

# THE WFP-WORLD BANK IFPRI THREE-COUNTRY STUDIES

## *Results and Evidence Based Learning from Impact Evaluation Studies School Feeding*

This summary presents the findings and implications from the three country-studies which were jointly undertaken by the World Bank, IFPRI and the World Food Programme on School Feeding Programmes in Burkina Faso, Uganda and Lao PDR between 2005 and 2008. The cases of Burkina Faso and Laos provide significant evidence on the positive impacts of school feeding on the policy-claimed objectives of education, nutrition and gender. The impact evaluation in Lao PDR shows how empirical research can help to identify the major challenges at policy level and to improve the design and implementation of school feeding programmes in the field.

### **1. Evidence Based Impact of School Feeding: Burkina Faso**

From: *Educational and Health Impacts of Two School Feeding Schemes: Evidence from a Randomized Trial in rural Burkina Faso (Kazianga et al. 2009)*

The paper uses a randomized experiment to assess the hypothesized relationships between School Feeding and enrolment, academic performance, cognitive development and preschool children nutritional status on the other hand. The focus of this study is the Sahel region of northern Burkina Faso in West Africa. Northern Burkina Faso is an appropriate context to evaluate the impact of school feeding program for two main reasons. First, the region has some the world's lowest primary school participation. On average 20 percent of school age children (6 to 16 years old) attend school, based on recent national surveys. Therefore there exists a large scope for increasing enrolment and educational attainment. Second, income levels are very low and severe food shortages are frequent and the value of the food offered should be a sufficient incentive to attract children to school. The analysis adds to the literature on education in low-income countries in two ways.

First, it rigorously evaluates the impact of two alternative school feeding schemes within the same context. The use of a randomized experiment has the advantage of avoiding the issue of site selection that may have limited the causal interpretation of many previous studies. The paper provides new insights on how a range of educational outcomes including enrolment, absenteeism and academic performance respond to two related types of interventions.

Second, in addition to educational outcomes, the paper also explores the impact of SFPs on the nutritional status of school age children as well as of younger children who are not enrolled in school. While previous studies have looked at the nutritional impact of school age children, none has taken into account the potential spillovers effects to younger children. This possibility would imply additional long-term benefit of SFPs which may have been previously under-estimated.

Findings included that both school meals and THR increase new enrolment for girls by about 5 to 6 percent. The interventions also led to adjustment in child labour, with children (especially girls) with access to SFPs shifting from on-farm labour and off-farm productive labour to more domestic tasks, possibly those that are more compatible with school hours.

The paper finds a small increase in time adjusted scores of mathematics for girls, but not a significant impact on raw scores of mathematics.

The impact on absenteeism is unexpected since students who were exposed to the interventions have higher absenteeism on average. It is argued that the increased enrolment could be accompanied by higher absenteeism rates if there is no active labour market and households are labour constrained and/or child labour is complementary to adult labour. It is shown that the interventions caused absenteeism to increase in household who are low in child labour supply while absenteeism decreased for households which have a relatively large child labour supply, which is an indication that labour constraints matter. This in turn explains the mixed impacts on learning outcomes that we observed. Regarding nutrition, for children between 6 and 60 months who were not in school, take home rations have increased weight-for-height by .33 standard deviations and weight-for-age by .38 standard deviations. Overall, both SFPs improved enrolment, and take home rations had positive spill over effect onto younger children.

## 2. Evidence Based Impact of School Feeding: Uganda

From:

1. *The Impact of Alternative Food for Education Programs on **School Participation and Education Attainment** in Northern Uganda (Adelman et al. 2008)*
2. *The Impact of Alternative Food for Education Programs on **Learning Achievement and Cognitive Development** in Northern Uganda (Adelman et al. 2008)*

The study compares SFP in schools to take home rations (THR) conditional on school attendance and considers how timing of meals and intra-household redistribution of transfers alters effects of FFE programs. It is designed as a cluster randomized prospective field experiment conducted in Internally Displaced People's (IDP) camps in Northern Uganda. The sample was selected in IDP camps formed between 1997-2003 due to killings and abductions during Lord's Resistance Army (LRA) insurgency and 29 households per camp with children age 6-17 at baseline were interviewed. The camps were randomly assigned to 3 groups: SFP (11), THR (10), and Control (10).

The food transfers were comprised of the following:

- SFP: fortified mid-morning snack and lunch at school; 1049 kcal energy/day, 33 g protein, 2/3 vitamin requirements, 99% iron needs
- THR: identical food provided as monthly dry ration

Among 6-9 year olds not enrolled at baseline, the study found that SFP increased enrollment by 12.4 percentage points, though this effect is weakly significant.

School attendance (morning and afternoon) was measured through unannounced attendance visits to overcome bias in attendance data collected from respondents or school registers. Both programs had large impacts on school attendance, with impacts varying by grade and gender. The SFP program increased boys' morning attendance rates in grades 1-2 by 13 percentage points and increased average afternoon attendance by 9.3 percentage points. THR increased boys' afternoon attendance by 9-12 percentage points. In grades 6-7, THR had significantly larger impacts than SFP, increasing average attendance by 17-18 percentage points, and girls' morning attendance by 30 percentage points. Both SFP and THR reduce grade repetition, but SFP impacts are larger. SFP also reduced girls' age at entry. Neither

program affected progression to secondary school. However, children in grades 6-7 in SFP schools in 2005 were significantly more likely to remain in primary school in 2007, suggesting that school meals induce hungry children to delay completing primary school.

Learning achievement is measured by math and literacy test scores and by results of the national Primary Leaving Exam (PLE). Cognitive development is assessed using the Ravens Colored Progressive Matrices and two forms of the Digit Span test. The sample is drawn from Internally Displaced People's (IDP) camps in Northern Uganda formed between 1997-2003 in response to the killings and abductions brought on by the ongoing Lord's Resistance Army insurgency. The paper presents results of several alternative treatment effect estimators which provide conservative 'intent to treat' measures of program impact.

Results show that neither program had significant average impact on the math and literacy test scores of 6-14 year olds. However, the THR program boosts math scores of 11-14 year olds by 16.7 points. Both the SFP and THR programs had large significant impacts on math scores of 11-14 year olds who had delayed school entry. On the literacy exam, SFP weakly increased test scores of 11-14 year olds by 6.4 points. On cognitive development, both programs improve cognitive function in terms of ability to manipulate concepts. Girls in the THR program also demonstrated improvements in short term memory and (weakly) in reasoning and perceptive ability compared to girls in the control group. Moreover, the THR program had weakly larger impacts on reasoning ability measured by the Raven's test than the SFP program.

The paper also explores the reasons for the relative difference in performance of the two programs. There was a strong significant impact on reduction of anemia prevalence for both THR and SMP modalities, respectively -19% on school meals and -17% on Take-Home rations.

### 3. Learning from impact evaluations : the case of Lao PDR

From: *Impact Evaluation of School Feeding Programs in Lao PDR (Buttenheim et al. 2010)*

This evaluation focuses on three northern districts in the Lao People's Democratic Republic (Lao PDR) with the following types of feeding modalities: on-site feeding (OSF), take home rations (THR), and a combination. The intervention region is notable for its ethnic diversity, low school participation, poor household food security, and lack of transportation infrastructure. The study included a baseline survey in 2006, followed by the rollout of the school feeding (SF) interventions, and a follow-up survey in 2008.

Potential goals for this type of SF intervention can be to: 1) decrease the net cost of schooling, thereby shifting parental demand for children's educational participation and increasing enrolment and attendance, 2) alleviate short-term hunger in order to increase children's concentration and cognition in school, and 3) improve children's long-term macro- and micro-nutritional status to reduce negative impacts of malnutrition on future health and productivity. The factors below have been identified as major challenges for future design and implementation of School Feeding in Lao PDR.

*Irregularities in Targeting.* Previous research has suggested that SF programs are most effective in areas with low enrolment and household resource constraints. In the sample, larger and less remote villages with higher baseline enrolment were selected into the SF programs. Greater effects might have been noticed if the program had 100% take up or had been targeted to

relatively disadvantaged villages. In addition, students in non-take-up villages started to attend school in adjacent villages that did have SF programs, thereby producing a selective take up of the intervention within districts and inconsistent implementation of the program in terms of intensity and conditionality.

Infrastructure and Transportation. Barriers to successful implementation mentioned were that the WFP food delivery point was too far away, as well as a lack of access to a road. The necessity to build a food storage warehouse was perceived as an added responsibility. In addition, there were unusually high transport costs in rural Lao PDR. This could threaten the future long-term sustainability of the program.

Participation. Problems were cited with recruiting sufficient village volunteers to run the program. This suggests a threshold level of social capital and social efficacy required for villages to participate in SF, which could potentially discourage villages that could otherwise greatly benefit.

Addressing these factors above and finding solutions should be a priority for WFP in Lao PDR. Results are usually most compelling for school enrollment and attendance, particularly where initial rates of participation are low. The models presented here regarding school participation do not demonstrate a robust impact of SF on school participation across the three intervention districts. It is clear that villages that took up the programs had higher enrollment at baseline, and that the entire region experienced a secular increase in enrollment over the two-year period, consistent with other education-related interventions such as the UNICEF-supported Child Friendly Schools program.

As well, the results suggested increased enrollment and earlier age at school entry in Phongsaly and Nhot Ou take-up villages (delivering only OSF) compared to Ngoi control villages. However, in Khua district, where both programs were offered, the results pointed to null findings, making it difficult to ascribe these improvements to a specific SF modality. Only a marginally significant increase in enrollment of 10% only among younger boys was seen. It is not clear that these increases can be attributed to SF, nor has the effect of SF on school entry age been demonstrated empirically.

Evidence of impact of SF on learning achievement, cognitive function and attention span is more complex to demonstrate. The impact of SF on achievement and cognition appears to depend on initial nutrition status.

For all children combined, there was a significant positive impact of THR in Nhot Ou in weight-for-age. Khua and Phongsaly also showed marginally significant increases in weight-for-age. However, stratified analyses (inconsistent results among ages of children analyzed) cannot draw clear links to SF. Similarly, height-for-age analyses are also inconclusive, despite significant gains for younger boys and girls. As well, results for reduction in anemia appear only for younger children in Nhot Ou and older girls in Khua and Nhot Ou. Collectively, the nutritional analyses fail to find evidence of positive effect of SF on children's nutritional status.