



**Understanding Children's Work**  
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# Child labour related programmes: a review of impact evaluations

B. Henschel

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As part of broader efforts toward durable solutions to child labor, the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), and the World Bank initiated the interagency Understanding Children's Work (UCW) project in December 2000. The project is guided by the Oslo Agenda for Action, which laid out the priorities for the international community in the fight against child labor. Through a variety of data collection, research, and assessment activities, the UCW project is broadly directed toward improving understanding of child labor, its causes and effects, how it can be measured, and effective policies for addressing it. For further information, see the project website at [www.ucw-project.org](http://www.ucw-project.org).

This paper is part of the research carried out within UCW (Understanding Children's Work), a joint ILO, World Bank and UNICEF project. The views expressed here are those of the authors' and should not be attributed to the ILO, the World Bank, UNICEF or any of these agencies' member countries.

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\* Understanding Children's Work project

# **Child labour related programmes: a review of impact evaluations**

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## **ABSTRACT**

This report is concerned with reviewing programme impact evaluations undertaken in the areas of child labour and education. The studies investigate the effects of promoted interventions on individuals, household and institutions exploring intended and unintended consequences, whether positive or negative. It is important for the evaluation system to be able and assess targeting efficiency and short- to long-term outcomes. For a correct estimate of the programme impact, the type of evaluation methodology employed is fundamental. We present several case studies of programme evaluation, which may be classified in two major categories: 'Social Fund Programmes' and 'Targeted Human Development Programmes'. Our major concern is to highlight the evaluation of the effectiveness of the education programmes.

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## CONTENTS

1.	Summary.....	1
2.	Introduction .....	3
3.	Impact Evaluation Methodologies.....	5
3.1	The Roy-Rubin-Model .....	5
3.2	Experimental or Randomised Control Design.....	6
3.3	Quasi-experimental and Non-experimental Control Design .....	7
3.4	Matching Methods.....	7
3.5	Double Difference Methods .....	8
3.6	Instrumental Variables Methods.....	8
4.	Case Studies of Programme Impact Evaluation with focus on Child Labour and School Enrollment: <i>Social Investment Funds</i> .....	10
4.1	Cross-country Impact Analysis of Social Funds .....	10
4.2	The Bolivian Social Fund.....	12
4.3	The Peruvian Social Fund.....	13
4.4	The Zambian Social Fund.....	15
4.5	The Honduras Social Fund .....	16
4.6	The Nicaraguan Emergency Social Fund .....	17
4.7	Morocco's Social Priorities Programme (BAJ).....	18
5.	Case Studies of Programme Impact Evaluation with focus on Child Labour and School Enrollment: <i>Targeted Human Development Programmes</i> .....	20
5.1	The Mexican Antipoverty Programme – PROGRESA .....	20
5.2	Colombia's PACES Programme .....	21
5.3	The Brazilian Child Labour Eradication Programme – PETI.....	22

5.4	The Bangladesh Food-for-Education Programme .....	24
6.	Conclusions .....	26
7.	References .....	33

## 1. SUMMARY

1. There are several approaches to evaluate the efficiency of a programme. We will focus on one of them: Impact Evaluation. Programme impact evaluations study the changes and effects of interventions on individuals, households and institutions, policies and other dimensions affected by the promoted interventions. They are indispensable for providing feedback and helping improve the effectiveness of programmes. Impact evaluations are aimed at answering the following fundamental question: What is the expected, or mean outcome gain to individuals targeted by programme intervention relative to the hypothetical situation (counterfactual) had they not been targeted? The difficulty is given by the fact that not all actions of the targeted beneficiaries can be attributed to the programme. It is a major challenge to extract the true programme effect on the targeted subjects. This causal effect of the treatment on the treated is given by the difference between the outcome under treatment and the outcome in the counterfactual situation. It is not possible to observe both situations for the same individual simultaneously, but it is possible to construct an appropriate counterfactual. Depending on the availability of the data type, different evaluation methodologies can be employed to resolve the so-called 'Fundamental problem of causality'. In an experimental environment the evaluation parameter 'average treatment effect on the treated' allows for estimating the population average of gains from treatment. The random assignment framework tries to balance the selection bias between the treatment and control group. It ensures statistical equality of observed and unobserved characteristics, and therefore independence of potential outcomes and assignment to the programme. In case treatment and comparison groups cannot be created through experimental design, quasi or non-experimental methodologies can be applied to carry out impact assessment. These methods generate comparison groups that resemble the treatment group, through the following econometric methodologies: matching, difference-in-difference and instrumental variable approach. The matching approach concentrates on choosing from a larger survey an ideal comparison group that matches on the basis of observable characteristics the treatment group. In order to balance the observable characteristics of the two groups the so-called balancing scores can be applied (*propensity score*). The double difference method compares the before-after change of project beneficiaries' outcome with the before-after change of non-participants' outcome. Finally, the instrumental variable approach allows identifying the exogenous variation in outcomes attributable to the programme and therefore resolves the selection bias problem.

2. A limited number of case studies have concentrated on estimating programme impact on levels of child work. Although the key objective of some of the programmes was not child labour, the promoted interventions have directly or indirectly influenced this issue. This is the case of the Targeted Human Development Programmes in Mexico, Colombia, Brazil and Bangladesh. Programme interventions consisted of providing educational grants to children, specifically vouchers that covered half the cost of private secondary school, monthly stipends or monthly food rations. The success of these programmes seemed to lie in conditioning these interventions on behaviours that increase human capital accumulation, e.g. children's school attendance or their academic performance. A reduction in child labour and an increase of school enrollment rates were experienced after these programme interventions. However, there is no evidence that child labour substitutes schooling. The Mexican study further compared the growth of school enrollment with the reduction in work participation. The study suggested that girls in

particular tried to combine their time spent on domestic work with school at the expense of their leisure time.

3. Social Fund Programmes carried out in several countries generally had first been established as emergency responses to economic crises. With the passing years they adopted the idea of focusing on longer-term development needs, particular with respect to social sector infrastructure investments. Programme interventions in the education sector consisted mainly of building and rehabilitating schools, financing furniture and basic equipment. Empirical analyses have not addressed the issue of child labour. However, impact evaluations of the education sector interventions have found in almost all discussed Social Fund case studies an increase in school attendance rate and a positive impact on school attainment and age-for-grade rate.



## 2. INTRODUCTION

4. Policy makers are always concerned about the effects of their policies. The main task of applied research is therefore to provide reliable information on the effects of policy actions. Since allocation of funds highly depend on the achieved result, impact evaluation studies gain growing value. There are several approaches to evaluate the efficiency of a programme. In this paper we will focus on one of these approaches: Impact Evaluation. We are concerned with reviewing programme impact evaluations undertaken in the areas of child labour and education. The studies investigate the effects of promoted interventions on individuals, household and institutions exploring intended and unintended consequences, whether positive or negative. Programme impact evaluations may be carried out at various stages and in various ways in order to improve the effectiveness of the programme design and its execution. It is important for the evaluation system to be able and assess targeting efficiency and short- to long-term outcomes. For a correct estimate of the programme impact, the type of evaluation methodology employed is fundamental. It needs to be stressed that the evaluation methodologies, as described in this report, are not the only one useful to carry out impact evaluation.

5. We present several case studies of programme evaluation, which may be classified in two major categories: ‘Social Fund Programmes’ and ‘Targeted Human Development Programmes’. Our major concern is to highlight the evaluation of the effectiveness of the education programmes.

6. The objectives of Social Funds are tailored to the specific country in question. Generally, they were first established as an emergency response to economic crisis and, with the passing years adopted the idea of focusing on longer-term development needs, particular with respect to social sector infrastructure investments. Social Funds are a quick and agile financial mechanism. Their main strategic aim is to empower communities and local level institutions to take the lead in identifying and executing investments. Although a diverse set of instruments is used across countries, Social Funds share some common characteristics. They have a mandate to appraise, finance and supervise the implementation of small social projects according to established procedures and targeting criteria. They are designed to bring to light and respond to the demand of local groups. Further, they must uphold strict accountability and transparency, underlining their operational autonomy. Today, Social Funds define menus of eligible sub-programmes that concentrate especially on social infrastructure. The main categories included are the following: education, health, water and sanitation, economic infrastructure and social assistance. Despite the growing popularity of Social Funds, few have been subject to empirical investigation that concentrated on the assessment of their impact. This issue is of central concern to policymakers in the social sectors, and particularly to the World Bank, being a principal supporter of Social Funds.

7. Targeted Human Development Programmes are integrated poverty reduction programmes designed to increase the capacity of the poor to accumulate human capital. The programmes are directed primarily to poor and vulnerable families with pre-school and school age children. Their main long-term objective is to eradicate the structural causes of poverty by fostering investment in the next generation’s human capital. A secondary objective is to alleviate poverty in short term, mainly through monetary transfers. Strict enforcement and requirements ensures that the long-term objectives are met. Therefore, transfers are conditioned on behaviours that increase human capital accumulation, including children’s health care, school attendance, early childhood

development and prenatal care. Several Targeted Human Development Programmes have been implemented during the past decade.

8. The report proceeds as follows. Section III presents the methodology of impact evaluation. Section IV discusses several case studies of Social Fund programme impact evaluation. Section V looks at impact evaluation studies of Targeted Human Development Programmes. Section VI concludes. Section VII gives an overview of the programmes impact by interventions.

### 3. IMPACT EVALUATION METHODOLOGIES

9. Impact evaluation is an indispensable tool to assess whether a programme is achieving its objective, how the beneficiaries' situation changed as a result of the programme and what the situation would have been without the programme. The difficulty of programme impact evaluation stems from the fact that not all actions of the targeted beneficiaries can be attributed to the programme. Therefore, the main task for analysts is to extract the true effect of the promoted intervention (treatment) on the targeted variables. Inference about the impact of a treatment on the outcome of an individual involves speculation about how this individual would have responded had he not received the treatment. This question cannot be simply measured by the outcome of a programme, as there may be other factors or events that are correlated with the outcomes that are not caused by the programme itself.

#### 3.1 The Roy-Rubin-Model

10. The framework serving as a guideline for the empirical analysis of the above-described fundamental problem is the potential outcome approach, often called the Roy-Rubin-model. The main building blocks of this model are individuals (participating in the programme or not) treatment and potential outcomes. In the basic model there are two potential outcomes ( $Y^T$ ,  $Y^C$ ) for each individual, where  $Y^T$  indicates a situation with programme participation and  $Y^C$  without, i.e. the individual is then in the so-called comparison group. Further we define a binary assignment indicator  $D$ , indicating whether an individual actually participated in a programme ( $D = 1$ ) or not ( $D = 0$ ). The treatment effect for each individual is then defined as the difference between his / her potential outcomes:

$$\Delta = Y^T - Y^C \quad (1)$$

11. As described in equation (1) the causal effect of the treatment on the targeted subject is the difference between the outcome under treatment and the outcome in the counterfactual situation. Only under controlled natural experiments it is possible to observe both outcomes. Since this approach is not feasible in social science, the causal effect of the treatment cannot be calculated as described in equation (1). This issue may be summarised as the 'Fundamental problem of causality'. The observed outcome for each individual is given by:

$$Y = D * Y^T + (1 - D) * Y^C \quad (2)$$

12. Equation (2) shows that the two potential outcomes,  $Y^T$  and  $Y^C$ , cannot be observed for the same individual simultaneously. The unobservable component in (1) and (2) is called the counterfactual outcome, so that for individuals who took part in a program ( $D = 1$ ),  $Y^C$  is the counterfactual outcome, and for those who did not ( $D = 0$ ) it is  $Y^T$ . In this sense the problem of evaluating the individual treatment effect can be interpreted as a missing data problem because for any given individual the counterfactual outcome cannot

be estimated. In the following we will discuss some methods that try to deal with the ‘Fundamental problem of causality’.

### 3.2 Experimental or Randomised Control Design

13. In a first stage we present methods that are based on data sets generated in an experimental environment. The starting point of this literature is the assumption that the treatment effect  $\Delta$  for each person must be independent of the treatment of other individuals. In the statistical literature this is referred to as the stable unit treatment value assumption (SUTVA) and guarantees that treatment effects can be estimated independently of the size and composition of the treatment population. The most prominent evaluation parameter for estimating the population average of gains from treatment is the so-called ‘*average treatment effect on the treated*’:

$$E(\Delta | D = 1) = E(Y^T | D = 1) - E(Y^C | D = 1) \quad (3)$$

14. This parameter gives an answer to the following question: ‘What is the expected, or mean outcome gain to individuals who received treatment to the hypothetical situation had they not received it?’

15. The second term in (3) describes the hypothetical outcome without treatment for those people who received treatment and therefore again it is unobservable. If the condition

$$E(Y^C | D = 1) = E(Y^C | D = 0) \quad (4)$$

16. holds, the non-participants can be used as an adequate control group. The key concept in this context is the *randomised* assignment of individuals into treatment and control groups. The random assignment framework deals with the so-called selection bias problem. This problem is caused by the fact that project beneficiaries may differ from non-beneficiaries in characteristics that are unobservable but affect both the decisions to participate in a project and its outcome. The randomisation design does not remove the selection bias but tries to balance it between the treatment and control groups in order to cancel it out. It ensures that, on average, both groups are statistically equivalent in all characteristics, observed and unobserved and therefore the potential outcomes are independent of the assignment to the programme.

17. The experimental (randomised) control design is generally considered the most robust of the evaluation methodologies. Although this approach seems to be very appealing in providing a simple solution to the fundamental evaluation problem, there are also some problems associated with it. First of all, it needs to be pointed out that the estimated effect is not the average treatment effect, but the average effect of the treatment on the treated. This is often mistaken when it comes to drawing the conclusions of the conducted study. Furthermore, in practice it may be difficult to assure that assignment is truly random. It can also be complicated to implement as it must be built into the programme at its initiation and as it implies also denying benefits or services to otherwise eligible members of the population only for the purposes of the study. Individuals in the

control group may change certain of their identifying characteristics during the experiment, which could invalidate the results. This problem could be resolved by bringing the control group into the programme at a later stage once the evaluation has been designed and started (*pipeline counterfactual*). According to this technique, random selection determines *when* the eligible beneficiary receives the programme, not *if* they receive it at all. The ideal data required for this method would be a baseline survey and follow-up surveys on both beneficiaries and non-beneficiaries of the project, which entails high costs and time consumption.

### 3.3 Quasi-experimental and Non-experimental Control Design

18. If it is not possible to create treatment and comparison groups through experimental design two other methodologies, the quasi-experimental and the non-experimental, can be applied to carry out the project impact assessment. These methods generate comparison groups that resemble the treatment group, through the following econometric methodologies: matching method, double difference method and the instrumental variable approach.

### 3.4 Matching Methods

19. Among these techniques, matching is one of the most appealing quasi-experimental approaches. The basic idea underlying the matching approach is to pick from a larger survey an ideal comparison group that matches on the basis of observable characteristics the treatment group. The match can be conducted before (prospective studies) or after (retrospective studies) the intervention. That being done, the differences in the outcomes between the well-selected control group and the treatment group can be attributed to the programme of the project. Of course matching is first of all plagued by the same problem as all quasi/non-experimental estimators, which means that assumption (4) cannot be expected to hold when treatment assignment is not random. However following Rubin (1983), treatment assignment may be random given a set of covariates ( $Z^I$ ). According to Rubin the construction of a valid comparison group through matching is based and depends on the so-called conditional independence assumption (CIA), i.e. the two potential outcomes are independent of the assignment to treatment, conditional on  $Z^I$  and can be written formally as:

$$Y^T, Y^C \perp D \mid Z^I \quad (5)$$

20. In order to balance the observable characteristics of the two groups and in order to keep distortion low, the so-called *balancing scores* can be applied. The *propensity score*, i.e. the probability of receiving a project intervention (treatment) is one promising and the most common balancing score. The propensity score makes it possible to create a quasi-experimental situation by supposing allocation to each group to be random. It is calculated using the observed characteristics of the treatment group. Once the predicted values of the probability of participation have been created for every sampled beneficiary and non-beneficiary, the treatment group scores are then matched to those of the comparison group. Next the 'nearest neighbour' needs to be located, or in other words, the closer the propensity scores in the comparison group to those of the treatment group,

the better the match. In sum, the propensity score guarantees independence between the allocation of the treatment and the potential outcomes. The ideal data required for this method would be a representative sample survey of eligible non-beneficiaries as well as one for the beneficiaries of the programme. The larger the sample of eligible non-beneficiaries, the better to facilitate good matching. In case the two samples come from different surveys, it is essential for them to be highly comparable. A large survey, e.g., census, national budget or LSMS type survey (that over-samples beneficiaries), could be used. It can occur that controlling for selection on observables may not be sufficient since remaining unobservable differences might still lead to a biased estimation of treatment effects.

### 3.5 Double Difference Methods

21. To account for selection on unobservables, we may refer to the **double difference** or **difference-in-difference** method (DiD). This estimator can be interpreted as an extension to the classical before-after estimator (BAE). Whereas the BAE compares the outcomes of participants after they participate in the programme with their outcomes before they participate, the DiD-estimator eliminates common time trends by subtracting the before-after change in non-participant outcomes from the before-after change for participant outcomes. The necessary data for this technique is a baseline survey, which must cover both non-participants and participants of the programme, and one or more additional follow-up surveys after the programme was put in place. The two types of surveys should be highly comparable. After calculating the mean difference between the 'after' and 'before' values of the outcome indicator for each of the treatment and comparison groups, the difference between these two mean differences provide the impact of the programme. In this context, the above-discussed propensity-score matching method can help assure that the comparison group is similar to the treatment group before doing the double difference.

### 3.6 Instrumental Variables Methods

22. In case no baseline survey of the same household is available, another methodology (non-experimental), the so-called **instrumental variables** approach, (IV) can be taken in consideration. As discussed above, the selection bias problem arises when the outcome and the selection into the programme are both correlated with an unobservable characteristic of the individuals. Therefore, an instrumental variable needs to satisfy two conditions: first, that the variable affects the probability of selection, and second, that it does not affect the outcome or response variable that is used to evaluate the programme. The first condition implies that the instrumental variable needs to be included among those variables that are used to match treatment and control groups. Nonetheless, the assumptions, upon which the IV method is based, are in general statistically untestable. In particular, the second condition usually cannot be verified empirically. If the instrumental variable and the outcome variable are uncorrelated, then it is difficult to understand whether this is due to no programme effect or due to lack of induced variation in the selection probability. On the other hand, if the correlation is nonzero, then we do not know whether or not there is a direct effect on the outcome variable. Hence, the choice of an instrumental variable has to be justified with ad hoc arguments, which may be more or less convincing. This non-experimental IV approach permits identification of the

exogenous variation in outcomes attributable to the programme, and underlines the idea that project placement is not random but rather purposive and measurable. The instrumental variables are used to predict programme participation in order to see how the outcome indicator varies with the predicted values.

23. The two-stage Least Squares (2SLS) is a special case of the instrumental variable technique in which the 'best' instrumental variables are used. We understand a good or best IV to be highly correlated with the regressor for which it is acting as an instrument. A natural suggestion is to bring together selected exogenous variables to create a combined variable to act as a 'best' instrument. This implies regressing each endogenous variable being used as a regressor on all observable exogenous variables that affect selection into the treatment, and then using the estimated values of these endogenous variables from this regression as the required instrument. Therefore the instrument fulfils both necessary conditions, i.e. it is not correlated with the unobservable characteristic of the individuals that affect the outcome and the selection into treatment, while at the same time it is correlated with the treatment itself. The 2SLS estimator is a legitimate and consistent instrumental variable estimator and can be used to obtain an unbiased, but often less efficient, estimate of the intervention effect. Nevertheless, this technique entails low computational cost and in many cases it may be the only available evaluation design, as random assignment is often not politically feasible and the information required for an unbiased matched comparison is rarely available. The ideal data for this technique would be a cross-section data representative of both the beneficiary and the non-beneficiary population.

#### 4. CASE STUDIES OF PROGRAMME IMPACT EVALUATION WITH FOCUS ON CHILD LABOUR AND SCHOOL ENROLLMENT: SOCIAL INVESTMENT FUNDS

24. Social Investment Fund programmes have adopted the idea of focusing on longer-term development needs particular with respect to social sector infrastructure investments. Their key objective is not child labour and the empirical analyses have not addressed this issue. However, several of the promoted interventions have directly or indirectly influenced the issues of school enrollment and attendance, age-for-grade measures, repetition rate, school attainment and child work.

##### 4.1 Cross-country Impact Analysis of Social Funds

25. One of the major recent studies of project evaluation is the analysis of six social funds by Sherburne-Benz L. et al (2001). The study represents a first attempt to conduct a systematic, cross-country impact analysis of social funds using household surveys. Research includes the following case study countries: Armenia, Bolivia, Honduras, Nicaragua, Peru and Zambia. The main interest of the research effort was the use of accurate impact evaluation methodologies in order to compare the outcomes of communities that received social fund investments to the outcomes experienced by control or comparison groups. The evaluation assesses the subprojects identified and put into operation between the years 1993 and 1999. It is based on the analysis of data from over 21.000 households surveyed for the purpose of this study and 42.000 households from national household surveys, as well as facilities surveys of over 1.200 schools, health centers, and water and sanitation projects. The objectives of the study can be summarised by the following four queries.

**26. *Did social fund interventions reach poor geographic areas and poor households?***

By answering this targeting question, researchers examined the distribution and allocation of social fund resources across districts based on each district's poverty level. Generally, social funds had reached all districts and municipalities, revealing a broad geographic coverage. In all six country studies, poor districts received more on a per capita basis than wealthier districts. All cases show that social funds were concentrated chiefly among the poor. On the other hand, it must be pointed out that some of the beneficiaries appeared not to be poor. This finding may be attributable to the nature of the investments made. Some community level infrastructure and services were included to which all households, poor and less poor, had general access, making perfect targeting impossible.

**27. *What is the quality and sustainability of social fund infrastructure investments?***

The facility surveys were used to assess the impact of subprojects concerning physical infrastructure of schools, health centers, water and sewage facilities. Particular attention was given to the provision of complementary non-infrastructure inputs (staff, materials,



and maintenance), representing important compliments and therefore being essential for a successful investment. The findings were positive across all the subprojects. In general, social fund investments led to an expansion in physical capacity and to an increase in the availability of basic services. Despite the success of the projects, some problems remain (e.g. inadequate supply of medicines in health centres).

**28. *How cost efficient are social funds and the investments they finance?*** The examination focused on two aspects of cost efficiency: unit costs for subprojects and general programme efficiency. Cost comparison was obstructed by several methodological difficulties. The results of this study vary across countries and sectors and show that on the one hand social funds did not always have lower unit costs than comparable investment mechanisms, but on the other hand that they enjoyed lower overhead expenses on average.

**29. *How do social funds impact living standards?*** The study concentrates on how social funds affect the access of households to basic services and their effect on health and education outcomes. Each country case study evaluated education and health projects; only a few concentrated on water and sanitation projects. In general, the projects selected for impact assessment represented a large share of the social fund portfolio. This ensured the focus on areas where social fund investments were highly concentrated. The education subproject represents in all six countries the largest share of investments of any other type of subproject. We will focus on the discussion of these subprojects in order to demonstrate results concerning school enrollment and child labour. Five aspects of the impact of social fund education projects have been examined: quality and expansion of schools' infrastructure; provision of complementary materials and staff; impact on school size; impact on enrollment / attainment and sustainability of the investments. The core of the education impact assessment used household data to compare a sample of social fund beneficiaries to a counterfactual composed of a sample of comparable individuals who had not benefited from social fund education investments. In all country cases, the sample size of the household surveys was statistically representative of the universe of project beneficiaries. But the facility-level school surveys often had a sample size that was not large enough to create representative samples of treatment and comparator schools.

**30.** For generating the counterfactual, each of the countries applied a different impact assessment methodology. Bolivia represents the only country with both baseline and follow-up data available from schools and households and therefore the only country where the experimental design was feasible. In Honduras, Peru and Zambia the matched comparison technique using 'pipeline' projects was applied. And the Armenia, Bolivia, Nicaragua and Zambia evaluations used statistical propensity score matching techniques to determine the counterfactual.

**31.** The impact of social fund investments in education on infrastructure in all the cases studied may be summarised as positive. The schools' physical capacity and provision of basic services (water, electricity) was expanded together with the availability of non-infrastructure inputs (textbooks, teachers). Despite this positive outcome, several countries continued having problems regarding provision and availability of basic services. This was the case of Nicaragua and Armenia, where water service supply in

schools continued to be lacking. Further, in Honduras, social fund schools continue having lower access to water and electricity than the comparator schools.

32. According to the school-level facilities data, the results indicate an increase of the number of students attending social fund schools in all cases studied. Nonetheless, there was no significant difference in the growth rates between social fund and non-social fund schools in Armenia and Bolivia. School enrollment rates were positively affected in beneficiary communities in Armenia, Nicaragua and Zambia, but not in Bolivia and Honduras. However, in Honduras, the results do show some indications of a positive impact on enrollment, but unfortunately the sample was not large enough to confirm this impact. In Peru, districts where social fund expenditures for school improvement were largest achieved the biggest gain in primary school enrollment. In the rural areas, these enrollment gains were found only among the poorest Peruvian populations. The results of Peru and Honduras must be interpreted bearing in mind the following observation. In both countries, enrollment rates had already been high before project investments, and therefore it might have been difficult to take hold of any statistically significant net changes.

33. The national data for Zambia, divided into rural and urban areas, indicated an increase in school enrollment only in the urban areas. Similarly in Bolivia and Peru, no positive impact achievement was estimated in the rural areas. These findings suggest that it may be more difficult to change enrollment rates in rural areas than in urban areas. This fact can be explained by demand-side factors in rural areas, which include the need for children to be involved in household chores and in agriculture. Additionally, school accessibility and household expectations about the benefits of education may influence the choice of participating at education. The evaluation of educational efficiency included assessing educational attainment with focus on the age-for-grade measures. This indicator points out whether children are enrolled in the grade level that corresponds to their age. It was acknowledged that children enrolled in the appropriate grade for their age were less likely to drop out of school. In Honduras, Nicaragua and the rural areas of Zambia, the impact on age-for grade measures among primary school students was significant and positive. Peru indicates a positive impact on years of accumulated education among primary and early secondary age students. In general, all countries, excluding Bolivia, turned out to have a positive effect on school attainment. These results indicate important gains in educational efficiency.

## 4.2 The Bolivian Social Fund

34. The groundwork for the cross-country study discussed above dates back to 1991, when the Bolivia impact evaluation was designed to assess the Bolivian Social Fund. It started with data collection of a baseline survey in 1993. An analysis of this baseline data for impact evaluation was conducted by Pradhan M., et al. (2000). It is an initial contribution showing how to use pre-intervention data for assessing the social investment fund using different evaluation methodologies. Analysing the baseline data before collecting the follow-up data (completed in 1998) can be very useful. First, information on facilities that in future benefit from the programmes allows for corrections while implementing the projects, particular with respect to targeting. Further, in the case of experimental or matched comparison designs, the evaluation methodology can be tested by assessing the comparability of the treatment and comparison group. As discussed

above, non-comparability of the two groups may have implications for the statistical methods used for assessing the impact and the required sample size for the follow up survey.

35. The analysis concentrates on evaluating the education sector using two methods for creating the control groups. The major findings of this study emphasise that a random selection of a group of eligible schools, that in future were receiving active promotion, made the assessment of the projects' impact quite straightforward. The attempt of a quasi-randomised assignment by matching the treatment and comparison group schools on observable characteristics turned out not to yield directly comparable groups. Therefore, a more promising approach, the instrumental variable method, was used. Several community characteristics provided valid instruments as they affected the selection into the project while they did not have any effect on the pre-intervention response variables. The 2SLS estimator showed that the number of NGOs and knowledge of the project itself had a significant positive effect on the selection into the treatment group but none on the output, standing consequently for a valid instrument.

#### 4.3 The Peruvian Social Fund

36. Another social fund analysis conducted as background resource for the Social Funds 2000 study is the evaluation of the Peruvian Social Fund, FONCODES by Paxson C. et al. (1999). FONCODES was created by the Peruvian Government in 1991 in order to supply direct financing to community initiatives as part of the Government's programme. The main issue was to address the social costs of adjusting present economic crisis. In 1994, the World Bank and IDB became main external financiers and with the end of the immediate economic crisis, the social funds' objectives expanded. It focused on building local capacity in project planning, execution, operations and maintenance of small-scale infrastructure and public services. Further, it concentrated on investments in productive projects designed to stimulate economic activity in poor communities in order to achieve longer-term poverty reduction. Most community-based projects in the education sector had entailed the construction and renovation of classrooms. A series of centrally designed 'special' projects had been executed. They included activities like school breakfast programme and the distribution of school uniforms for children.

37. The FONCODES evaluation study deals with the targeting question and with the impact on educational outcomes. In addition, it contributes, like the above-mentioned study of the Bolivian Social Fund, to the evaluation methodology literature. An important characteristic of the Peruvian Social Fund is the type of its targeting. FONCODES targets its investments by using an index of 'unmet basic needs' (UBN). It directs the resources to small geographic regions trying to reach above all the poor areas and poor households. The communities of these districts choose themselves a programme from a menu and present a proposal for funding. The social fund functions then as a financial intermediary rather than executing the programmes. This is an important aspect regarding the choice of evaluation methodologies and will be discussed below. The data sources used for this study are the following:

- The 1994 and 1997 Living Standards Measurement Survey (LSMS);
- The Household Survey conducted by the Peruvian Statistical Institute (INEI) in 1996

- and information on the geographic distribution of the social fund allocations and expenditures kept by FONCONDES itself.

38. The targeting of the social fund investments in the education sector had experienced a progressive improvement over time. FONCONDES had reached the poor districts and further the poor households living in these areas. Various estimation methodologies were applied to analyse the impact of the social fund on school attendance rates, the probability that children are at the right school level for their age (age-for-grade), and travelling time to school. The analysis was constrained by the following important limitations of the data. If the same districts and households were represented in both available cross-section data (1994 / 1997), then fixed effects estimator could be employed. However, only 25 % of all households interviewed fall into this subset of the data (panel), which would give the analysis an unclear result. As the assignment of the programme resources was not random, specific econometric strategies had to be employed to create and mimic a quasi-experimental situation. Further, the absence of credible village-level measures of the social fund investments led to an evaluation of the programme impact based on district-level measures of FONCODES expenditures. Moreover, the lack of information on measures regarding the time children spend at school, pupil teacher ratios, and scholastic achievement made an analysis of the social fund impact on the school quality not feasible.

39. The evaluation was based on the instrumental variable approach. For estimating the 'gross' effect of FONCODES expenditures on educational outcomes, a good instrument appeared to be the 'allocation' of the funds to the districts. The reason lies in the district-level index of UBN, which was the basis criteria for allocation and did not have any effect on the outcome. The results emphasise a highly significant impact of the social fund expenditures on school attendance for all younger children in a household. Households in districts that received more funding were at the beginning less likely to send all their primary-aged children to school. Generally, they experienced greater increases in the likelihood that all children attended school than did households in districts that received less funding. There is no evidence of any impact of the social investment fund expenditures on the school attendance of older children (IV method). Alternatively, an attempt with the OLS estimates suggested that districts that received more funding had greater gains in attendance for older children. This method did not take into consideration any potential unobservable variable, which might have been correlated with better educational outcomes, e.g. the 'taste' for education. Therefore, the contradicting results of the two methods may be explained by the fact that districts that had appealed for school funds had specific characteristics that would have at any rate led to a higher school attendance among older children.

40. Regarding the impact on age-for-grade measures, the project had no significant positive effect. This result may be interpreted taking into account the following consideration. It had been acknowledged that a positive programme effect on school attendance might increase the incentive of older children who were not previously attending school to participate in education. This leads to the fact that children may be enrolled in the grade level that does not correspond to their age.

#### 4.4 The Zambian Social Fund

41. Another programme evaluation study deals with the assessment of the Zambian Social Fund conducted by Chase R.S. et al. (2001). The first Social Recovery Project, launched in 1991 by the Government of the Republic of Zambia and the World Bank, was an extension of the Micro Project Unit (MPU) that until that point had received only European Union funding. In 1995, the project was assessed as successful and a second Social Recovery Project was launched again with World Bank financing. The programme focused primarily on strengthening communities' ability to improve their situation through self-help. The social fund relied on self-targeting in order to reach the poor. Menus of eligible project types focusing on rehabilitating schools and health centers were offered that automatically became more attractive to the less wealthy communities. The targeting analysis demonstrates that the social fund had reached absolutely poor households. However, this success results primarily from Zambia's high overall poverty incidence. There was a general rural and urban difference with regards to targeting, revealing the rural self-targeting as less effective. The education programmes were more successful in reaching the rural poor, while health programmes were more effective in urban areas.

42. The data used for the impact assessment is the Zambia Living Conditions Monitoring Survey (LCMS) conducted in 1998 (other national household surveys in 1991 and 1995). The survey consists of a base sample of 13,500 households and offers information representative of the entire population as well as of each of Zambia's district. The LCMS was modified for the impact assessment by adding an extra survey module addressing issues specific to social infrastructure. In addition, the LCMS used another 2,950 households in 99 communities that reflected the geographic and sectoral distribution of the social fund's activities.

43. The aim of the study was to estimate the programme's impact on household education and health outcomes. Two techniques were employed for creating the control group: the propensity score matching and the pipeline match. The results show an increase in education demand, but the enrollment effect is limited to urban areas. There is some evidence that school rehabilitation increased the proportion of children attending their appropriate grade (age-for-grade), particularly in rural areas. Overall, it appears that social fund interventions help support and satisfy unmet demand among Zambian households for improved education services. Regarding the impact on health outputs, it seems that the programme intervention had no effect on the actual level of sickness, but did nonetheless increase community awareness of health issues.

44. The Nicaragua (FISE) and Honduras (FHIS) Social Funds followed a similar evolution. They were initially set up in 1990 to support the governments during a period of economic adjustment. Then, in a second stage, the FISE began to undertake pilot projects focussed on strengthening municipal management in order to encourage more sustainable subprojects at the local level. In Honduras, the social fund expanded its mandate to include support to the governments' decentralisation strategy, focusing primarily on the poorer areas.

#### 4.5 The Honduras Social Fund

45. The World Bank carried out an impact evaluation of the second Honduras Social Investment Fund in 1998 (Walker I., et al). The central objective of the FHIS2 included the construction of social infrastructure related to human capital formation. The main activity focused on the building and improvement of classrooms and primary schools. The social fund contributed 58 % of new schools and 61 % of all new classrooms build in Honduras in 1994-97. Further, it has been an important source of resources for primary health, constructing 72 % of rural health centres in the period 1994-98. Regarding drinking water, the project was orientated to system rehabilitation and to upgrade service quality. Interventions in the sanitation sector included sewerage projects and building simple pit latrines and hydraulic latrines. The impact analysis was limited to water and sewage, education and health programmes, and concentrated on infrastructure works in order to achieve comparability with other studies undertaken as part of the above discussed Social Fund 2000 initiatives. In this section we will highlight the findings of education programmes. Under the FHIS 2, the programmes' resources were assigned to municipalities based on their populations and relative poverty levels, with more resources per capita going to the poorer municipalities. The main sources of information used were the following:

- The bi-annual Household Survey of the Honduran Office of Statistics and Census (7.200 households).
- A survey of 96 projects, divided into half for beneficiaries of the FHIS investments and the other half for those which were in the pipeline for investments.
- A survey of 2.600 households in the area of influence of all the subprojects.

46. The basic analytical procedure is a comparison between households that have received social fund interventions as well as households in the pipeline for the programme. Regarding the targeting of the social investment fund, the resource distribution was according to an 'unmet basic needs' index. The targeting analysis reveals a progressive distribution of the FHIS 2 at municipal level compared to the previous funds and highlights a more positive output at household level. Apparently, a large proportion of the resources reached the poor and there was a good correspondence, at local level, between the choice of projects and the community's priorities.

47. The impact evaluation illustrates that the improvement in the unmet basic needs in the programme communities was superior to the improvement of the other groups, thus indicating a general positive programme impact. In order to determine the specific impact of the social investment fund, estimates of its contribution to the total increase in the social physical infrastructure for education, health, water and sewage were undertaken (for the period of 1994 – 1998). The largest impact was achieved in the construction and improvement of primary schools, which corresponds to the main activity of the programme. There was an increase of 11 % in the number of primary schools and 15 % in the number of primary classrooms in Honduras, which led to a reduced national ratio of students per classroom. This result reflects the effort to transform one-teacher schools into multi-teacher schools through programmes oriented towards the improvement of the

quality of basic education. It was assumed that the social fund investments in building and improving schools would have had a positive impact on the gross enrollment rate for children aged 6 to 12. Further, a positive effect on the age-for-grade statistics of the treatment group compared to the pipeline communities was expected. But the findings of the impact assessment report no difference in the gross enrollment rate in households that were part of the programme and those households present in the pipeline communities. A multivariate analysis was employed to check for the possibility that a positive impact on enrollment rates had been hidden by the effect of differences in the impact of other independent variables between the comparison groups. The results of this analysis suggest that the probability of being enrolled decreased for rural areas. Further, a positive correlation between household income and the probability of being enrolled was pointed out. Other variables included in this model had no statistically significant impact on enrollment. Hence, the final result of this investigation reports no measurable impact on the enrollment rate, even though other inter-household differences in socio-economic conditions were taken into account. The impact of the social fund education programme on the grade-for-age rate was positive; marking above all children aged 8 and 9.

#### 4.6 The Nicaraguan Emergency Social Fund

48. The last input for the Social Funds 2000 study presented here concerns the Nicaraguan Emergency Social Investment Fund carried out in 1998-99 (Pradhan M., Rawlings L.B, 2000). The social fund created in 1990 had played a key role in improving living conditions and development opportunities among the poorest segments of the population. The main focus was to improve the quality and sustainability of priority social infrastructure in poor areas in accordance with community demands. Like other social funds, the FISE included sub-projects targeting education, health, water and sewerage. This FISE impact evaluation seeks to answer the by now well known question: 'had the social investment fund not existed, what would have been the conditions of the facilities and beneficiaries in the programme beneficiaries communities?' The evaluation of the social fund impact between 1994 and 1997 makes use of the following data sources:

- Living Standards Measurement Survey 1998;
- FISE Household Survey, which applied the questionnaire from the 1998 LSMS to a sample of social fund beneficiary households and comparator households (1312 FISE and non-FISE households);
- FISE Facilities Survey (131 FISE and non-FISE facilities).

49. The study did not have the benefit of baseline data collected prior to deciding to conduct the evaluation. As social fund targeting was demand-driven and based on a poverty map, randomisation was not feasible. Instead, the FISE impact assessment used a matched comparison evaluation design. Within this framework, two types of matching between the treatment and comparison group were applied in order to lend robustness to the impact estimates. The first type, the 'FISE Comparison Group', was constructed based on geographic proximity and similarities between the sites (schools and rural health posts) receiving the investment. The other type, 'Propensity Comparison Group', was

taken from households that matched the FISE treatment households using a propensity score matching technique.

50. Summarising, the two comparison groups give fairly consistent results regarding the impact of FISE primary education investments on net enrollment, the education gap and age in first grade. The effect on enrollment rates was positive, significant and very large (10 %) for the Propensity Comparison Group while it was smaller (2%) but still significant for the FISE Comparison Group. These results were confirmed by the school-based enrollment growth observed by the Facilities Survey. Nonetheless, it needs to be pointed out that as a result of better staffing and better facilities at FISE schools, children who were not previously attending school were now attracted to the new circumstances and decided to return. Additionally, parents obligated to send their children to expensive private schools switched back to the local public school after social fund interventions had improved them. Both comparison groups indicate the following results: a reduction in the education gap from 1.8 to 1.5 years and a decrease in the age at which children enter into primary school from 8.6 to 6.8 years. The results also showed that the impact of FISE education investments on enrollment was higher for girls, that the education gap was reduced more for children from the poorer quintiles and that the age at first grade was slightly more reduced for boys than for girls. Absenteeism in the FISE schools was very high (average 6.8 days per month). It was still a better situation compared to the FISE Comparison Group, but worse if measured up to the Propensity Comparison Group, rendering the results inconclusive. With regards to the primary school repetition rate, the assessment shows a drop from 11 % or 19 % to 7 %, depending on which comparison group is used. This result is significant only for the Propensity Comparison Group.

#### 4.7 Morocco's Social Priorities Programme (BAJ)

51. The evaluation efforts of the Social Funds 2000 study discussed above can be seen as a foundation for subsequent Social Fund impact assessment studies. Today, based on the methodology developed in the case studies presented so far in this report, several programme impact evaluations are being applied in different countries. The World Bank Development Economics Research Group (DECRG) has conducted an evaluation of the decentralised Social Sector Programmes in Morocco. (Jacoby H., 2000). The major objective of Morocco's social priorities programme (BAJ) is to increase access to basic social services for the poor in rural areas. It is a multi-sectoral project, including preventive and curative health care, maternal and neonatal care, and primary education. The programme is targeted to the provincial level but its resources are not distributed uniformly throughout each targeted province. Its implementation is decentralised and the responsibility lies with the governments of each of the provinces elected into the programme. This decentralisation leads to variation in efficiency regarding delivering social services, making the evaluation of the BAJ's difficult. The analysis concentrates on the impact of the social sector programmes on access to social services. A cross-sectional data on individuals was used for this evaluation.

- The Moroccan Living Standards Survey (MLSS 1990-91 interviews 3.300 households & MLSS 1998-99 interviews 5.100 households).



52. Both rounds of survey results were pooled in a total sample of 3.827 rural households (32 % of them are in BAJ provinces in 90-91 and 42 % in 98-99). The surveys are multi-topic and nationally representative, containing information on access to and utilisation of health facilities and schools. The data allow for comparison of average changes over time between provinces selected for the BAJ programme and those not selected (*difference-in-difference estimator*). The suitability of the DiD estimator depends on the targeting of the programme. The selection of provinces into the programme was carried out by ranking them on the basis of a set of objective indicators derived from census data, and choosing the 14 lowest ranked. The adjusted difference-in-difference estimator 'corrects' for permanent differences in BAJ and non-BAJ provinces induced by this targeting based on poverty levels. It assumes programmes to have a heterogeneous impact that can be estimated using several approaches. One method is to extend the difference-in-difference estimator in order to provide several programme effect estimates, one for each BAJ province and then aggregated to form an overall estimate of programme impact. This illustrates which of the provinces benefiting from the treatment do better relative to all non-beneficiaries. An alternative and more efficient analysis the characteristics of the particular provinces. The number of province types and the proportion of each type in the population are estimated. In this case one can outline the probability that any given province is either a 'high impact' type or a 'low impact' type, conditional on observed characteristics.

53. The empirical analysis concentrates on the health and education sector. As expected, provinces not part of the programme outperform project beneficiaries on all the outcomes. This is due to the private market for social services (e.g. medical services), which is more active in the better-off non-BAJ provinces. All outcome variables show some gains between the two rounds of surveys. There is no gender inequality in access to health services, although girls are slightly disadvantaged in school enrollment. Primary school enrollment was estimated for children aged 7 to 10. The simple regression adjusted difference-in-difference estimator was used in a first stage. The findings were negative, and although the BAJ programme did have an overall effect in the provinces selected for the project, this could not be shown in this sample. In a second stage, outcome gains attributable to the programme were considered to be heterogeneous across the provinces. Due to the comparison of coefficients across outcomes it was possible to highlight the successful provinces. The results show no relationship between the health and education impacts. Concentrating on school enrollment, a weakly positive project impact was estimated nationwide. The alternative method divided the 14 provinces selected for the programme into two 'types'. The results identify those obtaining a gain in girls' school enrollment and those that did not (about two-thirds fall in the former category), without dealing with the distinction between high and low impact.

54. An additional analysis was conducted regarding children temporal allocations (i.e., school, work and idle). This study evaluated whether any increase in school enrollment was accompanied by a decline in the incidence of child labour. Using a sample of children aged 7 – 14, the results show over one-fifth of boys and girls working in both survey years. Child labour is equally present in 1990 and 1998, but more common in BAJ provinces. There is no difference in work participation with regards to gender, but work participation rates increase progressively with age. The estimated impact of the programme for girls is a reduction in work incidence, but this impact is statistically insignificant. Therefore, it cannot be concluded with much certainty that the Social Sector Programs have had the effect of moving children out of the labour force and into school.

## 5. CASE STUDIES OF PROGRAMME IMPACT EVALUATION WITH FOCUS ON CHILD LABOUR AND SCHOOL ENROLLMENT: *TARGETED HUMAN DEVELOPMENT PROGRAMMES*

55. Targeted Human Development Programmes adopt an integrated approach to developing the human capital of the poor by addressing the educational, nutritional and health care needs of poor families. They have mainly been established in the early-mid 1990s. The major strategy of these interventions is to provide grants to poor families with young children on the condition that they keep their kids in school and/or visit health centres. These grants may fall under the form of vouchers, cash or food rations.

### 5.1 The Mexican Antipoverty Programme – PROGRESA

56. Impact assessment studies have rarely addressed the issue of child labour. One attempt was the evaluation of the *progres*a programme in Mexico. (Skoufias E., Parker S.W., 2001). *Progres*a is an antipoverty programme introduced for the first time countrywide in 1997. It is focused on increasing investment in human capital, measured by education, health and nutrition. In order to achieve this objective, *progres*a conditions cash transfers on children's enrollment and regular school attendance, as well as on clinic attendance. This multi-sectoral focus was believed to have a great social return. It was intended that conditioned cash transfer programmes would simultaneously increase child school enrollment and decrease child work. However, not all kinds of work may be substituted for schooling. In addition, increased school attendance may replace the leisure time rather than work time of children. Regarding the mechanism for delivering the resources, *progres*a gives benefits exclusively to the mothers of the household. It was agreed that mothers use the provided resources in a manner that responds to the family's immediate needs. The monetary educational grants were provided for each child less than 18 years of age enrolled in school between the third grade of primary and the third grade of secondary school. In order to substitute the potential income children could have earned conditional on their age, the grant amount increased progressively with children moving to higher grades. Grants were slightly higher for girls than for boys in junior high school. The other two components of the programme, health and nutrition, provided basic health care for all members of the household and also included fixed monetary transfer for children with signs of malnutrition, pregnant and breastfeeding mothers.

57. The empirical analysis of the impact of *progres*a on children's human capital investment and work used the following data sources:

- Encuesta de Características Socioeconómicas de los Hogares (ENCASEH), the survey of household socio-economic characteristics used to select the households in the eligible communities into the programme.
- Encuesta Evaluación de los Hogares (ENCEL), the Evaluation Survey of *progres*a consisting of a baseline survey conducted prior to the start of the programme (Nov-97) on the 24,077 households of the evaluation sample and 3 post-programme round surveys (Nov-98, Jun-99, Nov-99).

58. Due to the targeting of the programme and the data available, the empirical study relied on a quasi-experimental design. The assessment of the impact concentrated on the issues of schooling, work, and time allocation of children aged 8-17. It involved a sample of communities that received programme benefits (treatment) and comparable communities that received benefits at a later time (control). In a first stage, the difference-in-difference estimator was employed to estimate the impact on school enrollment and child labour. This estimator presents a simple comparison of the (unconditional) mean school and labour-force participation rate before and after the start of the programme in treatment and control villages for children of both genders, aged 8-17. Considering the definition of 'work,' it needs to be underlined that in this stage domestic activities were not included.

59. The results indicate a significant growth in school attendance for both sexes. Accompanied by a significant decrease of participation in work activities for both girls and boys. In proportional terms, the ex-post probability of working was similar for boys and girls although, given the higher pre-programme participation rate for boys at work, the absolute decrease for boys was much larger compared to girls. For boys the increase in school enrollment was similar to the reduction in work participation, whereas for girls growth in school enrollment was much larger than their decline in work involvement.

60. In a second stage, an interview collecting information on time use, carried out approximately one year after programme implementation, allowed for examining the impact of *progresa* on time allocation. A broader definition of work was adopted including market work, farm work and domestic work. The programme had a significant negative impact on leisure time for girls, but no effect for boys. For a correct interpretation of these results, it is necessary to bear in mind the following details. There was a general low participation of girls in work activities and a large increase in school enrollment after the cash transfers. The negative effect on leisure time arose because most of the increased school attendance of girls may have occurred among the groups combining school with domestic work. Regarding the hours spent on school and work, the outcome of the analysis indicates the largest effect of the programme on the time use for children above the age of 12. Boys of this age group have a strong reduction in participation in both market and domestic work, which is accompanied by an almost identical increase in time spent for school activities. Alternatively, the outcome for girls shows a diminution in hours spent on domestic work for all age groups. This suggests that time spent on domestic work competes with time spent on school, although girls try to combine both, as already mentioned above. Generally, children's work is a significant obstacle to school for both sexes, though less an obstacle for girls than for boys.

61. The study concludes that the conditional cash transfer programme *progresa* was successful at increasing school attendance and at decreasing child labour simultaneously.

## 5.2 Colombia's PACES Programme

62. A similar intervention strategy was used by Colombia's PACES programme, providing vouchers that covered half the cost of private secondary school. The Colombian government had established this programme in 1991 as part of a wider decentralisation effort and in an attempt to expand private provision of public services. The programme's major aim was to expand school capacity and to raise secondary school enrollment rates, which compared to enrollment in primary school, were low. The

treatment targeted low-income households. To qualify for a voucher, applicants must have entered the secondary school cycle (aged > 15; grade 6-11) and must have been admitted to a programme participating private secondary school. Over 125,000 pupils were provided with vouchers that covered more than half the cost of private secondary school. Many vouchers were awarded by lottery and were renewed as long as students maintained satisfactory academic performance. Here there is parallel with the conditioned cash transfer programmes in Mexico. The empirical analysis took advantage of the way allocations were made, following a quasi-experimental research design (Angrist J.D. et al, 2001). The lottery was random within localities and conditional on whether households had access to a telephone. The data sources used were taken from interviews of the three applicant cohorts of interest (1995 and 1997 applicant cohorts from Bogota and the 1993 applicant cohort from Jamundi), completed with 55 % of lottery winners and 53 % lottery losers in 1998. Taken under consideration the win/loss status and the individual characteristics, little evidence of any correlation emerged. Winners and losers had similar telephone access, age, and sex mix in the 1995 / 1997 Bogota data, although in the Jamundi-93 sample there were significant differences in average age and gender by win/loss status. The study concentrates on the assessment of the effect on scholarship use, school choice, schooling, test scores and non-education outcomes.

63. The findings indicate that voucher winners emerged with an increased likelihood of receiving any kind of scholarship. Further, the decision between public and private school was sensitive to variation in the price of private school induced by the programme, while the decision whether to attend school was not. Lottery winners completed more schooling than losers did, but no statistically significant effect on enrollment could be achieved. This is primarily due to the reduced probability of grade repetition for winners. Separate results by gender show moderately larger effects on educational attainment for girls. The increased probability of higher-grade completion and lower repetition rates for voucher winners seem a desirable outcome. For a correct interpretation of these results, it must be emphasised that the above output corresponds to the required conditions for qualifying for programme participation. It is likely that private schools have had an incentive to promote children with vouchers even though their performance did not meet normal promotional standards. In order to have better understanding, the effect of winning the voucher lottery on test scores was estimated. The results indicated that lottery winners scored higher than lottery losers did. This suggests that the significant repetition results were not only due to schools' lowering their bar for promotion of winners, but depended also on underlying learning. Additional to these results, some evidence that the programme affected non-educational outcomes arose. Regarding the child work issue the following findings were demonstrated. Voucher winners worked less, with their households actually devoting more resources to education than the value of the voucher itself. A significant difference in hours worked was shown, with voucher winners working 1.2 fewer hours per week than losers did. This effect is more striking for girls.

### 5.3 The Brazilian Child Labour Eradication Programme – PETI

64. The federal government of Brazil initiated in 1996 the Child Labour Eradicating Programme (PETI) in rural areas of the country. Its main objectives are increasing educational attainment and reducing poverty. Further, it focuses on eradicating

simultaneously the 'worst forms' of child labour<sup>o</sup>. The programme provides stipends to poor families who have children aged 7-14. PETI conditions these stipends on the children's school attendance, their participation in after-school activities and on their agreement of not working. The extended school day (*Jornada Ampliada*) prevents children from doing both, attend school and work, by placing a constraint on their time. The money is distributed to the mothers of the household, giving them a sense of independence and responsibility as they look after the purchases for the family.

65. A recent study evaluates the effectiveness of the 1999 Child Labour Eradicating Programme in meeting its objectives (Sedlacek G., et al, 2000). The analysis concentrates on examining the impact of PETI on several outcome variables, namely child's weekly hours spent in school, weekly hours worked, probability of child working, child's success in school and programme impact on the distribution of children working in the worst forms of child labour. The study is based on data collected by *Datametrika* in a household survey of rural areas in the northeastern states of Pernambuco, Bahia, and Sergipe. This data allows for an evaluation of programme impact at three levels: the individual child level, household level and municipality level. The comparison of the estimates at all levels provides valuable information regarding the regional child labour supply and schooling demand markets.

66. The overall results of the conducted study show an increased demand for schooling by roughly 17 hours. This corresponds to a doubling of hours spent in school due to the extended school sessions (*Jornada Ampliada*). It is important to investigate whether this increase in school hours is sufficient to discourage work and reduce working hours or whether it comes at the expense of decreased leisure time without changing child work. The results indicate a negative impact of the programme on the probability of child work. In the state of Pernambuco the estimates point out a 5 % diminution of the probability of child work. In the state of Bahia the reduction in child labour probability is estimated to be 25 percentage points. This result may be explained with the fact that non-participating households behave like the one participating in the programme, which could be due to the social pressure. For this reason the estimation is carried out with a more restrictive definition of child labour that excludes work lasting less than 10 hours a week. The result indicates smaller levels but still a significant reduction of the probability of child work. The programme reduces weekly work hours in all the three states. The largest effects are manifest in Bahia, where a reduction of 4 hours per week was stated compared to a 1 to 2 hour reduction in Pernambuco and Sergipe. Further analysis show an increase in the age for grade rates in all states. With regards to the distribution of children working in the worst forms of child labour the following may be stated. In Pernambuco the programme appears to concentrate on the less hazardous occupations; in Bahia, the most hazardous occupations experienced the greatest reductions in working children; and in Sergipe, the programme targets the mid-rank category of hazardous occupations.

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<sup>o</sup>The programme defines 'worst forms' of child labour as to include the collection or production of charcoal, sugarcane, tobacco, cotton, horticultural products, citrus, salt, flour, 'sisal', timber, tiles or ceramics, fishing and mining activities, activities related to the extraction of precious stones and metals.

## 5.4 The Bangladesh Food-for-Education Programme

67. Ravillion M. and Wodon Q. (2000) made an important contribution to the child labour literature by testing for substitution between child labour and schooling in rural Bangladesh. It was considered that children were a current economic resource for poor parents and therefore fighting the issue of child labour in developing countries was a major challenge. The approach followed by Ravillion M and Wodon Q. was to examine the impact of an education programme on parents' decisions whether sending their kids to school or work. The Bangladesh Food-for Education (FFE) programme had the main objective of keeping children of poor rural families at school. For this reason, targeted households received monthly food rations as long as their children attended primary school. Programme targeting concentrated above all on poor rural areas and on poor households. Selected children had to participate in at least 85 % of all classes each month in order to continue receiving the stipend. For the empirical analysis the following data source was used:

- Rural sample of the Bangladesh Household Expenditure Survey (HES 1995-96)

68. The descriptive statistics revealed an unclear effect on child labour in the rural Bangladesh. Boys aged 5-14 classified as being in the workforce showed an average of only 26 hours work per week while girls had an average of 20 work hours per week. Further, the main reason for the longest absences from school turned out to be child labour in only 15% of the cases. Therefore, it could not be assumed that these children spent their time working at the expense of time for education. Nonetheless, many parents might not have admitted to their children working. In order to test whether child labour displaced schooling, the impact of the FFE stipend on child labour was estimated.

69. The findings of this study showed a strong positive effect of the programme on school attendance. In a first stage, a simple OLS estimate achieved for both genders a higher mean enrollment rate for FFE participants than for non-participants. Further, children's labour force participation rate was lower for FFE beneficiaries compared to the other group. This suggests partial displacement of child labour by schooling: one third of extra school attendance came from work. However, to achieve a consistent estimate of the impact we must allow for the endogeneity of participation arising from purposive targeting of the programme. Therefore, in a second stage 'village participation' was assumed neither to affect child labour nor schooling, and consequently used as instrumental variable. The estimated results confirm that the FFE stipend had a significant negative effect on child labour, and a strong opposite effect on the probability of attending school. For boys, lower incidence of child labour accounted for about one quarter of the increase in school enrollment rate; for girls it accounted for one eighth. Generally, the FFE stipends turned out to be a large net transfer benefit to poor households with a long-term benefit through higher schooling. The effects of household demographic variables were generally weak. Children from larger households were neither more nor less likely to work or attend school. The only significant outcome suggested greater pressure for boys to earn income when families consisted of fewer adult male earners. Parental education was revealed to have a strong impact on children's participating in the workforce and schooling. Higher parental education was associated with lower incidence of child labour and higher school attendance rates. This effect

vanished for children with an illiterate father. As a result, the study suggested that the programme was acting as a pure transfer payment for educated parents, who sent their children to school irrespective of the programmes' incentive. Further, the finding of the analysis led to questioning the common view that child labour subsists at the expense of schooling.

## 6. CONCLUSIONS

70. This review report provides an idea of the kind of impact that various types of programme interventions may cause. The main focus was on the issue of child labour and education. Only a limited number of studies have concentrated on estimating the impact of the programmes on child labour. Though it is a subject matter that is important and needs to be taken under analysis in future.

71. Impact assessment tries to give an answer to the following question: 'What is the expected or mean outcome gain to individuals who received programme intervention to the hypothetical situation had they not received it?' Depending on the availability of the data type, different evaluation methodologies can be employed to estimate the true programme effect on the targeted subjects. The experimental design is considered the most robust of the evaluation methodologies. However, in practice it may be difficult to assure that assignment is truly random and therefore the quasi or non-experimental design may be the only feasible approach. It has to be emphasised that different econometric methodologies may achieve different evaluation results. This has been underlined by several discussed case studies. Table 2. gives information on the employed evaluation design, the main data sources used and programme targeting for each conducted analysis. Table 1. provides an overview of the effects achieved by the discussed programme interventions. The interpretation of these outcomes is very complex and needs to be carried out with great attention.

72. The evidence of the examined programmes impact on child labour and education is too scarce to capture and offer a solid ground in order to beat general conclusions, but some suggestions may be put forward. Targeted Human Development Programmes consisting of grants conditioned on school/health center attendance or academic performance as in the case of Bangladesh, Colombia, Brazil and Mexico, show significant negative effects on child labour. In Colombia, children, especially girls, worked 1.2 hours less per week. Brazil states a remarkable decrease of up to 4 working hours per week. A significant decrease of children participating at work activities was estimated in Mexico. Further, Bangladesh resulted with a reduction in the incidence of child labour for both sexes. The effect on school enrollment in these countries was positive. These results suggest that well targeted programmes consisting of conditioned enrollment subsidies are successful at inducing families to withdraw children from work and enrolling them in school instead. In Mexico, the increased school enrollment for boys was similar to the reduction rate in work participation. However, for girls the growth in school enrollment was much larger compared to the decline in work involvement. Further, a negative impact on leisure time was estimated for girls. This suggests that most of the increased school enrollment for girls may have occurred by the group combining school with domestic work at the expense of their free time. There is no evidence of child labour displacing schooling as the case study of Bangladesh concluded. The Social Fund programmes achieved in general an increase of school attendance rates. Further, positive effects on age for grade rates and school attainment were estimated. But the issue of child labour has not been addressed. The case studies in Zambia, Bolivia and Peru showed an increase in school enrollment only in the urban areas which suggests that it may be more difficult to change enrollment rates in rural areas than in urban areas.

73. Some final comments may be stated for further analysis. With regards to the methodology, this paper analyses the comparison of relative merits of impact evaluation, while with respect to other approaches like e.g. Good Practices were not discussed.



The presented impact evaluation studies concentrate on the efficiency of evaluation using one set of policy instruments. This gives an answer to the particular kind of intervention that produces an effect but does not allow comparing relative efficiency of different sets of instruments.

Table 1. - Programme Impact by Interventions

Country Project-type	Programme Intervention Activities under analysis	Impact on School attendance and enrollment	Impact on Educational efficiency (age-for-grade measures / school attainment/ rate etc.)	Impact on Child Labour	Further results
Peru - Social Investment Fund (FOCONDES)	Improve small-scale infrastructure and public services; Education sector: construction, renovation of classrooms; Special projects including breakfast programme/distribution of school uniforms	High significant impact on school attendance for all younger children in the household. No impact for older children (IV) Effect for older children (OLS);	No significant effect on age-for-grade measures; No information on school quality due to data lack	No evaluation regarding child labour	Weak impact on average time for children to get to school
Zambia - Social Recovery Project (ZSF)	Education/Health Projects; Rehabilitation of (primary) schools and health centers	Increased enrollment rate only in urban areas;	Some evidence of positive impact on age-for-grade rates (more in the rural)	No evaluation regarding child labour	Improved quality of education / health facilities; Positive effect on education expenditures; Positive effect on social capital: in rural areas community togetherness increased
Honduras - Social Investment Fund (FHIS 2)	Main activity: building, rehabilitate and improve primary schools and classrooms; Construction of rural health centers; Rehabilitation of drinking water system; Improvement of sanitation sector	No measurable impact on gross enrollment	Reduced national ratio of students per classroom; Positive impact on age-for-grade measures (especially for children aged 8 / 9)	No evaluation regarding child labour	Positive impact on the utilisation of primary health services
Nicaragua - Social Investment Fund (FISE)	Improvement of quality and physical capacity of priority social infrastructure especially (primary) schools and health posts; Education initiatives: better access to basic infrastructure in schools, better staffing, building school-libraries.	<i>Propensity comparison group:</i> positive significant very large (10%) effect on net enrollment rate; <i>Other comparison group:</i> positive significant smaller (2%) effect on enrollment rate; Generally higher impact for girls than boys;	Reduction in education gap from 1.8 to 1.5 years - bigger reduction for the poorest; Decreased age for entering into primary school from 8.6 to 6.8 years - bigger results for boys; Drop of repetition rate	No evaluation regarding child labour	Little positive impact of health investments on utilisation of health clinics
Morocco - Social Sector Programmes health/education (BAJ)	Increase quality of social services Health: concentrating on construction and renovation of communal health care centers / supply with equipment and medicine Education: promotional campaign for primary school enrollment included building latrines for girls in rural schools	Nation-wide weak positive impact (general) on school enrollment; In the majority of provinces results of positive impact on girls enrollment, but aggregated with other project provinces no effect; No relationship between health and education impacts;	No evaluation	1/5 of boys and girls are working in both surveys (children aged 7-14) - child labour is equally present in 90' and 98', but more common in project provinces; No gender difference; Progressive growth of child labour by age; Uncertain effect of project on	No gains in access to health facilities;

Table 2. - (continue) Programme Impact by Interventions

Country Project-type	Programme Intervention / Activities under analysis	Impact on School attendance and enrollment	Impact on Educational efficiency (age-for-grade measures / school attainment/ repetition rate etc.)	Impact on Child Labour	Further results
Mexico - Antipoverly programme (PROGRESA)	Monetary educational grants for children - conditioned on school attendance; Basic health care including fixed monetary transfer - conditioned on health center attendance,	Increased school enrollment: for boys this increase was similar to the reduction in work participation - for girls growth in school enrollment is much larger than their decline in work involvement	Significant growth in school attendance for both genders;	In proportional terms: significant decrease of participation at work activities for both genders; In absolute terms: the decrease in child labour was bigger for boys than girls given the higher pre-programme participation rate for boys at work.	Impact on Time allocation: Negative impact on leisure time for girls; Largest effect for children >12: for boys strong reduction in market / domestic work (=time spent for education) For girls diminution of domestic work.
Colombia - Antipoverly programme (PROGRESA)	Provision of vouchers that covered half the cost of private secondary school - conditioned on academic performance	No statistically significant effect on enrollment rate;	General positive effect on educational attainment - moderately larger for girls; Positive impact on school / higher grade completion; Lower repetition rates; Positive impact on test-scores	Significant impact on work participation: 1.2 hours per week less work - especially for girls.	Positive effect on choosing private schools compared to public;
Brazilian - Child Labour Eradication Programme (PETI)	Provision of cash grants - conditioned on school attendance, extended school session attendance, removal of children from work	Increased school attendance;	Positive impact on age-for-grade measures;	Significant reduction of the probability of child work; Reduced weekly working hours (up to 4 hours/week)	
Bangladesh - Food-for-Education Programme (FFE)	Provision of monthly food rations -conditioned on primary school attendance.	<i>Simple OLS estimate:</i> increase of mean enrollment rate for both genders; <i>IV approach:</i> strong positive effect on school attendance	No evaluation	<i>Simple OLS estimate:</i> decreased labour force participation rate; <i>IV approach:</i> significant negative effect on child labour; greater pressure for boys of households with few male income earners	Parental education had a strong positive impact on children's' participating at school and a negative on child labour.

Table 3. - (continue) Programme Impact by Interventions

Country Project-type	Programme Intervention / Activities under analysis	Impact on School attendance and enrollment	Impact on Educational efficiency (age-for-grade measures / school attainment/ repetition rate etc.)	Impact on Child Labour	Further results
Armenia SIF		General increase of attendance rate, no difference in the growth rate between SF-schools and non-SF-schools; Increase of enrollment rate for SF-schools	Positive effect on school attainment		Improved access to save water in schools; Increased number of teacher
Bolivia SIF	All six funds concentrate on improving social infrastructure. <u>Education</u> : building and rehabilitation of schools, financing furniture and basic equipment; Bolivia supports informal education campaigns, rural boarding schools, teacher training; No financing of textbooks and teachers' salaries; Installation of basic school utilities (water and sanitation facilities). <u>Health</u> : rehabilitation / construction of health posts and centers; basic equipment, furniture and medical supply; Bolivia, Honduras, Peru support health and nutrition campaigns. <u>Economic Infrastructure</u> : all funds except Bolivia finance basic economic infrastructure (rural roads, marketplaces); <u>Water and Sanitation</u> : in Armenia and Peru local environmental rehabilitation and waste disposal	General increase of attendance rate, no difference in the growth rate between SF-schools and non-SF-schools; No effect on enrollment rate	No effect on school attainment	The Social Fund 2000 study has carried out no evaluation of the programmes regarding child labour.	Reduction in drop-out rates; Improved access to sanitation service in schools;
Honduras SIF		General increase of attendance rate; No effect on enrollment rate (high enrollment rate before intervention)	Significant/positive effect on age for grade rates among primary school students; Positive effect on school attainment		Improved access to sanitation service in schools; Increased number of teacher;
Nicaragua SIF		General increase of attendance rate; Increase of enrollment rate for SF-schools	Significant/positive effect on age for grade rates among primary school students; Positive effect on school attainment		Improved access to electricity, save water and sanitation service in schools; Increased number of teacher;
Peru SIF		General increase of attendance rate; Increase in enrollment rate in urban area / rural area only amongst the poorest (high enrollment rate before intervention)	Positive effect on years of accumulated education among primary and secondary age students; Positive effect on school attainment		Improved access to save water in schools; Increased number of teacher
Zambia (ZSF)		General increase of attendance rate; Increase of enrollment rate for SF-schools; Increase of enrollment rate only in urban areas	Significant/positive effect on age for grade rates among primary school students in rural areas; Positive effect on school attainment		Improved access to electricity, save water and sanitation service in schools; Increased number of teacher;

## 6.1.1

Table 4. - Information on Data sources, Evaluation designs and Programme Targeting

Country Project-type	Main Data Sources	Evaluation Design	Project - Targeting
Peru - Social Investment Fund (FOCONDES)	LSMS 1994 / 1997; Household Survey 1996	OLS estimate ('naive' regression); Instrumental Variable approach	Targeting according to UBN-index of small geographic regions to reach poor areas and poor households; Community demand-driven targeting
Zambia - Social Recovery Project (ZSF)	LCSM 1998; Modification of LCSM for impact assessment; Impact Evaluation Oversampling Household Survey 1998	Propensity Score Matching; 'Pipeline' Match	Self-targeting in order to reach the poor (urban and rural areas) resources equally spread across regions;
Honduras - Social Investment Fund (FHIS 2)	Bi-annual Household Survey of Survey of 2.600 households in area of influence of '96 projects;	Matched Comparison with 'Pipeline' communities	Targeting low income families according to a poverty map (based on UBN index) at municipal level
Nicaragua - Social Investment Fund (FISE)	LSMS 1998; FISE Household Survey (same questions LSMS) 1998; FISE Facilities Survey 1998	Matched Comparison with similar communities; Propensity Score Matching	Poor rural and urban communities and poor households (based on poverty map); Community demand-driven targeting
Morocco - Social Sector Programmes (BAJ)	MLSS 1990 - 91	Quasi-experimental evaluation design: Difference-in-difference estimator	Poor rural areas: targeting at provincial level - no uniform resource distribution.
Mexico - Antipoverty programme (PROGRESA)	Household Survey 1999; Evaluation Survey Nov-97, Nov-98, Jun-99, Nov-99	Quasi-experimental evaluation design: Difference-in-difference estimator	Poor rural areas: (extreme) poor households with children >age 18 enrolled in school between III. grade of primary and III. of secondary school Health care for children with signs of malnutrition, pregnant and breastfeeding mothers
Colombia Antipoverty programme (PROGRESA)	Household Survey 1998	Quasi-experimental evaluation design	Low income households: applicants must have entered the secondary school cycle (aged > 15; grade 6-11) and must have been admitted to a project participating private school; Vouchers were awarded by lottery.

Table 5. - (continue) Information on Data sources, Evaluation designs and Programme Targeting

Country Project-type	Main Data Sources	Evaluation Design	Project - Targeting
Brazilian Child Labour Eradication Programme (PETI)	Household Survey of rural areas 1999	Experimental design: simple means-comparison technique	Poor rural areas (northeast) with high concentration of 'worst form' of child labour: households with at least one resident child aged 7-14
Bangladesh - Food-for-Education Programme (FFE)	Household Expenditure Survey 1995-96	Non-experimental design with Instrumental Variable	Poor rural areas and households with primary school children
Armenia SIF	LSMS 1996; Impact Evaluation Oversampling household survey 1996; Facilities Survey 1997;	Propensity Score Matching	All six social funds are directed to the poor - at geographic and household level (for the specific country see above)
Bolivia SIF	Baseline 93' and Follow-up 97-98' Impact Evaluation Household Survey; Baseline 93' and 97-98' Facilities Survey; Education achievement test for math and language	Randomized Control Design; Propensity Score Matching	
Honduras SIF	Impact Evaluation Household Survey 1998; Facilities Survey 1998;	Matched Comparison with 'Pipeline' communities	
Nicaragua SIF	LSMS 1998; Impact Evaluation Oversampling Household Survey 1998; Facilities Survey 1998	Propensity Score Matching; Matched Comparison with similar communities	
Peru SIF	Impact Evaluation Household Survey 2000;	Matched Comparison with 'Pipeline' Communities	
Zambia (ZSF)	LSMS 1998; Impact Evaluation Oversampling Household Survey 1998; Facilities Survey 1998	Propensity Score Matching; Matched Comparison with 'Pipeline' communities	

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