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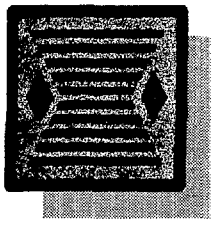

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THE UNIT COSTS AND COST-EFFECTIVENESS OF MCH FOOD AND CASH TRANSFER PROGRAMS IN HONDURAS:

AN ASSESSMENT OF THE BONOS (BMI) AND PL-480 TITLE II MCH FOOD DISTRIBUTION PROGRAMS

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C

CONTENTS

D

1. Summary

This report presents the unit costs and cost-effectiveness estimates of the following programs: 1) Bono Materno Infantil program (BMI/PRAF), which consists of monthly cash transfers (coupons or "bonos") through health centers; 2) Programa de Alimentación Complementaria (PAC) which is an on-site, daily feeding program at community-based nutrition centers; and 3) Programa de Alimentación Materno Infantil (PAMI), a monthly take-home food distribution program.

The results show that:

1. The BMI Program is the most costly of the three programs with total costs of 24 million lempiras. The least costly program is PAMI with total costs of 17 million lempiras, the PAC or lactarios program has a cost of 22 million lempiras. The BMI Program is by far the most efficient of the three programs: its operating costs constitute only 10 percent of the program's total costs. The three programs operating costs per beneficiary vary by a factor of nearly 10; ranging from BMI's 21 lempiras per beneficiary per year, to 156 for PAMI and 207 for the Lactarios.
Factors accounting for the significant differences in the cost of the programs include: economies of scale (BMI is serving a larger number of beneficiaries), large number of intermediate storage and distribution points in food programs, and a marked variation in the level of community contributions to the programs which are considerable in both food programs, especially in the Lactarios' program.
There is no community involvement in the implementation of the BMI Program.

2. The Lactarios Program's operating costs are nearly four times larger than PAMI's costs. The major difference between the two programs is in the Junta and DAN's costs, which vary by a factor of more than five. Most of this difference is attributable to costs incurred in the distribution and supervision activities.

3. Combining the costs and effectiveness figures shows that the bonos program is the most cost-effective mechanism for transferring income at a cost of 1.03 lempira per lempira transferred (compared with 2.00 for PAC and 5.68 for PAMI). The PAMI program increased health center utilization at a cost of 176 lempiras per additional visit; BMI had no effect. The PAC and PAMI programs increased calorie consumption of children (under 5 years) at 341 lempiras per 100 calories in PAC and 375 lempiras per 100 calories in PAMI; BMI had no effect.

If these programs are targeted towards poorer areas, all of these estimates -- and particularly those for the bonos group -- may understate the effectiveness of the programs because the participants in the programs would be worse off than the no program group in the absence of the programs. Nevertheless, the results suggest the following actions have the potential to improve cost-effectiveness: decrease operational costs of the PAC (Lactarios') program; increase health services and nutrition education in health and nutrition centers, in particular, emphasize these activities at each point of contact with BMI participants; explore the feasibility of increasing coverage.

2. Introduction

This report presents the results of a study on the impact of food and cash transfer programs on poverty, health services and food consumption in Honduras. The following programs were evaluated: 1) Bono Materno Infantil program (BMI/PRAF), which consists of monthly cash transfers (coupons or "bonos") through health centers; 2) Programa de Alimentación Complementaria (PAC) which is an on-site, daily feeding program at community-based nutrition centers; and 3) Programa de Alimentación Materno Infantil (PAMI), a monthly take-home food distribution program. The purpose of the report is to discuss the unit costs and cost-effectiveness of these programs.

Multivariate analysis was used to control for differences in characteristics of individuals, households, communities and centers to determine program impacts. Targeting and coverage issues are explored through analysis of data from the national household survey on income, expenditures, consumption and nutritional status conducted in 1993/94 (USAID/ ADAI).

3. Methodology

3.1 Costs

The scope of the costs

We selected, for study of both costs and effectiveness, the calendar year 1993. This was the most recent year for which data could be gathered, and allowed some time for the relatively recently established bonos program to have some degree of stability. Since the principal questions being addressed concerned the possible withdrawal or expansion or modification of existing programs rather than the establishment of new ones, the study focussed on costs associated with the current administration of the program (and not start-up costs). All types of inputs were included (capital as well as recurrent), for all relevant activities, conducted at any level of the system (central, intermediate or health center and community-based nutrition center) and funded from whatever source (donor, government, participants). Our focus is on program operating costs, (i.e. supply-side costs), including those resources contributed by the community, though we do also comment on the nature of the costs incurred by beneficiaries in gaining access to the program (demand-side costs).

Procedure in gathering cost data

i) **General**

The first step in estimating costs was to obtain as detailed a description as possible of the kind of activities each program entailed, and at all levels from central office to individual health center. Most of the activities take place at central level or health/nutrition center level and data collection focused on these. In each of the main participating organizations (all with bases in

Tegucigalpa) expenditure records were consulted and key individuals were interviewed to calculate central level operating costs and to estimate the contribution at intermediate level. For costs incurred at the health/nutrition center level we used information collected from interviews with staff from a random sample of centers.

(ii) Central level OPERATING costs

Expenditure records provided much of the information on costs we were seeking at the central level. Most of the key organizations had good expenditure data with a reasonable amount of detail[1]. We also excluded from either program the costs of the CEFASA which is used for targeting a number of programs not only the ones included here.

The expenditure records, however, had a number of limitations. Firstly, they provided no useful information on capital items for which we required the annuitised value of ALL the capital items currently used and not simply those items purchased in that year; secondly, they did not include items used by the program but for which no payment was made; thirdly, they provided inadequate information on the specific activities for which they were destined; and, finally, a substantial proportion of the costs recorded in expenditure records were for resources shared with other programs.

To address the first three of these limitations we constructed estimates of these costs (capital, donations, activity-specific) by detailing the nature and quantity of the resources used through interviews and then applying an appropriate price (i.e. the ingredients approach). For capital we adopted a simple approach assuming that most non-mechanical equipment had a useful life of 10 years, and mechanized equipment, 5 years. We did not discount the value of future years. The depreciation of vehicles is over a 5 year period.

The disadvantage of the "ingredients" approach to building up cost estimates lies in the difficulty of being comprehensive and adequately assessing the elements of "waste", idle time etc which form part of the costs of any program. We therefore did a number of checks of the reasonableness of our estimates by, for example, comparing the results with elements of annual expenditure records and by confirming that the sum of days we attributed to different activities for each person added up to a reasonable proportion of their total available days.

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[1] We excluded from our estimate of bonos program operating costs, part of the PRAF budget which was transferred to the Presidency of the Republic for "various expenses related to the execution, supervision and evaluation of the Bonos program and related programs of other governmental institutions" (Acuerdo 14-93), since we did not consider it to be a real cost of the program.

Since none of the programs have organizations devoted solely to them, there were several important cost elements shared with other programs. Those costs that we could not tease out more precisely as belonging to a particular program were allocated between programs based, as far as possible, on factors likely to be related to level of effort.

In 1993, CARE was in the process of transferring responsibility for the management of the food programs to government departments. Care staff estimate that these "phase-over" activities (training counterparts etc) accounted for some 30% of their activities in that year, and so we reduced our estimates of CARE costs by 30% in order to approximate more closely routine operating costs.

(iii) Health and nutrition centers-level OPERATING costs

Cost data were collected from 60 health centers in selected areas of Western Honduras, 20 of which had the bonos program, 20 had PAMI and 20 had no program. (see Sanghvi et al., 1995 for details concerning sampling strategy and data collection procedures).
Using interviews with health center chiefs and any staff involved in the bono and PAMI programs, information was gathered for each center on the time contribution of staff to each program. Data was also collected through interviews with the director on other resources utilized by the centers (eg space for food storage and cooking) and on the contributions from the community. Further information on community components was gathered from interviews with a sample from each center of 18 households.

Some of the key problems we encountered were: not all the staff identified by the center directors as involved in the programs were interviewed; it is possible that the survey did not fully capture the time costs of the program of staff, even when not actively involved in program-specific activities due to disruptions in their routines; instead of survey data on details of staff salary and working hours, we estimated typical annual salaries (including standard allowances such as the extra holiday month pay, alguinaldo, and social security).

Community

Families play no part in the operation of the bonos program. They do incur costs associated with the 10 to 12 times per year collection of the bonos from health centers. By contrast, the benefitting families in the food programs incur minor costs associated directly with gaining access to the centers, while making substantial contributions to the operation of the PAMI and PAC programs. In particular, PAC participants generally pay a fee and supply foods, firewood and labor. The latter have been valued based on household survey price data for foods and self-reported value of other inputs, also from the household survey. The fees reportedly paid to PAC centers is assumed to be divided into payments for food and related supplies and staff salaries or honoraria for workers.

Total program operating costs

Central (and intermediate) level program operating costs have been estimated for the national program covering the whole of Honduras. Program operating costs at the health and nutrition center level, however, are based on a sub-national sample. To develop estimates of the total operating costs for the national program we needed to "factor up" the estimates of local costs which we had for the centers in our sample to the national level.

We found to significant differences between CESARs versus CESAMOs but costs did vary by lactarios versus CEDINs. This was taken into account in expanding the estimates to national level. Based on analyses of the variables that appeared to affect costs, we adopted the assumption that local operating costs vary primarily as a function of the number of beneficiaries.

Food and Bonos costs

The total cost of the bonos themselves was calculated as Lp 20 multiplied by the number of bonos distributed in 1993.

The price we employed to cost the food distributed in PAC and PAMI is that paid by the U.S. Government in the USA for the food plus a 30% mark-up for freight to Honduras (based on the relationship between the total cost of food shipments to Honduras in 1993 and the cost of its freight). We have used a simplified framework for calculating the price of the food - and not considered possible deleterious effects on local Honduran prices and hence agricultural production, and the benefits of price support for U.S. farmers, for example. The quantity of food used in the PAC and PAMI programs was calculated using data from the health and nutrition center survey on the amount and kind of food distributed. The community provided food is priced according to local retail prices paid by households from our 1994 household survey.

3.2 Effectiveness

The study is a cross-sectional comparison of MCH programs. It is not an experimental study in that households were not assigned at random to program groups. Rather, comparisons are made of randomly selected households and individuals who participate in each program. A control group of households residing in areas where health centers do not distribute any benefits are included as a fourth group. Multivariate analyses were conducted to control for dissimilar characteristics of participants in each program or non-program group. The control variables include socioeconomic, demographic, seasonality, geographic location and infrastructure related characteristics at the individual, household, health center/lactario, and community levels. If these control variables include all the relevant determinants of program placement, then our estimates of the program effects are not biased due to the program variables representing in part some unobserved factors. If programs were placed, however, in response in part to some unobserved community characteristics, our estimated program effects may be biased. For example, if programs were concentrated in communities that are poorer in ways that are not observed in our data, our estimates of the program effects are downward biased.

The main source of data used is a survey of 1418 households participating in the study programs and the no-program group, in Western Honduras. A survey of 60 health centers and 20 community-based nutrition centers was also conducted.

Three types of effectiveness indicators are used, based on the objectives of the programs. These are:

1. Health Services Utilization: Number of additional visits to health centers for preventive maternal and child services, per household per year.

2. Food Consumption: The number of additional calories consumed by households, women and children, per person per day.

3. Income Transfer: Net value of benefits received (net of program operational costs paid by recipients).

Health Services Utilization

The number of household visits for preventive services (such as prenatal and postnatal checkups, vaccinations for children or growth monitoring) is the indicator of health services utilization used to assess program impacts. In each household, the mother of the focus child or focus mother herself, was asked to enumerate the number of visits made in the past six months to CESARs and CESAMOs for any of the following services: children's vaccination, growth monitoring, sickness of children, adult illness, prenatal checks, delivery, postpartum checks, family planning, collection of bonos, and collection of food rations. The number of visits for vaccinations and growth monitoring were added together to obtain an indicator of preventive child health visits made, and the number of prenatal, delivery and postpartum care visits were added together to obtain an indicator of maternal health care visits. The denominator for children's visits is the total number of children under five in the household, and for maternal health, the total number of girls/women in the 12 to 60 years age group. A combined indicator for preventive care visits was developed by adding children's and women's health visits, using as denominator the total number of children under five and women (12 to 60 months).

Food Consumption

For estimating dietary intakes of households, three, non-consecutive 24-hour dietary recalls were conducted on each household in the sample. The sample consisted of 360 bonos recipient households randomly selected from health centers in the bonos program, 358 food ration recipient households randomly selected from health centers in the PAMI program, 338 households of lactarios participants randomly selected from lactarios in the PAC program, and 358 households randomly selected from households with children under five years of age from health centers not participating in any of the aforementioned programs. The 24-hour recall data included all food prepared in the household and consumed the previous day. Volumes or weights of cooked foods and ingredients were recorded and converted into grams per day. The calorie and protein values were calculated from Latin American food composition tables (INCAP), and averaged for the three days. Meals consumed by family members outside the home were imputed based on average consumption per adult equivalent, of members consuming that meal in the household.

For estimating dietary intakes of mothers and children, individual portion sizes consumed were obtained from three non-consecutive 24-hour recalls in each household, for one mother (pregnant, lactating, or having a child under five years of age) and two children (0 to 11 years of age). The food consumed at lactarios and health centers was estimated from data obtained on recipes and volumes distributed per person from lactarios. Food composition tables used for converting commodities into calories, protein and vitamin A are from the Commodities Reference Guide (USAID/FFP).

In this analysis, emphasis is placed on calorie consumption which serves as measure of overall food intake (embodied in the definition of food security and "hunger"). It is also a limiting factor in Honduran diets for a substantial proportion of the population, especially the poor. The results of the analysis are expressed as calories consumed per adult equivalent (AE) per day per household, calories consumed per woman, or calories consumed per child.

Income Transfer

The value of bonos transferred is the number of members participating in each household multiplied by the estimated number of times they collect bonos over a 12 month period, and again multiplied by 20 lempiras per bono. Because the BMI program was suspended for several months, we used a proportion of the actual number reportedly collected by the households, to a 12 month distribution scenario.

For the PAMI program, the average prices paid by households in the program group were used to value the food rations. The total annual value of benefits per household was computed using the number of beneficiaries in the household, multiplied by the number of times over a 12 month period rations were collected, multiplied by the value of foods received each time.

For the PAC program, the average prices paid by households in the program group were used to value the food prepared and distributed daily. The total annual value of benefits per household was computed using the number of beneficiaries participating in the program per household, multiplied by the number of days over a 12 month period the household is estimated to have participated.

4. Results: Total and Unit Costs

Table 1 presents summary information about the number of beneficiaries and the total (direct plus indirect) costs of the BMI, PAMI and Lactarios Programs in 1993. The BMI Program is the most costly of the three programs with total costs of 24 million lempiras. The least costly program is PAMI with total costs of 17 million lempiras, 63 percent of those of the BMI Program. The Lactarios Program's expenditures of 22 million lempiras makes it 92 percent of the size of the BMI Program.

As Table 1 shows, the central level costs of the three programs are remarkably similar, in absolute terms. Intermediate and local level operating costs, however, vary markedly. The

lactarios' intermediate and local level costs are both about 16 times greater than those of BMI. While the PAMI and Lactarios Programs' intermediate and local costs vary substantially (the Lactarios' are 3 and 2 times greater than those of PAMI's, respectively) their cost structures are very similar and both are very different from the bono program's cost structure.

1. VARIATIONS IN THE EFFICIENCY WITH WHICH THE PROGRAMS DELIVER ONE LEMPIRA'S WORTH OF BENEFIT

Table 1 shows the breakdown of costs by level and type of expenditure. The operating costs of the program are presented separately from the value of the food or bono in order to facilitate analyzing each of these two different types of costs with their distinct management policy issues and implications. The operating costs' share of total program costs is a measure of the efficiency with which the program delivers its benefit (food or bonos). Other things being equal, the higher the proportion of total costs that are comprised of operating costs the less efficient the program is in providing a given value of benefit (e.g., one lempira's worth of food or one 20 lempira bono).

As gauged by this efficiency measure, the BMI Program is by far the most efficient of the three programs: its operating costs constitute only 10 percent of the program's total costs. This is about one-quarter of PAMI's 36 percent operating cost share and less than 20 percent of the Lactarios Program's 53 percent share. The three programs operating costs per beneficiary vary by a factor of nearly 10; ranging from BMI's 21 lempiras per beneficiary per year, to 156 for PAMI and 207 for the Lactarios. The Lactarios Program's operating costs per beneficiary alone (i.e., exclusive of the cost of the food distributed) exceed the bono program's total costs.

2. COSTS PER BENEFICIARY

One of the major sources of variations in the total costs of the programs is their widely varying numbers of beneficiaries. The number of PAMI beneficiaries, 39,500, is only 34 percent of the number of BMI beneficiaries and 70 percent of those of the Lactarios. Adjusting for these widely varying numbers of beneficiaries by calculating total program costs per beneficiary (reported in the next to last row of Table 1) results in much more similar program costs, and a reversal of the rank ordering of the programs by cost. The BMI Program has the lowest cost be beneficiary, 205 lempiras per year, compared with the Lactarios Program's 390, and PAMI's 432.

It is likely that there are some economies of scale in each of these programs: i.e., that the average cost of serving an additional beneficiary of the program decreases as the size of the program increases (at least up to some maximum capacity level). This is likely to occur at various levels within the program. For instance, central level program costs will not increase appreciably if a few additional children are brought into the program--especially if they are added to the roles of already operating facilities. Thus increasing the number of beneficiaries enables spreading the central level program costs over a larger number of beneficiaries, thereby reducing the average program costs per beneficiary.

There are also likely to be economies of scale in the program at the individual facility level, as well. For example, if a lactario is serving meals to 50 children and one additional child is admitted into the program, the cost of the program is likely to increase by less than average cost of providing meals to the first 50 children (i.e., it is likely to be less than the total costs divided by 50). This is likely to happen because, it will not be necessary, for example, to purchase additional pots and pans, or to use more wood on the fire, to prepare the additional portion. Nor will it be necessary to purchase or rent a larger facility to enable serving the additional child. When some of the costs of the program do not increase (or do not increase as rapidly) as the size of the program increases then the cost of these items is spread over more participants as the size of the program increases, thereby reducing the average cost per beneficiary (and, by definition, improving the efficiency of the program).

The average number of beneficiaries per delivery site (health center or lactario) ranges from only 56 in the Lactarios Program, to 146 in PAMI, and reaches 770 in the bono program. To the extent to which there are economies of scale in the programs, it contributes to the much larger (in terms of the number of beneficiaries) BMI Program having lower costs per beneficiary relative to the food programs. We do not, however, have adequate information about variations in the costs of the programs at the local level or about the potential capacity of the programs to enable quantifying the extent to which the different sizes of the programs (and only size) accounts for their different cost structure. Still, with nearly 14 times as many beneficiaries in the average bono program vis-a-vis the average lactario, it is very likely that the average bono program's average cost per beneficiary are lower.[1]

3. COSTS PER FACILITY

Another reason for the variation in the cost of the programs is that they are administered through widely varying numbers of facilities. The BMI Program has only 152 delivery sites nationally. In contrast, PAMI has nearly twice this number, 270, and the Lactario Program, with 1,012 sites, has nearly seven times as many local sites as BMI.

As the number of delivery sites increases, so too does the number of persons involved in implementing the program. Even if program staff spend the same amount of time per beneficiary, regardless of the total number of beneficiaries in their program, a larger number of sites and staff will mean greater costs than the same number of persons being treated in a smaller number of sites. This is because some of the inputs, such as staff training, vary by the number of facilities involved in the program and not (or not as importantly as) by the number of program beneficiaries. This relationship is another reason the two food programs, with their much larger numbers of delivery sites, are so much more expensive relative to the BMI Program. Lack of adequately detailed information, again, precludes being able to quantify the significance of this relationship on the cost differences of the three programs.

4. VARIATION IN THE SIGNIFICANCE OF COMMUNITY CONTRIBUTIONS

Another important factor accounting for some of the significant differences in the cost of the programs, and particularly in the marked variation in the local level component of operating costs, is the great variation in the level of community contributions to the programs.

The two food programs are both implemented with assistance from their beneficiaries and other members of the community. There are three types of community contributions to the Lactarios Program: volunteer work to carry out the program, monetary contributions/fees and in-kind contributions of food. Community contributions to the PAMI program include volunteer work to aid in the distribution of the food and monetary contributions. There is no community involvement in the implementation of the BMI Program.

Although the two food programs' volunteers' time is not paid for, it does have value. This is perhaps most intuitively evident if one considers that, in the absence of these time contributions, the implementing agencies would have to hire additional staff to undertake these same tasks. The issue of how to value the opportunity cost of volunteers' time is a potentially contentious issue that, depending upon the assumptions made, has a relatively large range of potential estimates. The maximum estimate is one that values the volunteered time at the minimal cost that would have to be incurred to hire and pay additional staff to perform these tasks. However, this approach would probably overstate the value of the community contribution, as it is likely that persons who were hired to do this work would be or could be made to be much more productive and perhaps fewer in number than the current corps of volunteers. How much less and how many fewer, however, is not clear.

At the other extreme, the minimal cost estimate, is one that values the volunteered time at zero. From casual observation of the programs it is obvious that this volunteer work is something of a social event that has inherent value for those who contribute their time (i.e., they enjoy getting together and preparing meals for malnourished children). A second rationale for setting the value of volunteers' time at a low level is recognizing that the volunteers actually do receive some compensation for their work in the form of food rations, and in some instances, some monetary contributions from the community or program beneficiaries. Another reason for valuing the volunteers' time on the low side is that they have limited alternative commercial uses of that time: unemployment and underemployment are both widespread in Honduras. In an attempt to balance these various, countervailing considerations, the time contributed by beneficiaries and other members of the community was valued at 0.75 lempiras per hour.

The estimated value of the community contributions to each of the three programs is presented in Table 2. Community contributions to the Lactarios Program total 4,084,000 lempiras, and constitute 19 percent of total program costs. The contributions to the other two programs is markedly less: the PAMI program receives 385,000 lempiras, 2 percent of total costs, and the BMI Program does not receive any community contributions.

The very different roles that the community plays in financing these programs is important for several reasons:

1. The contributions made by the community defray operating costs and therefore represent reductions in the costs that would otherwise have to be incurred by the implementing agencies. One way to view these contributions, therefore, is as privatized costs of the program.

2. The level of community contribution to the financing of the program is an important indicator of the community's valuation of the worth of the Lactario Program. Clearly the community values the program or it would not be willing to continue to make such a significant contribution to its operating costs.

3. The prominent role of community participation in the Program is important for another, very different, reason, as well: it contributes to the organization of the community, thereby fostering the development of leadership and management skills in the community. Organizational development and these types of skills are among the most serious bottlenecks to economic development. While exceedingly difficult to quantify (we will not attempt to do so here), this aspect of the Lactario Program in particular is an important benefit of the program. It is one which is much less prominent in the PAMI program and conspicuously lacking altogether in the bono program.

Community contributions raise an important issue about the composition of costs. The costs that are estimated and presented in this report are the total program costs. They provide a comprehensive accounting of the value of all of society's resources that go into providing these programs. Different actors, however, are likely to be more interested in some of these costs than in others: they are likely to be most concerned about those costs for which they are responsible. The Government of Honduras, for example, is likely to be more interested in what are its direct outlays for these programs, as opposed to the programs' total costs. The issue of how the burden of financing the programs is distributed has obvious policy relevance.

This issue of the incidence of the costs of the programs quickly comes to the forefront when one juxtaposes the levels of community involvement in these three programs. The observation that the community pays for nearly one-fifth of the Lactarios Program and only, at best, a modicum of the other two programs begs two questions: (1) Why is the level of community involvement in the other programs so modest or non-existent?, and, (2) Would it possible and desirable to increase the level of the community contribution in the other programs, and thereby either off-load some of the financing burden of the programs, or improve the functioning of those programs? It would appear that some of the BMI Program costs might be off-loaded to the community. At the very least, it might be possible to supplant some of the health center staff time devoted to the program with that of community volunteers so that the magnitude of the reported disruption of the health centers' regular operations on bono distribution days could be reduced. This is an area that requires additional research and analysis.

5. VARIATIONS IN PROGRAM COSTS BY ACTIVITY

Table 3 presents a breakdown of the three programs' costs by activity. Again it is readily evident the structure of the two food programs' costs is fairly similar and distinct from that of the BMI. The rank ordering of the food program's activities by their share of total costs is nearly identical, with the exception of the planning and programming. About half of the BMI Program's costs are administration, compared to only about 13 percent for PAMI and 11 percent for the Lactarios. A much larger proportion of the food programs' costs are accounted for by distribution and supervision (activities IV. and V.). These two activities constitute 67 percent of PAMI's total costs, 78 percent of the Lactarios Program's total costs, but only 23 percent of the bono program's costs. The very large share of these two activities in the total costs of the food programs warrants taking a closer look at their composition. Analyzing these activities is a logical starting point in searching for ways to improve the efficiency of these programs.

6. THE MUCH LARGER COSTS OF THE JUNTA RELATIVE TO DAN

Table 4 presents the CARE and the JNBS/DAN costs for the two food programs, broken down by activity. The Lactarios Program's CARE and Junta total costs are nearly four times larger than PAMI's CARE and DAN costs. The major difference between the two programs is in the Junta and DAN's costs, which vary by a factor of more than five. Most of this difference is attributable to costs incurred in the distribution and supervision activities. For the Junta, these two are by far the most expensive of the seven activities, accounting for 3.8 million lempiras, 75 percent of Junta's total costs. In contrast, for DAN, these two activities are not even the most expensive ones. They rank third and fourth in terms of the relative cost of the seven activities, and account for only 30 percent of DAN's total costs. In absolute terms, distribution and supervision activities cost DAN 7 percent of what they cost the JNBS. Why does it cost the JNBS 16 times more than it costs DAN to distribute a smaller quantity of food than DAN distributes?

A number of factors account for these major differences. First, as already noted, the Lactarios Program has 1,012 distribution points, compared to only 270 for PAMI. In addition, the Lactarios Program has 48 intermediate warehouses for storing food, compared to 12 for PAMI.

A second reason for the relatively larger costs of the Lactarios Program vis-a-vis PAMI's is that the Lactarios Program distributes food as meals. Daily meal preparation is a much more time intensive activity than monthly distributions of bulk foods. The Lactarios Programs has much higher local distribution costs, in large part due to its higher labor costs for food distribution, as is readily seen in Tables 5 and 5a. Differences in the personnel costs of distribution account for 54 percent of the total difference in PAMI and the Lactarios Program's local level personnel costs.

Table 5 reveals a third reason for the Lactarios Program's greater costs relative to PAMI; namely, the personnel costs of supervision. These costs are due to the Lactarios Program having two staffpersons at each of the 48 CEDINs dedicated to supervision and monitoring and program promotion. Is it essential to have two persons performing these activities at each CEDIN?

A fourth major reason for the relatively greater costs of the Lactarios Program is that the JNBS has established a completely independent infrastructure. It has not piggy-backed onto an already existing delivery system, as has PAMI. PAMI (like the BMI Program) has been able to economize on its distribution and supervision costs by tacking some additional duties and responsibilities on Ministry of Health (MOH) personnel, and has thereby been able to avoid shouldering the complete cost of full- time staff. The major element of the Junta's distribution costs are the staff of the CEDINs. The CEDINs play a dual role as the program's mid-level management (the organizers, supervisors and monitors of local final distribution points) and as final distribution points (where program participants receive meals). As the seat of the program's mid-level managers the CEDINs are each responsible for maintaining an intermediate level food warehouse. These warehouses receive food from the two CARE warehouses for the lactarios and CNCs they supervise. The 48 CEDINs employ 115 watchmen (security guards) who work full-time, year round guarding the food warehouses at an annual cost of 800,000 lempiras. This is an expense that is much smaller in the PAMI Program because of the smaller number of intermediate warehouses, coupled the fact that the local distributions occur much less frequently (monthly rather than daily).

To fulfill some of their other charges as mid-level managers, the CEDINs also employ 58 program promoters (promotores polivalentes) and 47 program monitors (economas) at an annual cost of 1.2 million lempiras. Roughly three-quarters of the costs of these personnel fall under the supervision (activity V.) category, and account for a large portion of the lactarios much larger supervision costs relative to those of PAMI.

To fulfill part of their functions as a final food distribution point, the CEDINs employ 63 full-time cooks and 46 full-time teacher/supervisory staff (nineras). These personnel annually cost the Junta 900,000 lempira. With the average number of beneficiaries in a CEDINs program only slightly larger than that of the typical lactario or CNC program, it is not clear why only the persons occupying these positions in CEDINs receive a salary from the Junta. Nor it is clear if it is essential to pay these persons. It may be possible to reduce these costs (18 percent of the Junta's total costs) by making these positions voluntary, as they are in the lactarios and CNCs.[4]

It is recognized that the CEDINs have longer hours than the lactarios and CNCs. The CEDINs are open for eight hours daily, Monday through Friday, compared to just 3 hours daily, Monday through Friday for the lactarios and CNCs. It is certainly likely to be much more difficult to rely on volunteers to staff a facility for 8 hours and to prepare two meals daily, as opposed to 3 hours and 1 meal per day. But are the extended hours of the CEDINs warranted? What is different about the CEDINs and their function, intended and actual, that justifies their longer hours, their full-time staff, and their much greater costs? This is an issue that warrants further investigation.

Simultaneous consideration of a number of characteristics of the JNBS lead one to suspect that the Junta may not be a very efficient organization. These considerations include:

1. the large size of the Junta (it has more than 460 employees);

2. the Junta's four-tiered organizational structure (a national office, 12 regional administrative units or modules, 48 intermediate administrative units--the CEDINS, and the local facility level (lactarios and CNCs);

3. the Junta's highly politicized nature (with massive changes in even relatively low level staff occurring with every change in presidential administration)

It is possible that a review of the Junta's Lactario Program operations could yield strategies for significantly reducing costs. Consideration should also be given to investigating the possibility of combining the PAMI and Lactarios Program's central and intermediate levels of operations and placing them under the auspices of the MOH (and transferring resources to the MOH to carry out these additional responsibilities). This would enable economizing on the supervisory staff of the Lactarios Program-- particularly those at the CEDIN level--as well as some of its distribution costs, which constitute such a disproportionately large expenditure under the Lactarios vis-a-vis the PAMI Program.

5. Results: Effectiveness Estimates

The effectiveness indicators reflect the common goals of the three programs evaluated: household food security (calories per adult equivalent), maternal and child nutritional intakes (adequacy of calories, protein and vitamin A); and increased income. Each program is different in important ways, and this has a bearing on effectiveness. For example, the health center-based programs have the advantage of providing health services, and promoting desirable health behaviors at the time of distribution (monthly). The PAC program, on the other hand has no formal linkages with health services delivery, but works as a community resource not only for distribution but for community organization and education, and potentially for women's activities. PAC has approximately 200 contacts per year with each participating household, as compared with 9 to 12 contacts per household in the BMI and PAMI programs. In all cases a centralized administrative structure plans and oversees implementation: PRAF and MOH for the BMI program, CARE and MOH for the PAMI program, and CARE and JNBS for the PAC program. In this section we first discuss study design issues, then program implementation, followed by results, and finally the implications for modifying pogroms to achieve greater impacts.

Household surveys confirmed that at the time of the study, all three programs were being implemented as planned. PAMI and BMI participants were collecting rations or bonos respectively, on 75 to 80 percent of distributions held at health centers, and households were participating on an estimated 75 percent of days when PAC centers were open. On average each household had 1.5 (BMI), 2.0 (PAMI) and 2.1 (PAC) members participating in the programs. Sharing of cash and food transfers occurs among all members of the household in the BMI and

PAMI programs. The total value of benefits range from 170 lempiras per household per year in the PAMI program, to 300 lempiras in the BMI program, to approximately 560 lempiras for the PAC program. The PAC figure is deceptive, however, since each participant is expected to pay a fee for attending and to contribute labor, food and firewood for the maintenance of the program (Fiedler et al 1995). While the benefits are large in PAC, coverage is low (less than half the coverage of BMI). In PAMI, though the value of food rations is low relative to other programs, the convenience of obtaining food instead of coupons is appreciated by the participants. Many communities had poor access to food markets, and food program participants reported valuing the convenience of receiving benefits in the form of food. When compared with incomes of the beneficiary households, the value of benefits in all programs, particularly in BMI and PAC is significant.

Impacts on Health Services Utilization:

The study found a significant positive effect of participation in the PAMI (take-home food) program on the number of preventive health visits made for maternal and child health services to CESARs and CESAMOs. The bonos program showed no significant effect. The number of additional visits per households per year was 4.9.

Household Food Security:

PAMI and PAC showed positive and significant effects on caloric consumption of households, controlling for the other variables. Each household in the PAMI or PAC, was consuming an estimated 250 to 350 more calories per AE than the no program group. The bonos program showed no significant difference from the no program group.

Dietary Intakes of Adolescent Girls and Women:

When intakes of adolescent girls and women were examined, both food distribution programs (PAC and PAMI) showed positive and significant effects on calorie consumption relative to their recommended levels of intake. The magnitude of the effect was in the range of approximately an additional 200 calories per day for the PAMI group, and approximately 300 additional calories for the PAC group as compared with the no program group. The bonos program showed no significant difference in calorie intake from the no program group.

Dietary Intakes of Young Children:

Both food programs (PAC and PAMI) have positive and significant effects on calorie consumption of children relative to their recommended levels of intake. The magnitude of the effect was approximately an additional 170 calories per day for both programs. The bonos program showed no significant difference from the no program group.

6. Results: Cost-Effectiveness

Combining the costs and effectiveness figures provides an estimate of the relative "worthwhileness" of each program. Since multiple objectives are embodied in each program, cost-effectiveness is presented for several indicators. See Tables 6, 7 and 8. The results suggest that the bonos program is the most cost-effective mechanism for transferring income at a cost of 1.03 lempira per lempira transferred (compared with 2.00 for PAC and 5.68 for PAMI). The PAMI program increased health center utilization at a cost of 176 lempiras per additional visit; BMI had no effect. The PAC and PAMI programs increased calorie consumption of children (under 5 years) at 341 lempiras per 100 calories in PAC and 375 lempiras per 100 calories in PAMI; BMI had no effect.

7. Discussion and Conclusions

Factors Influencing Cost-Effectiveness:

Costs: The costs vary considerably for the three programs considered. The two food provision programs (PAC, PAMI) have governmental costs associated with purchasing, transporting and storing food that the cash transfer program (BMI/PRAF) does not have. These direct costs associated with food depend, of course, on prices paid for the food, the transportation necessary, and storage necessary -- all of which may vary considerably under different arrangements. Local purchases of food, for example, might be more expensive than food purchased elsewhere but would not have the added costs of transportation and would likely to be storable at least as cheaply as food purchased elsewhere.

Operating costs, therefore, may vary -- and, in fact, do vary -- considerably among the programs. Operating costs as a percentage of total costs are 10 percent for the BMI Program, which is much less than the 36 percent for the PAMI Program and 53 percent for the Lactario Program. The average cost per beneficiary per year, further, are 205 lempiras for the BMI Program, 390 lempiras for the Lactario Program, and 432 for the PAMI Program. An important part of these large cost differences is that the BMI Program does not need to purchase, transport, store and handle food. But there also may be differences that favor the BMI if there are economies of scale overall or in central administration (because the BMI Program has over twice as many beneficiaries as the Lactarios and almost three times as many as the PAMI Program). There are even larger differences in the number of beneficiaries per delivery site, with over five times as many for the BMI Program as for the PAMI Program and over 13 times as many for the BMI Program as for the Lactarios Program. While the study does not provide information with which to access the extent of economies of scale either at the overall level or at the delivery facilities, these substantial differences suggest that such economies of scale may be a factor -- in addition to the costs of handling food relative to handling bonos -- in the widely different costs per beneficiary across the programs.

Community costs, too, vary considerably across these three programs. For the Lactarios Program, even with time of community members valued at only 0.75 lempiras per hour, community contributions accounted for almost a fifth of total program costs. In contrast, they were only 2 percent for the PAMI Program and negligible for the BMI Program. The relatively large community contributions in the Lactarios Program presumably reflect community commitment to the program that may have additional advantages of fostering community organization and management. The important community commitment to the Lactarios Program raises the question of whether more extensive community involvement might be desirable for the other programs. But it also must be recognized that the high community involvement probably is related closely to the relatively large number of delivery sites and the relatively small number of beneficiaries per delivery site noted above as possible factors contributing to the high costs per beneficiary of this program

Effectiveness:

The three programs together covered a small proportion of households experiencing poverty and of children suffering malnutrition. We estimate that at 1993 beneficiary levels, the combined programs had the capacity to cover less than 15 percent of the households in need, if the programs had been perfectly targeted to the poor and there was no program overlap. However, data from the national household survey of 1993/94 that takes into account program overlap, shows less than ten percent of households participated in one or more of these programs.

All three of these programs appeared to be targeted fairly successfully to the more needy segments of the population, rather than to higher income groups. This is in marked contrast to the availability of many public services in Honduras. For example, education, electricity and health, are either skewed in favor of the better-off (education, electricity) or equally distributed (health). Both the bonos programs (BMI and BMJF) and merienda escolar (school feeding) are the best targeted of all transfer programs reviewed. In addition to achieving household-level targeting by income, the bonos (BMI) program reaches households with malnourished children. PAMI and PAC (food program) households also showed a higher prevalence of malnourished children than no program households.

PAMI and PAC have significantly positive effects of 250-350 additional calories per adult equivalent, about the same magnitude for adolescent girls and women, and slightly less than 200 additional calories per day for children. The bonos program showed no significant difference in calories consumption than in the no-program group. If these programs are targeted towards poorer areas, all of these estimates -- and particularly those for the bonos group -- may understate the effectiveness of the programs because the participants in the programs would be worse off than the no program group in the absence of the programs.

PAMI is estimated to induce an additional 4.9 health care visits per participant family. These visits provide opportunities for increasing knowledge of good health care practices. The BMI program, in contrast, was not significantly related to increased health care visits.

The net cost-effectiveness of the programs depends critically on how different outcomes are weighted. For transferring income, the BMI program is by far the most cost effective, with a cost of 1.03 lempira per lempira transferred, as compared with 2.00 for PAC and 5.68 for PAMI. But for increasing calories consumed or use of health care facilities, BMI had no effect.

Other Considerations:

Sustainability: Issues that need to be included in an assessment of options for improving program impacts should take into account the sustainability of both the BMI and food programs. During its short lifespan, the bonos program suffered a significant interruption in services. The budgetary implications of bonos for Honduras, in the event that donors cut back on support for the program, is no doubt an issue. For food programs as well, budgetary cuts in the U.S. may reduce Title II food availability over the next few years.

Dependency and Welfare (disincentives for employment): Claims are common that welfare programs increase dependency on governmental transfers of income and food and thereby reduce incentives for work. Such possibilities have some plausibility, but we are not able to investigate them with the cross-section data for our study.

Other strategies for improving health, nutrition, wellbeing of the poor:

Strengthening broad-based micronutrient strategies would seem to be important in light of the growing evidence that intakes of vitamins and minerals can have important mortality and growth consequences in young children (Allen 1995), and given the severe shortage of vitamin A (and possibly other micronutrients) in Honduran diets found in this study.

Girls' education is thought to be an important factor in improving health, nutrition, and more general wellbeing. Our analysis does not provide much evidence on these possibilities, perhaps because the schooling levels for females are quite low with little variance in our sample. Data that covered a wider range of female schooling would be useful for better evaluation of its impact and whether it is a fairly high priority means, in comparison with programs such as are the focus of this paper, of improving health and nutrition even though there are considerable lags in the effects of schooling girls.

All the outcomes examined in this study through multivariate analyses, pointed to the detrimental effect of large family size in Honduras in terms of worse health and nutrition, after controlling for other factors. The possibility of emphasizing family planning education at lactarios and their

close linkages with community-based distribution of contraceptives should be explored. There may be important gains if people are making uninformed choices about how many children they have.

The study results strongly suggest that seasonal food shortages play a significant role in perpetuating hunger and malnutrition in Honduras. This had been suggested by the qualitative research undertaken by CARE in 1994. Long-term, sustainable policies and programs to stabilize food prices in rural areas combined with strategies for short-term mitigation of seasonal shortages should be a high priority in any comprehensive plan to address nutritional problems.

The study results also suggest that infrastructure development in remote rural areas IS important. In almost every analysis undertaken in this study, one or another of the following variables were found to play a critical role, after controlling for other factors: whether or not the community was connected by paved roads, had electricity, piped water and sewer systems, and access to food markets. Infrastructure development, further, may have important effects in mitigating the seasonal food shortages noted above by integrating better into broader markets what are now relatively isolated communities.

Tables

Table 1

COMPARING THE TOTAL COSTS
OF THE THREE PROGRAMS IN 1993
(IN THOUSANDS OF LEMPIRAS)

COSTOS/GASTOS POR FUENTE	BMI	PAMI	LACTARIOS
NUMERO DE BENEFICIARIOS	117,041	39,500	56,561
NUMERO DE FACILIDADES	152	270	1,012
NUMERO DE BENEFICIARIOS POR FACILIDAD	770	146	56
COSTOS OPERACIONALES: A NIVEL CENTRAL	1,906	1,957	1,887
	8%	11%	9%
COSTOS OPERACIONALES: A NIVEL INTERMEDIO	276	1,301	4,302
	1%	8%	19%
COSTOS OPERACIONALES: A NIVEL LOCAL	330	2,809	5,549
	1%	16%	25%
COSTOS OPERACIONALES TOTALES	2,512	6,067	11,738
	10%	36%	53%
EL VALOR DE LOS BONOS/ALIMENTOS	21,490	11,005	10,339
	90%	64%	47%
TOTAL	24,002	17,072	22,077
COSTO POR BENEFICIARIO (LEMPIRAS)	205	432	390
COSTO POR FACILIDAD (LEMPIRAS)	157,908	63,230	21,815

Table 2

COMPARING THE TOTAL COSTS
OF THE THREE PROGRAMS IN 1993
(IN THOUSANDS OF LEMPIRAS)

COSTOS/GASTOS POR FUENTE	BMI	PAMI	LACTARIOS
NUMERO DE BENEFICIARIOS	117,041	39,500	56,561
NIVEL CENTRAL	1,906	1,957	1,887
	(8%)	(11%)	(9%)
NIVEL INTERMEDIO	276	1,301	4,302
	(1%)	(8%)	(19%)
NIVEL LOCAL	330	2,424	3,493
	(1%)	(14%)	(25%)
CONTRIBUCION COMUNITARIA	0	385	4,084*
	(0%)	(2%)	(19%)
EL VALOR DE LOS BONOS/ALIMENTOS	21,490	11,005	8,311*
	(90%)	(64%)	(38%)
TOTAL	24,002	17,072	22,077
COSTO POR BENEFICIARIO (LEMPIRAS)	205	432	390

Table 3

COMPARING THE STRUCTURE OF OPERATING COSTS OF THE THREE PROGRAMS IN 1993

ACTIVIDADES	BMI	PAMI
I. CAPACITACION	4.6%	3.7%
II. SELECCION DE BENE-FICIARIOS	6.2%	2.7%
III. PLANIFICACION Y PROGRAMACION	10.1%	7.4%
IV. DISTRIBUCION Y ENTREGA DE BONOS/ALIMENTOS	17.2%	35.6%
V. SUPERVISION	6.0%	31.5%
VI. INFORMATICA	5.0%	6.0%
VII. ADMINISTRACION	50.8%	13.1%
TOTAL	100.0%	100.0%

TABLE 4

COMPARING THE STRUCTURE OF COSTS
OF PAMI AND THE LACTARIOS PROGRAM:
VARIATION IN THE COSTS OF CARE AND THE JUNTA/DAN

ACTIVIDADES	PAMI	LACTARIOS
I. CAPACITACION	161,371	227,963
CARE	0	163,148
JUNTA/DAN	161,371	74,816
II. SELECCION DE BENE-FICIARIOS	9,623	0
CARE	0	0
JUNTA/DAN	9,623	0
III. PLANIFICACION Y PROGRAMACION	160,546	63,539
CARE	33,106	41,445
JUNTA/DAN	117,441	22,094
IV. DISTRIBUCION Y ENTREGA DE BONOS/ALIMENTOS	406,092	2,544,639
CARE	269,306	306,988
JUNTA/DAN	136,787	2,237,661
V. SUPERVISION	422,637	1,986,132
CARE	278,079	429,840
JUNTA/DAN	144,558	1,556,292
VI. INFORMATICA	136,498	272,014
CARE	14,924	54,711
JUNTA/DAN	120,574	217,303
VII. ADMINISTRACION	336,513	1,094,596
CARE	88,814	117,633
JUNTA/DAN	246,699	976,963
TOTALS	1,611,280	6,188,883
CARE	684,227	1,103,765
JUNTA/DAN	927,053	5,085,118

TABLE 4a

COMPARING THE STRUCTURE OF COSTS
OF PAMI AND THE LACTARIOS PROGRAM:
VARIATION IN THE COSTS OF CARE AND THE JUNTA/DAN

ACTIVIDADES	PAMI	LACTARIOS
I. CAPACITACION	9.4%	3.7%
CARE	0.0%	13.9%
JUNTA/DAN	16.3%	1.5%
II. SELECCION DE BENE-FICIARIOS	0.8%	0.0%
CARE	0.0%	0.0%
JUNTA/DAN	1.0%	0.0%
III. PLANIFICACION Y PROGRAMACION	9.3%	1.0%
CARE	4.8%	3.8%
JUNTA/DAN	12.7%	0.4%
IV. DISTRIBUCION Y ENTREGA DE BONOS/ALIMENTOS	25.2%	41.1%
CARE	39.4%	27.8%
JUNTA/DAN	14.8%	44.0%
V. SUPERVISION	26.2%	32.1%
CARE	40.6%	38.9%
JUNTA/DAN	15.6%	30.6%
VI. INFORMATICA	8.4%	4.4%
CARE	2.2%	6.0%
JUNTA/DAN	13.0%	4.3%
VII. ADMINISTRACION	20.8%	17.7%
CARE	13.0%	10.7%
JUNTA/DAN	26.6%	19.2%
TOTALS	100.0%	100.0%
CARE	100.0%	100.0%
JUNTA/DAN	100.0%	100.0%

TABLE 5

COMPARING THE STRUCTURE OF THE COSTS OF PAMI AND THE LACTARIOS PROGRAMS: VARIATION IN THE COSTS OF PERSONNEL AT THE LOCAL LEVEL

ACTIVIDADES	PAMI	LACTARIOS
I. CAPACITACION	5,400	12,773
II. SELECCION DE BENE-FICIARIOS	106,200	43,669
III. PLANIFICACION Y PROGRAMACION	75,470	0
IV. DISTRIBUCION Y ENTREGA DE ALIMENTOS	620,730	1,782,427
V. SUPERVISION	112,605	847,044
VI. INFORMATICA	77,490	466,873
TOTALS	997,895	3,152,786

TABLE 5a

COMPARING THE STRUCTURE OF THE COSTS OF PAMI AND THE LACTARIOS PROGRAMS: VARIATION IN THE COSTS OF PERSONNEL AT THE LOCAL LEVEL

ACTIVIDADES	COLUMNA (1): PAMI	COLUMNA (2): LACTARIOS	COSTOS DE LACTS. DIVIDIDA POR COSTOS DE PAMI
I. CAPACITACION	1%	0%	237%
II. SELECCION DE BENE-FICIARIOS	11%	1%	41%
III. PLANIFICACION Y PROGRAMACION	8%	0%	0%
IV. DISTRIBUCION Y ENTREGA DE ALIMENTOS	62%	57%	287%
V. SUPERVISION	11%	27%	752%
VI. INFORMATICA	8%	15%	602%
TOTALS	100%	100%	316%

6. Summary of Costs, Effectiveness and Cost-Effectiveness for MCH Programs (BMI, PAMI and PAC)

Unit costs and income transfer

Indicator	Bonos (BMI)	PAMI (take-home food)	PAC (on-site feeding)
Number of beneficiaries	117,041	39,500	56,561
Number of households	78,027	19,750	26,934
Total costs ('000)	24,002	17,072	22,077
Cost per beneficiary	205	432	390
Lempiras transferred ('000)	23,174	3,002	11,043
Cost per lempira transferred	1.03	2.00	5.69

7. Summary of Costs, Effectiveness and Cost-Effectiveness for MCH Programs (BMI, PAMI and PAC)

Health center visits

Indicator	Bonos (BMI)	PAMI (take-home food)
Number of households	78,027	19,750
Total costs	24,002	17,072
Additional visits per HH	0	4.9
Total additional visits	0	96,775
Cost per additional visit	NA	176.4

Table 8. **Summary of Costs, Effectiveness and Cost-Effectiveness for MCH Programs (BMI, PAMI and PAC)**

Food Consumption: Children

Indicator	Bonos (BMI)	PAMI (take-home food)	PAC (on-site feeding)
Number of children	78,418	26,465	37,896
Total costs	24,002	17,072	22,077
Number of additional calories per child	0	172	171
Total additional calories consumed	0	4,551,980	6,480,216
Cost per 100 calories consumed	NA	375	341