sup>4</sup> Since Strauss's (1986) study on the impact of calorie consumption on

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<sup>2</sup> Earlier studies using mostly cross-sectional non-experimental data tended to present positive associations between preschool nutritional status and school achievements, but did not present persuasive evidence regarding causality because they did not incorporate in the analysis that preschool nutrition reflected behavioral decisions in the presence of unobserved factors such as genetic endowments (a number of such studies are reviewed in Behrman and Deolalikar 1988, Pollitt 1990, Behrman 1996, and Strauss and Thomas 1995, 1998).

<sup>3</sup> They used the Cebu Longitudinal Health and Nutrition Survey (CLHNS) for 1983-4, 1991-2 and 1994-5 from the metropolitan Cebu area in the Philippines. They control for unobserved family and community heterogeneity by using within-sibling estimates. They suggest that the coefficient estimates of child height-for-age may be biased towards zero by measurement error in OLS regressions so for their preferred estimates they instrument the difference in heights between siblings using the older siblings' height-for-age (at birth, 12 months and 24 months) for identification.

<sup>4</sup> Recent studies in this genre include Deolalikar (1988) and Behrman and Deolalikar (1989b) on rural India; Sahn and Alderman (1988) on Sri Lanka; Pitt, Rosenzweig and Hassan (1990) on rural Bangladesh; Haddad and Bouis (1991) and Foster and Rosenzweig (1994) on the rural Philippines; Alderman, Behrman,

agricultural productivity in Côte d'Ivoire, the better of these studies have explored the indicators of health (e.g., morbidity) and nutrition (e.g., current caloric consumption), and have found significant and, in some cases, substantial effects of health and nutrition on economic productivities. Those studies that have examined much longer-run indicators of nutrition, namely height, also generally have found fairly substantial associations with adult productivity.<sup>5</sup> Indeed, though some qualifications are necessary in interpreting these different studies, the current state of knowledge strongly suggests that early childhood human capital has important effects on adult productivities, both directly through health status over the life cycle and indirectly through schooling.

*Determinants of early child development.* What produces good early child development? Numerous studies have found statistically significant positive associations between family background and schooling and child health (see Strauss and Thomas 1995, 1998 for reviews). The growing literature on early childhood development (ECD) in developing countries finds that these associations begin earlier in childhood. Parents with more education, for instance, tend to have greater access to public health and ECD-related facilities because they have better connections, are favored by the providers of such services, or are more informed in ways that permit them to more efficiently exploit such services. Some examples: In the Philippines, mothers' education protects child health in communities without piped water or good sanitation and in communities farther from health facilities—an effect larger than that of household income (Barrera, 1990). In Guatemala, women with more education are more likely to use childcare, particularly formal care, and to have their children immunized completely (Pebley, Goldman, and Rodriguez, 1996). In urban Niger and Nigeria, mothers' education is also positively related to immunization (Gage, Sommerfelt, and Piani, 1997). This positive relationship between mother's schooling and child immunization rates is observed broadly across world regions, as parents with more schooling seem better able to translate their own health status into beneficial outcomes for children, and those with greater wealth are more efficient in using information for their young children's development, suggesting the double-disadvantage of poor parents with low education and little access to information and public services.

We see this same effect in the Philippines (Behrman et al. 2002). Parents who have more household wealth, higher schooling, and better health tend to have children who have better physical development (i.e., taller and heavier) and score higher in cognitive, language, and motor development. In particular, a one-standard deviation increase in household assets is associated with an 18 percent increase in the cognitive, language, and motor skills development, and 0.9 percent increase in physical development. The study finds that the mother's physical size (measured by Body Mass Index, weight, or height) and education have a large positive effect on

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Ross and Sabot (1996b), Behrman, Foster and Rosenzweig (1997) and Fafchamps and Quisumbing (1999) on rural Pakistan; Strauss and Thomas (1996) and Thomas and Strauss (1997) on urban Brazil; Schultz and Tansel (1997) on Côte d'Ivoire and Ghana; and Schultz (1999) on Brazil, Côte d'Ivoire, Ghana and Vietnam.

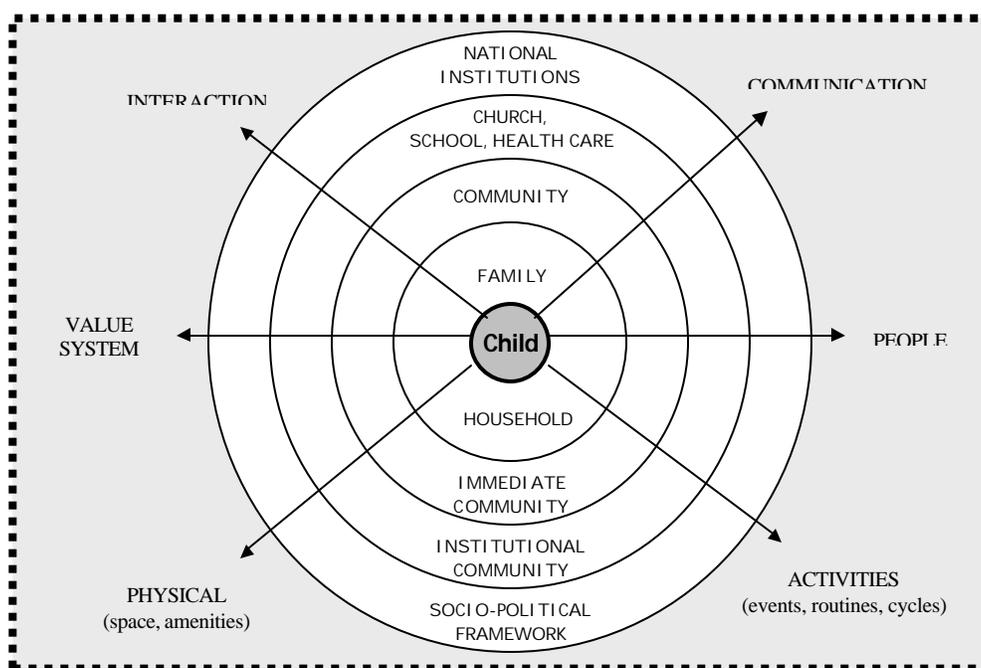
<sup>5</sup> See, for example, Adair 1999, Adair and Guilkey 1997, Golden 1994, Martorell 1995, 1999, Martorell, *et al.* 1994.

children. A one-standard deviation increase in these human capital assets increases children's cognitive development by more than 80 percent, and their physical development by 5-12 percent. The effect of mother's physical size is larger than father's on the child's cognitive and physical development but the effects of mother's and father's schooling are not appreciably different. Interestingly, this study finds also that estimates of the effect of family background on aspects of ECD can be substantially biased if the impact of health or ECD-related services to the family and other community characteristics are not taken into account.

Turning then to the effect of health and nutrition programs, several studies have concluded that these programs have beneficial effects on children. For example, studies in Northeastern Brazil showed that children's participation in growth monitoring was a good predictor of weight gain (de Souza et al., 1999). Furthermore, supplementation programs that seek to address the nutritional needs of very young children have been shown to significantly impact early child development, particularly on educational performance and growth. Some studies (like Benton and Roberts, 1988 and Benton and Buts, 1990 both in Southon et al, 1993) revealed an improvement in non-verbal intelligence among school children after several months of micronutrient supplementation. A Jamaican study found that nutritional supplementation for undernourished children (who are likely to be from disadvantaged families) improved mental development (Grantham-McGregor et al., 1991). In Indonesia, Vitamin A was found to improve the linear growth of children, but not among those with high prevalence of respiratory infections (Hadi et al., 1999). Although these studies found promising results, other studies revealed otherwise. In Sudan, for example, intake of Vitamin A yielded no significant difference in height and weight gain among rural children aged 6-72 months (Fawzi et al., 1997) Similarly, in Nepal, Vitamin A supplementation had no impact on annual weight gain or linear growth (West et al., 1997).

The above studies cover only a few elements of a child's environment that affects cognitive, physical, social and emotional development. In many cases, the omission of a larger set of factors is due to the lack of data that measures the various aspects of a child's development and links these to the child's environments. The various factors that likely affect child development are best illustrated in a simple framework for child development (Bronfenbrenner 1979) (Figure 1). This diagram sums up the pathways and the interaction between the child and the child's environment from the level of the household up to the broader socio-economic political framework that affect how children grow, learn and develop. It shows that to improve ECD, the level of resources and effort allocated to ECD services at different levels of government need to affect the behavior of service providers in the community, as well as community and family knowledge and attitudes.

Figure 1. ECD Conceptual Framework



## An Early Child Care and Development Program

In 1999, the Philippine Government launched a five-year Early Child Development (ECD) Project in three southern regions which encompass thirteen provinces.<sup>6</sup> At its inception, the project was viewed as a means to attain the country's human development goals and to reduce poverty (see Box 1); as an instrument to meet the government's commitment to the international Convention on the Rights of Children (CRC) of which the Philippines is a signatory; and as a pilot for testing ECD structures and delivery systems. The government received financial and technical support from the Asian Development Bank and the World Bank for the project.

This project is part of a broader program to promote the development of Filipino children and to address the great risks that children from poor and disadvantaged families face. In 2002, the government institutionalized the program by legislating the Early Child Care and Development (ECCD) Act (Republic Act 8980). The Act established governance structures and delivery systems for children ages 0-6 years. It created the Council for the Welfare of Children (CWC) as the highest policy-making body in government for children's concerns and gave CWC

<sup>6</sup> Under the present project, the three regions are: Regions VI (Western Visayas), Region VII (Central Visayas), and Region XII (Central Mindanao). The project areas are divided into focus-targeted areas and self-targeted areas. The focus-targeted municipalities are expected to take advantage of the project by the year 2003 through a phased-in schedule of inscription into the project. The self-targeted municipalities will be invited to participate at any time during the project's duration with the proviso that they meet DSWD-specified conditions about ECD services.

the mandate to formulate and evaluate policies, and to coordinate and monitor the implementation and enforcement of all laws and programs for children.

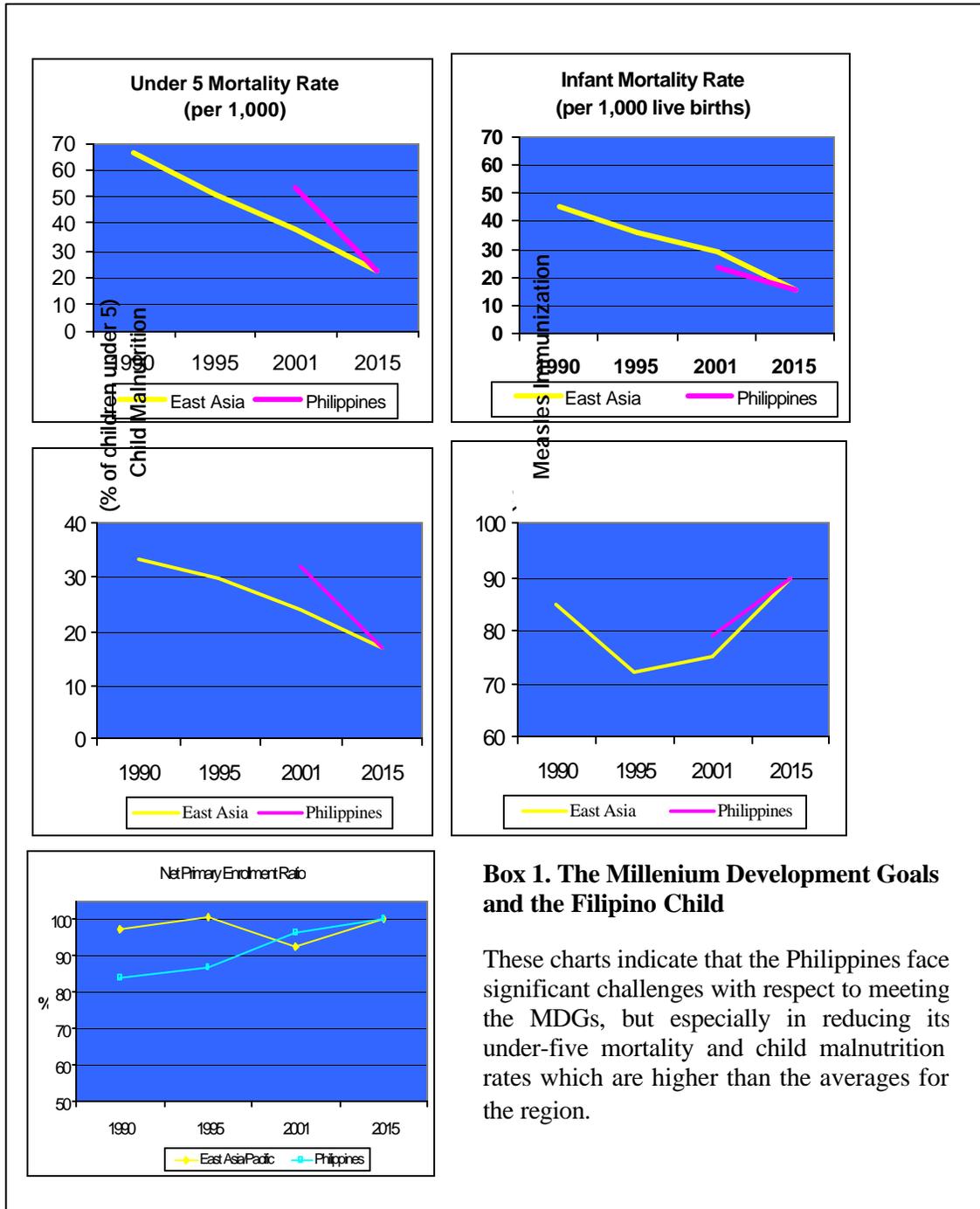
*Program goals.* The ECCD program's overarching goal is to maximize the survival and developmental potential of children, particularly those who are most vulnerable and disadvantaged. It aims to achieve this by minimizing the health risks to very young children; by contributing to the knowledge of parents and the community about child development, and encouraging their active involvement; by advocating for child-friendly policy and legislation; by improving the ability and attitude of child-related service providers; and by mobilizing resources and establishing viable financing mechanisms for ECCD projects.

Through the 1999 ECD Project, the ECCD program set specific quantitative goals<sup>7</sup>:

- Reduce by 30 percent the under-five mortality rate from the baseline value which was estimated in 2000 at 53 per thousand in the program regions;
- Reduce by 40 percent the proportion of underweight children under six from the baseline value of 34 percent by one estimate or 28 percent by another;
- Increase to 90 percent the proportion of children aged 12-18 months fully immunized from the baseline value of about 80 percent;
- Establish a functioning Protein Energy Malnutrition program in 50 percent of municipalities or cities by 2003; in 2000, all the municipalities in the program areas already had weighing programs and 39 percent had feeding programs; 84 percent and 13 percent of children were estimated to be participating in weighing and feeding programs, respectively, at that time;
- Increase to 75 percent of children aged 3 to 5 attending daycare centers;
- Increase to 90 percent the primary school completion rate for children who enter Grade 1;
- Improve the combined index of child development (motor, language, and cognitive skills) among children under six; the baseline survey estimated that 85 percent of children under three years of age and 86 percent of children aged 3-5 years have at least average psychomotor and social skills development.

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<sup>7</sup> ECD objectives as specified in The National ECD Project Infokit produced by the Department of Education, Department of Health and Department of Social Welfare and Development, printed in 1998



**Box 1. The Millenium Development Goals and the Filipino Child**

These charts indicate that the Philippines face significant challenges with respect to meeting the MDGs, but especially in reducing its under-five mortality and child malnutrition rates which are higher than the averages for the region.

*Program instruments, innovations, and implementation.* These are ambitious goals. To achieve them, the program includes a “full range of health, nutrition, early education and social services programs that provide for the basic holistic needs of young children” (ECCD Act). It defined a strategy that includes a multitude of instruments:

- A national child surveillance and referral system;

- Investments in essential, child-focused services for parents, caregivers, and service providers;
- Expanded community participation and local ownership to ensure sustainability;
- Establishment of ECCD Coordinating Councils at all levels of government to monitor implementation.

In implementing this program, it has been essential to involve and work with local government units (LGUs) because of the country’s devolved government system. The program recognized the need for a full partnership with LGUs and also with non-governmental organizations (NGOs). LGUs could choose a set of investments according to their particular needs and administrative capacity.

The ECD project launched in 1999 was a pilot effort to assist LGUs in implementing a diverse investment program of essential local services aimed at young children, their parents, and service providers (Table 1). In general, these services were not new; the project was meant to build on existing ECD-related services and to improve both their reach and quality. The innovation was to adopt an integrated or multi-sectoral approach to delivering the services and to use a combination of center-based and home-based programs. Center-based programs include day-care services established under an earlier legislation (Republic Act 6972), preschools, community or church-based early childhood education programs initiated by NGOs, workplace-related child care and education programs, and health centers and stations. Home-based programs include family day-care programs, parent education, and home visiting programs. In addition, the project was designed to enhance the capacities of LGUs to plan, manage, and evaluate the ECD programs in their communities, and to make available a financing facility that would support their policies. This support for implementation of their investment packages consisted of improvements in communication, planning, targeting, the build-up of a dedicated management information system, and training of personnel.

Table 1. ECD Services: Project Components

Expanded program of Immunization (EPI)
Integrated Maternal and Child Health (IMCI)
Micronutrient Malnutrition Control
Parent Effectiveness Service (PES)
Grade 1 Early Childhood Education (8-Week Curriculum)
ECD Service Providers: Rural Health Midwife, Day Care Worker, Child Development Worker, Day Care Mom

*Note:* See Appendix A for a description of these programs.

*Political structures and partnerships.* The program is an interdepartmental partnership—indeed, according to the ECCD Act, a joint responsibility—of the Department of Education (DepEd), Department of Health (DOH), Department of Social Welfare and Development (DSWD), Department of Interior and Local Government (DILG), Department of Labor and Employment (DOLE), Department of Justice (DOJ), Department of Agriculture (DOA), the National Economic Development Authority (NEDA), and the National Nutrition Council, reflecting the program’s multi-sectoral package of child and family-focused interventions. Each

of these national agencies has been assigned functions, and representatives are members of a national ECCD Coordinating Council, which is also the function of the CWC. The Secretaries of DepEd, DOH, DSSD, and DILG serve as co-chairpersons of this Council.

As mentioned, the program is also a partnership between the national agencies and LGUs. In fact, while policy-making is the primary task of the national Council, the ECCD Act places the principal responsibilities of providing and financing ECCD programs on LGUs. LGUs have been tasked with providing basic ECCD services, supporting for the organization of parent cooperatives to initiate ECCD programs, financing the salaries of ECCD service providers, and providing counterpart funds for the development of ECCD service providers and support of local ECCD Coordinating Councils. Cognizant of the broad public support for child-related programs, many mayors of these LGUs are active supporters of the ECCD programs.

With respect to funding, the national agencies are expected to provide counterpart resources for the establishment and expansion of ECCD programs in poor and disadvantaged communities (that is, the fourth, fifth, and sixth class municipalities, including the urban poor). These funds are supposed to be available through the Municipal Development Fund. The ECCD Act explicitly allows resource mobilization from intergovernmental donors and financial institutions for the support of poor areas. In fact, the 1999 ECD project, the first activity of the ECCD program, has been assisted by the Asian Development Bank and the World Bank. In addition, its monitoring and evaluation component has been implemented by a collaboration of local researchers and international experts.

*Learning and experimentation.* The ECCD program recognizes the importance of monitoring and evaluating the impact of the different interventions. Research, testing and assessment of innovative approaches, and the establishment of service standards are tasks that have been given to the CWC. Early in the implementation of the 1999 ECD Project, a joint team of local and international experts developed a rich set of indicators of program effectiveness and survey instruments to measure various dimensions of child development. A Baseline Indicator Survey was conducted in 2000 in the project's three participating regions and also in a selected non-program region that has served as a comparison population. An Endline Indicator Survey is planned for 2005, upon the completion of the pilot ECD project.

In addition to these indicator surveys, the project launched an *evaluation study* that is assessing the impact of specific interventions included in the service delivery package. The study is examining the impacts on the availability and quality of service delivery in the program areas, on parental child-rearing behaviors, and ultimately on children's physical, language, cognitive, and social development. Two surveys of the same sample of households from program and non-program regions have now been completed. One noteworthy product of these activities has been the development of a diagnostic tool, the Revised ECD Index. The rest of this paper discusses the early results of the program's impact evaluation study.

## Learning About the Program's Impact

Evaluation, a systematic assessment of the impact of policies and programs, can reveal valuable lessons for effective policymaking. It is with this in mind that the Philippine government agreed to allocate part of the 1999 ECD Project funds to monitoring and evaluation. The current project covers just three regions in the country, providing an opportunity to test established, as well as new, approaches to ECD before these are scaled up to other regions. In this respect, three sets of questions are important.

*Policy questions for the evaluation.* One important set of questions pertains to how a municipality has chosen the package of services funded by the project, how the municipality finances its part of the co-financing scheme, how it disseminates information about the new ECD services, and how it selects project staff. Variables that indicate delays in implementation or funding, for example, are likely to affect observed program impact at a given point in time but may be obtained only by interviewing municipal or *barangay* officials and/or providers.

A second set of questions relates to how the project is changing the access to and the quality of service delivery. Providers of ECD services differ in many dimensions – whether they are public, NGO or private providers; sources of financial resources; number and skills of personnel; ranges of services; availability of non-personnel inputs; intensity of use; prices for (or contributions from) users; and convenience of use from the perspective of the target population, such as hours of operation and location. The project may affect a number of these dimensions of service delivery, and the effects on ECD of the project—and who are most affected—may depend importantly on the nature and magnitude of these service delivery changes. To understand the pathways through which the project affects parental child-rearing behavior and, ultimately, children, it is critical to observe and examine these many process changes. Addressing the question of the project's impact on service delivery requires detailed information on how service delivery is transformed over the course of the project.<sup>8</sup>

A third set of questions refers to the impact of the project on its specific goals regarding children's development. As mentioned, many of the specific project interventions are not new. This is certainly the case with the immunization package, day care centers, and the rural health workers. Evaluating the value-added of the project for these interventions is thus about the impact of additional financial and technical resources. The ECD project is also a complex one. Given its design, it would be nearly impossible to focus only on the effect of one package or sub-

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<sup>8</sup> Both the pilot and program *barangays* were designated as program *barangays*. Although the pilot *barangays* were supposed to have received initial ECD project inputs prior to the data collection phase of this study, these project inputs were delayed. Some officials from the DSWD also agree that the delay in the implementation of the ECD inputs may not have resulted in considerable differences in the delivery of services in the pilot and program areas. Hence, for this analysis, both pilot and program areas were considered as program areas and no distinction between these two types of ECD participating *barangays* was made. Moreover, for Round 1 and Round 2, only the sample in these program *barangays* was analyzed.

component, ignoring the effect of the others, since this could result in an overestimate of the impact of a single sub-component if the other sub-components exert positive effects. This omission is likely to lead to an even larger bias when strong complementarities exist. The question is also related to another one that the evaluation must address -- is the integrated form of the project more effective than what had existed previously?

*Evaluation strategy.* Two surveys of the same 5,000 households were organized and implemented by the Office of Population Studies (OPS) at the San Carlos University in Cebu City in 2000 and then again in 2002, first under the leadership of Borja and then of Gultiano, in collaboration with Behrman and King on sample and questionnaire design. Some details are provided in Appendix B. In brief, the same survey questionnaires, measurement tools, and protocols were used in both surveys. Data were collected at the municipal, *barangay*, household, and individual levels in two program regions and one non-program or control region. The overall response rate for the surveys was high at 96 percent. The resulting total number of children aged 0-4 years in 2000 was approximately 8,000.

Although the control region was chosen to be as similar as possible to the program regions and the sample households in that region were selected randomly, the average characteristics of the sample households in the program and control regions differ significantly in several respects (Table 2). For example, the proportion of households that are urban is twice as high in the program regions as in the control region and the percentage of household heads with more than elementary education is 25 percent larger in the program regions than in the control region. Because of these significant differences between the program and control regions, simply comparing the differences in ECD indicators between the regions does not provide a measure of impact. As a first estimate of impact, we estimate the change in each ECD indicator between the two survey rounds separately for the program and control regions, and then we compare the change in the program regions with the change in the control region (that is, computing a double-difference in the ECD indicator). Thus,

$$\text{Impact} = (\text{Change in ECD indicator between Round 1 and Round 2 in the Program Regions}) - (\text{Change in indicator between Round 1 and Round 2 in the Control Region})$$

If this double-difference is positive and statistically significant, then the program has had a positive impact, at least with respect to that ECD indicator. This statement does not apply in all instances, however, as it assumes that the socioeconomic characteristics of communities and households stay constant or that they change to the same degree in the program and control regions. Moreover, it assumes that the socioeconomic characteristics affects only the levels of the ECD indicators, not the rate of change in those indicators. If, in contrast, these characteristics change over time or if they do not change randomly in the program and control regions, then it would be very difficult to assert that the double-difference in the ECD indicator is evidence of the impact of the ECD program. The rich data on community, household, and individual characteristics obtained by the two surveys allow us to address this concern by making it possible to control for these characteristics in computing double-differences.

Table 2. Households' socioeconomic characteristics, ECD evaluation samples

Socioeconomic characteristics	Program regions		Control region	
	Round 1	Round 2	Round 1	Round 2
Residing in urban areas		42.6		20.1
Highest education level of household head				
None	1.5	1.3	2.9	3.2
Some elementary	40.0	39.2	52.9	53.5
Some high school	34.4	33.2	28.1	26.6
Some college	24.1	26.3	16.1	16.7
Residing in neighborhood with electricity	84.1	84.0	77.2	79.4
Household uses electricity as light source	69.4	72.3	57.4	58.7
Household has piped water supply	47.9	47.9	41.1	33.8

\* Totals may not add up to 100 because of rounding errors.

## Evaluation Results

The Philippine ECD project is not yet complete and so the evaluation itself remains ongoing. In addition, while the project was launched in a few of the municipalities as far back as three years ago, in most, full project implementation has been much more recent. Thus, for some of the program municipalities, the project may not have had time to take root even by the second survey round, and so the results presented here are likely to be partial. Nonetheless, the selected findings presented suggest that the program is benefiting children in the program areas.

*Access to and utilization of ECD programs.* Municipalities appear to be successfully providing basic ECD-related health services. Except for the Infant Feeding Program and the Day-Care Mom Program, nearly all the municipalities in the program and control regions already have basic health and social services programs for children and mothers in place (Table 3). Hence, the proportion of the municipalities that have specific programs did not change at all between the baseline survey and the first follow-up survey, and the ECD project mainly has been providing expanded support for existing programs. This is very similar to the pattern in the control region.

Table 3. Availability of ECD-related programs

Presence of ECD-related program	Program Regions		Control Region	
	Round 1	Round 2	Round 1	Round 2
With Expanded Program on Immunization	37	38	57	57
With IMCI Program	34	37	43	57
With IMCH Program	36	38	56	56
With Growth Monitoring Program	37	38	57	57
With Infant Feeding Program	14	26	17	17
With Vitamin A Supplementation Program	37	38	57	57
With Iron Supplementation Program	37	38	57	57
With Iodine Supplementation Program	35	38	54	54
With Early Child Education Program	37	38	55	55
With Day Care Program	37	38	57	57
With Parent Effectiveness Service Program	30	36	41	31
With Day Care Mom Program	6	16	4	1
Total (N municipalities)	37	38	57	57

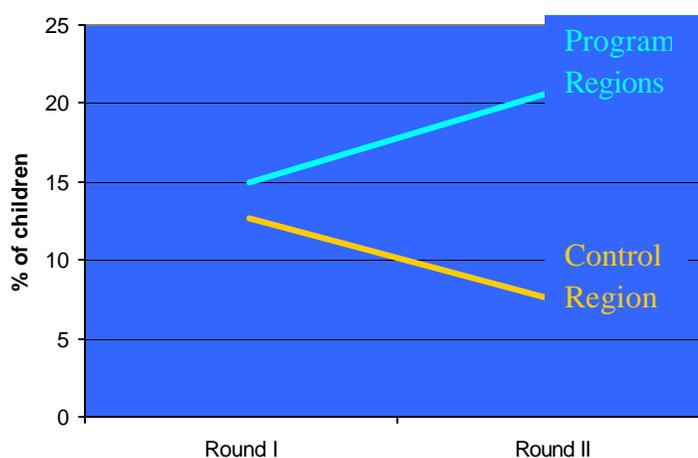
\*In Round 2, one Municipal Health Officer in Region 6 claimed that the IMCI program was in place only during the baseline year.

\*\* One municipal mayor was not interviewed in Round 1.

We focus on the utilization rate of three programs.

(a) Feeding programs are meant to supplement or augment the food intake of children, particularly in areas where malnutrition is prevalent. Parallel to the increase in the number of municipalities with a feeding program, we also see a significant increase in the percentage of children availing of such programs in the program regions (Figure 2). It is not clear why there is a significant decrease in the control region, given that the number of municipalities with a feeding program did not decrease over the same time period. This observation in the control period might be worth looking into during the next follow-up survey.

Figure 2. Percent of children using feeding programs



(b) Vitamin A supplementation decreases the risk of blindness and of illnesses such as measles and diarrhea for children 6 to 59 months. The largest increase in vitamin A supplementation is seen among children 6-12 months. The percent of children aged 6-11 months

who took vitamin A supplements increased by more than 25 percentage points in the project regions, while it rose by only 10 percentage points in the control region. The increase in vitamin A supplementation among older children aged 12-59 months differed little between the program and control regions (Figure 3).

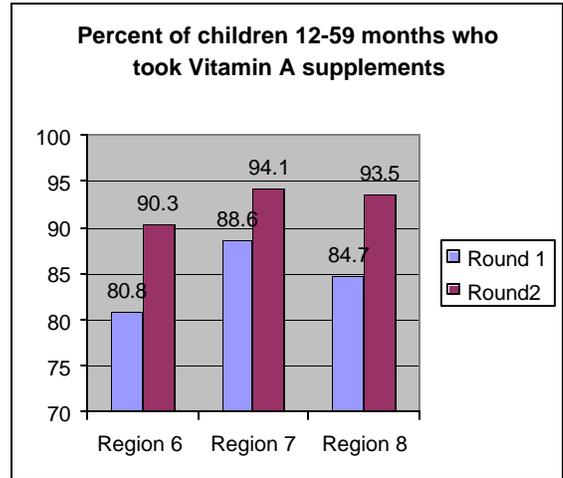
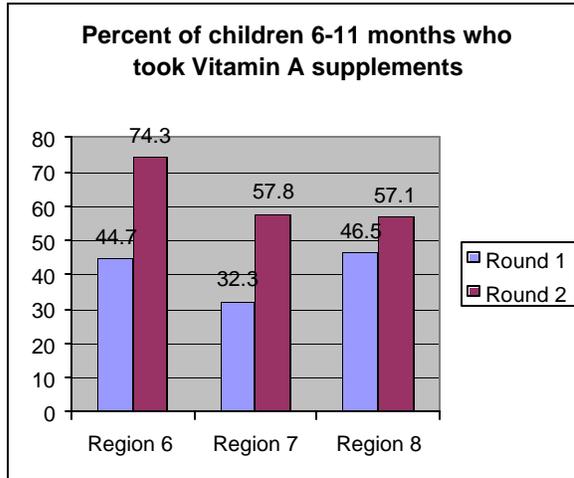
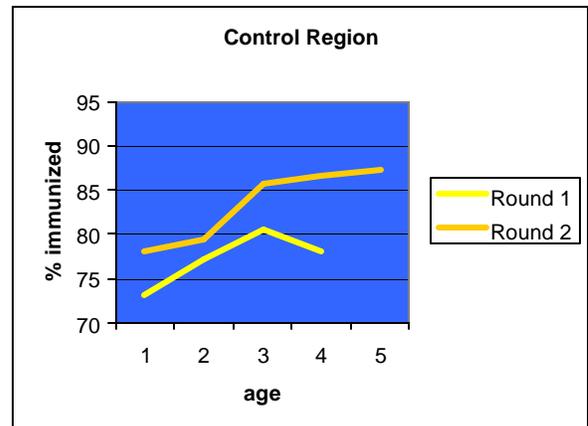
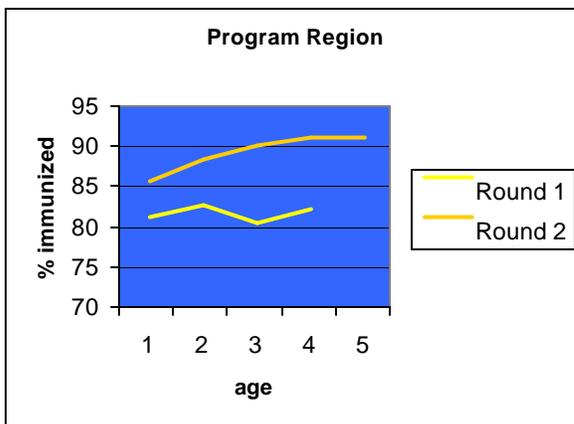


Figure 3. Vitamin A Supplement Intake

Figure 4. Percent of children fully immunized



(c) Child immunization is an important factor to ensure the health of children and build their resistance against illnesses. The Expanded Program on Immunization is one of the major programs of the Department of Health that has universal coverage, and indeed there was virtually no change in the availability of an immunization program in our sample program and control regions (Table 3). Nonetheless, the program appears to have contributed to an increase in immunization rates among children. Figure 3 shows a notable rise in the proportion of children who are fully immunized in both program and control regions. For one-year-olds and four-year-olds, the difference between the program and control regions is not evident. However, there was

nearly twice as large an increase in the program regions as in the control regions for the two- and three-year-olds (Table 4). In sum, the program appears to have increased the percentage of children who are fully immunized by 3.6-4.8 percent, depending on the age of the child.

*Impact on cognitive and language development.* The project collected information on a Revised ECD Checklist (REC) developed by a team of experts at the Department of Psychology of the University of the Philippines.<sup>9</sup> This checklist was designed to measure child development in several domains: gross and fine motor skills, receptive and expressive language, socio-emotional skills, cognitive skills, and self-help skills. It was applied to all children except those with serious health problems (e.g., poorly controlled seizures), debilitating anomalies (e.g., meningocoeles and cerebral palsy) or those with special needs (e.g., autism). This instrument was normed to reflect the distribution of scores for a larger random population of children in the Philippines.

**Table 4. Program impact on percent of children fully immunized**

	2001/2	2002/3	Difference
Program regions			
Age 2	80.93	86.69	5.76
Age 3	78.58	88.42	9.84
Control region			
Age 2	77.29	79.50	2.21
Age 3	80.61	85.66	5.05
Impact			
Age 2	3.55		
Age 3	4.79		

Grouping those children who had scored average or above in the tests, we see that there was about a 13-16 percent development lag in the program and control regions (Table 5). There was a significant improvement in Round 2 in both program and control regions, but the increase

**Table 5. Program impact on cognitive and language development of children**

	2001/2	2002/3	Difference
Program regions	86.9	93.3	6.4
Control region	83.7	88.5	4.8
Impact			1.6

Notes: Percentage of children of average or better performance on ECD Index developed specifically for program. Index includes motor, language, and cognitive test scores.

in program regions dominates that in the control region, suggesting a program impact of 1.6 percent in the increase of children who scored average or better.

There are several components of the project that are likely to have contributed to this impact.

The project is funding the construction of additional day-care centers, upgrading of existing ones, and an increase in the supplies available to these centers in the program regions. The project is providing Child Development Workers more supplies and equipment for their work. It also supports a range of services that enhance parental involvement in child care and development and

<sup>9</sup> Drs. Lourdes Ledesma and Elizabeth Ventura of the University of the Philippines, Diliman, were the authors.

that teach parents more efficient ways of childrearing and what the children need for their physical and mental development. The Child Development Worker conducts workshops on these services. More in-depth analysis of our data on these service providers is planned for the future and is expected to reveal the factors that might explain the larger improvement in the cognitive, language, and motor development of children in the program regions.

*Impact on physical development.* Growth monitoring is an important ECD service because it can identify children in need of help. One aim of this project is to increase to monthly the frequency with which children under two years of age are weighed. During the first survey, the proportion of children under two weighed was already high in the sample regions, but as shown in the Table 6, this percentage increased in both program and control regions. The difference in the increase, or the impact of the program, however, was just 2 percent.

Table 6. Percentage of children (0-24 months) weighed

	2001/2	2002/3	Difference
Program regions	81.0	88.8	7.8
Control region	76.8	82.5	5.7
Impact			2.1

Measured weight—as well as height—of children at ages 1-4 indicate, however, that the program has not produced gains. The gains in height and weight of these children in program regions were no better than the gains of children in the control region. The results were more mixed on stunting as measured by height-for-age, since in one program region the average gain was slightly smaller than the average gain in the control region; in the case of the other program region, however, there was no difference from the control(?) region. With respect to wasting which is measured by weight or weight-for-height, there was no observable difference in the averages for the program regions and the control region. **Final Remarks**

The ECCD Program is a major initiative by the Philippine government to coordinate various efforts to minimize the risks to the welfare of children and to promote their potential for development. It harnesses public interest in child-related policies and investments and musters the political commitment and enthusiasm in local governments and national agencies for these policies and programs. But to scale up the reach of the program, an increase in general public awareness of available ECD-related services is necessary. If parents and communities are uninformed or uneducated about the impacts of early childhood development or of the services that are available to them, service utilization will be minimal and change will not occur. For this reason, the program has allocated significant resources for intensive information drives and parental education services.

In general, the package of services delivered by the ECCD program is not new, but one important innovation is that the program links sectoral policies that affect young children and integrates multi-sectoral interventions in center-based and home-based programs. This has

changed the country's approach to ECCD. To support this integrated approach, the program trains service providers accordingly—but whether the attitudes, knowledge, and behavior of service providers have really changed is a question that the evaluation study continues to examine. This inquiry is expected to shed light on the channels through which the program improves ECCD indicators.

The strategy laid out by the ECCD Act is consistent with a decentralized system of government: it accords the greatest responsibility for policy-making to a council of national agencies and implementation and financing of interventions to local governments. At the same time, the legislation explicitly recognizes the role of the central government in protecting the poor and disadvantaged populations by charging it with mobilizing counterpart funds to ensure adequate programs for these populations. The donor-financed ECD Project launched in 1999 has allowed the government (and donor supporters) to test an integrated ECCD approach in three poor regions of the country. In addition, it has also been a pilot test of the multi-sectoral governance of the program and of the partnership between the national agencies and the local governments. Delays in the establishment of a functional project management office and in the availability and release of funds, and variation in the degree of implementation across the regions led to needed organizational and managerial changes in the project and produced valuable lessons for the program as a whole.

Lastly, has the ECCD program paid off? The dividends from the program are measured in terms of greater availability and better quality of services at the local levels (municipalities and *barangays*), increased use of these services by families, and ultimately, in terms of gains in the measures of child development. Not enough time has past to assess the full impact on children, but the evaluation results already point to increased service utilization by families in program areas, from infant feeding programs to child immunization, and a few ECD indicators already illustrate gains. To our knowledge, few systematic evaluations of ECD programs utilizing longitudinal data (that is, that follow children from birth or a very young age to later ages) as we do have occurred, so it is useful to end this paper with a brief review of those that have, to obtain comparisons for the Philippine program.

Four programs in the United States provide program services in centralized settings, where children leave their homes to attend a preschool or a day-care center. The Perry Preschool Program supplemented its center-based curriculum with weekly home visits. The Home Intervention Program for Preschool Youngsters (HIPPY), in contrast, is an exclusively parent-focused program that aims to educate parents to be better educators of their children. Through HIPPY, para-professional trainers visit families weekly to give them teaching materials and parenting advice (Baker, Piotrkowski and Brooks-Gunn 1998). Evaluations have found increases in cognitive test scores, at least over a two-to-three-year interval after the program. Long-term assessments of some of the programs find lasting effects in terms of higher educational attainment, higher earnings, lower welfare participation levels, lower arrest records, and lower out-of-wedlock births.

Bolivia's PIDI is an early childhood development program that provides 70 percent of children's nutrient inputs and systematic learning environments for poor children aged 6-72

months in urban areas.<sup>10</sup> Comparisons of children in the program for short (less than two months) and longer durations show that the program has had positive effects on child growth and larger, more significant effects on children's psychosocial development (Todd, Behrman and Cheng 2000). Projecting to adulthood, the effects mean gains in lifetime earnings that suggest fairly high benefit/cost ratios of 1.7 to 3.7.

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<sup>10</sup> The original evaluation design included the collection of baseline data and then periodic follow-up surveys. Information was collected on children (and their households) who were enrolled in PIDI, other children who lived in the same communities but who were not enrolled in PIDI, and others in communities in which PIDI was not available, both for 1995/6 and 1997/8.

## Appendix A. Glossary of Components of ECD Program in the Philippines

<b><i>Expanded Program on Immunization</i></b>	<p>Refers to the provision of immunization services to infants and young children to protect them from immunizable diseases (tuberculosis, diphtheria, pertussis, tetanus, hepatitis B, measles and polio). Also included in this program is the immunization of pregnant mothers with tetanus toxoid to prevent tetanus neonatorum.</p> <p>In the ECD project, this refers to the provision of additional inputs to the EPI Program in all provinces of the program regions including replacement of cold chain equipment (as necessary), training of cold chain technicians in cold chain management, maintenance and repair, training of primary health care staff in EPI skills and reproduction of EPI information, education communication materials and monitoring charts.</p>
<b><i>Integrated Management of Childhood Illnesses (IMCI) Program</i></b>	<p>Refers to a range of services focused on the accurate diagnosis, management and treatment of illnesses among children in outpatient settings. This program seeks the improved management of childhood illnesses (like respiratory infections, pneumonia, diarrhea) with aspects of nutrition, immunization and other factors influencing child health including maternal health.</p> <p>In the ECD project, this refers to the improvement in diagnosis, management and treatment of common childhood diseases and malnutrition with the training for health providers, supply of delivery and diet kits to improve case management conditions affecting the newborn.</p>
<b><i>Integrated Maternal and Child Health (IMCH) Program</i></b>	<p>Refers to a range of services that seek to protect the health of mothers and children like endemic diseases, nutritional disorders, risks and illnesses brought about by pregnancy and childbirth. This program caters to mothers, infants and young children (0-4 years old). In relation to child health, the IMCH program is concerned with prenatal, natal and postnatal services, under five clinic and promotion of breastfeeding.</p>
<b><i>Protein Energy Malnutrition (PEM) Program</i></b>	<p>Refers to services that seek to address the protein energy malnutrition problem with the provision of growth monitoring and infant feeding programs among others.</p>
<b><i>Growth Monitoring Program</i></b>	<p>Refers to services that provide monitoring of the growth of children under six years old.</p>
<b><i>Infant Feeding Program</i></b>	<p>Refers to services that provide food supplements to children who are diagnosed as malnourished.</p>

<b><i>Micronutrient Malnutrition Prevention and Control Program</i></b>	<p>Refers to the provision of services that address protein energy malnutrition (PEM), and micronutrient deficiencies.</p> <p>At the ECD level, this refers to the prevention, management and control of major micronutrient deficiencies (iron, iodine and vitamin A) in preschoolers through mix of direct supplementation, food fortification and deworming of children, provision of weighing scales for infants to identify low birth weight babies requiring iron supplements, deworming tablets and social marketing to promote comprehensive food fortification.</p>
<b><i>Vitamin A Supplementation Program</i></b>	<p>Refers to a range of services that seeks to address the vitamin A deficiency of children and mothers. Included in the services is the provision of free vitamin A capsules.</p>
<b><i>Iron Supplementation Program</i></b>	<p>Refers to a range of services that seeks to address the iron deficiency in the population particularly of children and mothers. Included in this program is the provision of free iron syrup, tablets/capsules.</p>
<b><i>Iodine Supplementation Program</i></b>	<p>Refers to a range of services that seeks to address the iodine deficiency in the population. Included in this program is the provision of free iodized capsules and iodized salt.</p>
<b><i>Early Child Education Program</i></b>	<p>Refers to the administration of an 8 week enriched early child experience (ECE) curriculum that helps children bridge the gap between home and school and improve their readiness for formal education.</p> <p>In the ECD project, this refers to the improvement of the child readiness through an eight-week curriculum module in Grade 1 that incorporates innovative and participatory approaches and complementary health and nutrition inputs (iron supplementation and deworming) to first graders. This program includes the review and improvement of the ECE curriculum, support for training of teachers in the new Grade 1 curriculum, the reproduction and distribution of teaching materials, training of trainers and teachers and the distribution of iron supplements and deworming tablets for Grade 1 entrants. Managed by the Department of Education.</p>
<b><i>Day Care Program</i></b>	<p>Refers to a range of services that seeks to provide early education to children aged 3-5 years, including the provision of day care centers.</p>
<b><i>Parent Effectiveness Services Program</i></b>	<p>Refers to the range of services that enhance parental involvement in child care and development and teach parents more efficient ways of childrearing and what the children need for their physical and mental development. The child development worker conducts workshops on these services.</p> <p>In the ECD project, this refers to the upgrading of the PES program with the provision of the mother and child book (that records the child growth from birth to age six) and distributing the parents' ECD</p>

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manual. In the context of the LGU, the PES includes the training of the child development worker as the key PES provider and responsible for community based parent education. Managed by the DSWD in coordination with the Department of Education (incorporated into the Teacher Child Parent Program) and the DOH (incorporated into the health education programs).

***Day Care Mom Program*** Refers to the range of services and support provided by day care moms to provide child-minding services to children under three years old.

## Appendix B. Sampling Procedure for Household Survey

In the three regions that are relevant for this study, the *barangays*<sup>11</sup> in each province were stratified into (1) pilot *barangays* that were supposed to have participated in a 1998 ECD pilot program, (2) program or target *barangays* of Phase 1 Local Governmental Units (LGUs), and (3) non-program *barangays* or non-targeted *barangays* in the pilot and phase 1 municipalities/cities and other *barangays* in the region that are neither in the pilot nor Phase 1 group. This classification was based on a list of program *barangays* provided to OPS by the Project Management Office (PMO) and that was verified with the DSWD field offices in the respective areas. For each of the three ECD regions, five pilot and five non-program *barangays* were randomly chosen from the list, while the remaining *barangays* were drawn at random from the program *barangays*. Although the pilot *barangays* were supposed to have received initial ECD project inputs prior to the data collection phase of this study, these project inputs were delayed.

In each sample *barangay*, an average of 24 eligible households (i.e., households with 0-6 year old children or households with pregnant women) in Regions 6 and 7 and 14 households in Region 12 were selected. The number of households screened in each *barangay* ranged from 20 to 70 to obtain the desired number of eligible households. The household lists from the 2000 Philippine Census originally were to be used as the sampling frame for the survey. But the Census lists were not available and there were no funds to conduct a complete household listing of sample *barangays*. Therefore households were chosen using the following systematic sampling scheme. The latest information on the total number of households in a *barangay* was first obtained from the *barangay* captain. This number was then divided by the number of households to be screened in that *barangay* to get the sampling interval. For example, if the total number of households was 320 and the number to be screened for eligibility was 20, then the sampling interval for that *barangay* was 16. To start the survey, the *barangay* was first divided into sections (*sitios* or *puroks*). The section from where the household screening was to start was then chosen at random. One household out of the first 16 in that section was randomly selected. Then every 16<sup>th</sup> household thereafter was interviewed. The following screening procedures were implemented for each of the visited households:

- A responsible adult member of the household (preferably the household head) was asked if there were children or pregnant women in the household. If there were none, the interviewer went to the next household.
- If the household had children, the age of the youngest child was first ascertained to ensure including children who were 0-6 years of age. If there were no children under seven or if there were no pregnant women, the next household was visited.

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<sup>11</sup> A *barangay* is the smallest political unit in the Philippines.

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- The resident status of eligible children and pregnant women were then verified. Residents were defined as those adults who had stayed for at least six months in the *barangay* and children who were born to resident parents. If there were no permanent eligible child or pregnant women residents, the interviewer proceeded to the next household.
- If the household had permanent residents who were pregnant or who were under seven years old, it was included in the study.

Table B.1 gives the number of municipalities, *barangays*, eligible households, women and eligible children aged 0-6 years screened in the three regions. The study's overall response rate was high at 96 percent. The resulting total number of children 0-6 years for our analysis is 11,023. In addition to the household surveys, information was collected at the municipality, *barangay*, health and other ECD-related service provider level. These sources provide information that is central to this analysis of whether family background may be in part proxying for health and other ECD-related service provision.

Table B.1. Samples drawn from the program and control areas, phase 1 and phase 2 surveys

Sample	Program Areas				Control Area		Total	
	Region 6		Region 7		Region 8		Round 1	Round 2
	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2		
Municipalities	24	24	14	14	57	57	95	95
Barangays	96	96	96	96	96	96	288	288
Households	1,456	1,392	1,959	1,887	1,911	1,756	5,326	5,035
Pregnant women with no eligible children in phase 1 (Newborn children in Phase 2)	49	42	81	68	58	47	188	157
Children 0-4	2,115	1,999	* 2,913	2,780	*2,894	2,661	*7,922	7,440

Table B.2 summarizes the major components of data collected for each of the four levels of aggregation covered.

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Table B.2. Major components of data collected in evaluation survey by level of aggregation

Levels of aggregation	Methods	Respondents	Evaluation survey
Municipalities	Structured questionnaire, administrative data, open-ended interview	Mayors, Municipal ECD Team members, and other agencies involved in childhood development	What ECD services provided prior to project (location, content, including private providers) Expenditures and funding sources How projects selected?
Barangay	Structured questionnaire, administrative data, open-ended interviews	<i>Barangay</i> captains	What ECD services provided prior to project (location, content, including private providers) Expenditures and funding sources
Providers	Structured questionnaire, administrative data, open-ended interviews	Rural Health Midwives Child Development Workers Day Care Workers Day Care Mothers <i>Barangay</i> Health Workers <i>Barangay</i> Nutrition Scholars Grade 1 Teachers	Services provided (population targeted)
			Resources and expenditures Prices (contributions) Location Indices of quality Public-private Utilization rate Capacity How project affected in qualitative ways. Knowledge and attitudes about ECD practices and programs
Households	Structured questionnaire	Mothers or main child care providers	Parental behaviors related to ECD (e.g., using services) Characterizing the household (composition, parents' education, expenditures/ assets) Time use (labor supply, child care) Knowledge and attitudes about ECD practices and programs Distance to ECD services
		Mothers or main child care providers, target children	Indices of ECD: physical, language, cognitive and social development

## References

- Adair, Linda. 1999. "Filipino children exhibit catch-up growth from age 2 to 12 years," *Journal of Nutrition*. 129, 1140-1148.
- Adair, L. and D.K. Guilkey. 1997. "Age-Specific Determinants of Stunting in Filipino Children," *Journal of Nutrition*, 127, 314-320.
- Alderman, Harold, Jere R. Behrman, Victor Lavy, and Rekha Menon. 2001. "Child Health and School Enrollment: A Longitudinal Analysis," *Journal of Human Resources* 36:1 (Winter 2001), 185-205.
- Alderman, Harold, Jere R. Behrman, David Ross, and Richard Sabot. 1996. "Decomposing the Gender Gap in Cognitive Skills in a Poor Rural Economy." *Journal of Human Resources* 31:1, no. Winter (1996a): 229-54.
- Behrman, Jere R. 1996. "The impact of health and nutrition on education," *The World Bank Research Observer (International)*, (February 1996) 11:23-37.
- Behrman, Jere R. and Anil B. Deolalikar. 1988. "Health and Nutrition," in Hollis Chenery and T.N. Srinivasan, eds., *Handbook of Development Economics, Vol. 1*, Amsterdam: North-Holland.
- Behrman, Jere R. and Anil B. Deolalikar. 1989. "Wages and Labor Supply in Rural India: The Role of Health, Nutrition and Seasonality," in David E. Sahn, ed., *Causes and Implications of Seasonal Variability in Household Food Security*, Baltimore, MD: The Johns Hopkins University Press, 107-118.
- Behrman, Jere R., Andrew Foster, and Mark R. Rosenzweig. 1997. "The Dynamics of Agricultural Production and the Calorie-Income Relationship: Evidence from Pakistan," *Journal of Econometrics* 77:1 (March), 187-207.
- Currie, Janet and Duncan Thomas. 1995. "Does Head Start Make a Difference?" *American Economic Review* 85:3 (June), 341-364.
- Currie, Janet and Duncan Thomas. 1999. Early Test Scores, Socioeconomic Status, and Future Outcomes. Cambridge, MA: NBER working paper #W6943.
- Deolalikar, Anil B. 1988. "Nutrition and Labor Productivity in Agriculture: Estimates for Rural South India," *Review of Economics and Statistics* 70:3 (August), 406-413.
- Deutsch, Ruthanne. 1999. "How Early Childhood Interventions Can Reduce Inequality: An Overview of Recent Findings," Washington, DC: InterAmerican Development Bank, mimeo.
- Fafchamps, Marcel, and Agnes R. Quisumbing. 1999. "Human Capital, Productivity, and Labor Allocation in Rural Pakistan." *The Journal of Human Resources* XXXIV:2, no. Spring (1999): 369-406.

- Foster, Andrew D. and Mark R. Rosenzweig. 1993. "Information, Learning, and Wage Rates in Low- Income Rural Areas," *Journal of Human Resources* 28:4 (Fall), 759-79, reprinted in T. Paul Schultz, editor *Investment in Women's Human Capital*, University of Chicago Press, 138-170.
- Glewwe, Paul, Hanan Jacoby and Elizabeth King. 2000. "Early Childhood Nutrition and Academic Achievement: a Longitudinal Analysis," *Journal of Public Economics* 81 (September 2001), 345-368.
- Glewwe, Paul and Elizabeth M. King. 2000. "The Impact of Early Childhood Nutrition Status on Cognitive Achievement: Does the Timing of Malnutrition Matter? " *World Bank Economic Review* 15:1 (May 2001), 81-113.
- Glewwe, Paul and Hanan Jacoby. 2002. "Economic Growth and the Demand for Education: Is there a Wealth Effect?" (Forthcoming in *Journal of Development Economics*).
- Golden, M.H. 1994. "Is Complete Catch-Up Growth Possible for Stunted Malnourished Children?" *European Journal of Clinical Nutrition* 48, s58-s70.
- Haddad, Lawrence and Howarth Bouis. 1991. "The Impact of Nutritional Status on Agricultural Productivity: Wage Evidence from the Philippines," *Oxford Bulletin of Economics and Statistics* 53:1 (February), 45-68.
- Karoly, Lynn A., et al. 1998. *Investing in Our Children: What We Know and Don't Know about the Costs and Benefits of Early Childhood Interventions*. Santa Monica, CA: Rand Corporation.
- Manasan, Rosario G. 2002. *Philippines Country Study on Meeting the Millennium Development Goals*. Makati City, Philippines: United Nations Development Program.
- Martorell, R. 1995. "Results and Implications of the INCAP Follow-up Study," *Journal of Nutrition* 125 (Suppl), 1127S - 1138S.
- Martorell, R. 1999. "The Nature of Child Malnutrition and its Long-Term Implications," *Food and Nutrition Bulletin* 20, 288-292.
- Murnane, Richard J., John B. Willet and Frank Levy. 1995. "The Growing Importance of Cognitive Skills in Wage Determination," *Review of Economics and Statistics* 77:2 (May), 251-266.
- Myers, Robert. 1995. *The Twelve Who Survive: Strengthening Programmes of Early Childhood Development in the Third World*. Second Edition, Michigan: High/Scope Press.
- Neal, Derek, and William R. Johnson. 1996. "The Role of Premarket Factors in Black-White Wage Differences." *Journal of Political Economy* 104:5, 869-95.
- Office of the Population Studies, University of San Carlos. 2002. *A Study of the Effects of Early Childhood Interventions on Children's Physiological, Cognitive and Social Development (Basic Indicators Study)*. Cebu City, Philippines.

- Pitt, Mark M., Mark R. Rosenzweig, and M.N. Hassan. 1990. "Productivity, Health and Inequality in the Intrahousehold Distribution of Food in Low-Income Countries." *American Economic Review* 80:5, no. December (1990): 1139-56.
- Pollitt, Ernesto. 1990. "Malnutrition and infection in the classroom : summary and conclusions," *Food and Nutrition Bulletin (International)*; 12:178-90 September 1990.
- Psacharopoulos, George. 1994. "Returns to Investment in Education: A Global Update," *World Development* 22:9 (September), 1325-1344.
- Republic of the Philippines. 2002. *The Early Childhood Care and Development Act and the Implementing Rules and Regulations. Manila, Philippines: Unicef.*
- Sahn, David E. and Harold Alderman. 1988. "The Effect of Human Capital on Wages, and the Determinants of Labor Supply in a Developing Country," *Journal of Development Economics* 29:2 (September), 157-184.
- Schultz, T. Paul. 1999. "Productive Benefits of Improving Health: Evidence From Low-Income Countries." *New Haven CT: Yale University, Mimeo*, no. December: 1-30.
- Schultz, T. P., and A. Tansel. 1997. "Wage and Labor Supply Effects of Illness in Cote D'Ivoire and Ghana: Instrumental Variable Estimates for Days Disabled." *Journal of Development Economics* 53:2, no. August: 251-86.
- Strauss, John and Duncan Thomas. 1995. "Human Resources: Empirical Modeling of Household and Family Decisions," in Jere R. Behrman and T.N. Srinivasan, eds., *Handbook of Development Economics*, Volume 3A, Amsterdam: North-Holland Publishing Company, 1883-2024.
- Strauss, John, and Duncan Thomas. 1998. "Health, Nutrition, and Economic Development." *Journal of Economic Literature* 36:2, 766-817.
- Thomas, Duncan and John Strauss. 1997. "Health and Wages: Evidence on Men and Women in Urban Brazil," *Journal of Econometrics* 77:1(March),159-187.
- Young, Mary Eming. 1995. "Investing in Young Children," Washington, DC: World Bank Discussion Papers, No. 275.