



RE2-05-007

**Economic and  
Sector Study Series**

**SOCIAL ASSISTANCE,  
POVERTY AND EQUITY IN THE  
DOMINICAN REPUBLIC**

**Ferdinando Regalia  
and Marcos Robles**

December 2005



**REGION II**

**Inter-American Development Bank**

This document in discussion is not an official publication of the Inter-American Development Bank. The purpose of the Economic and Sector Study is to provide a mechanism for diffusion of selected analytical work undertaken by the department in support of its operational program at the country or sub-regional level. Opinions and judgments expressed in these studies do not necessarily reflect the view of Bank Management or member countries.

## PREFACE

Given that the accumulation of productive assets (human and physical capital) takes time, redistributive transfers can play an important role in the short-term in addition to their longer term poverty and inequality reducing impacts. The Dominican Republic invests a considerable amount of public resources in transfer and subsidy programs with the main objective of redistributing income to (and subsidizing consumption of) the poor. This study measures the effectiveness with which publicly-financed transfers redistribute income. This study also assesses the potential of the Unified System of Beneficiary Identification (Sistema de Identificación de Beneficiarios - Índice de Condiciones de Vida, SIUBEN-ICV) to improve the targeting performance of social assistance programs against other Proxy Means Test (PMT) instruments. Finally, this study examines the redistributive potential of *Comer es Primero* and ILAE, two Conditional Cash Transfer programs recently launched by the Government, and of the possible changes in the rules of operation of the LPG gas subsidy.

Special thanks to Carlos Eduardo Velez-Echavarria, Gillette Hall, Margaret Grosh, Sam Carlson and Emmanuel Skoufias for detailed comments to an earlier version of this work which was included in the “*Dominican Republic Poverty Assessment: Achieving more pro-poor growth*”, Green Cover. The authors thank Hector Salazar-Sanchez, Division Chief (RE2/SO2) and Manuel R. Agosin, Regional Economic Advisor (RE2/RE2) for their guidance and inputs. They also thank Martha Guerra (RE2/SO2) and Miriam Pérez-Fuentes (RE2/RE2) for their support in the production of this document.

Funding from the DFID-IDB Enlace Social Inclusion Trust Fund for background work carried out for this research is gratefully acknowledged.

Máximo Jeria  
Manager  
Regional Operations Department II  
Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala,  
Haiti, Honduras, Mexico, Nicaragua and Panama

## TABLE OF CONTENTS

<b>I.</b>	<b>A BRIEF REVIEW OF SOCIAL ASSISTANCE PROGRAMS .....</b>	<b>1</b>
<b>II.</b>	<b>HOW WELL DOES SIUBEN IDENTIFY THE POOR? .....</b>	<b>4</b>
<b>III.</b>	<b>AN ASSESSMENT OF THE SIUBEN-ICV CLASSIFICATION FORMULAS</b>	<b>5</b>
<b>IV.</b>	<b>ALTERNATIVE PMT TARGETING FORMULAS.....</b>	<b>8</b>
<b>V.</b>	<b>KEY CHALLENGES FOR THE SIUBEN MANAGEMENT SYSTEM .....</b>	<b>10</b>
<b>VI.</b>	<b>DISTRIBUTIONAL CHARACTERISTICS OF SOCIAL ASSISTANCE/SOCIAL INSURANCE PROGRAMS.....</b>	<b>13</b>
<b>VII.</b>	<b>SIMULATION OF THE DISTRIBUTIONAL OUTCOMES OF <i>COMER ES PRIMERO</i>, ILAE AND THE NEW REGIME OF LPG GAS SUBSIDIES .....</b>	<b>23</b>

# SOCIAL ASSISTANCE, POVERTY AND EQUITY IN THE DOMINICAN REPUBLIC

*Ferdinando Regalia\* and Marcos Robles\*\**

December 15, 2005

## **Abstract**

*Given that the accumulation of productive assets (human and physical capital) takes time, redistributive transfers can play an important role in the short-term in addition to their longer term poverty and inequality reducing impacts. The Dominican Republic invests a considerable amount of public resources in transfer and subsidy programs with the main objective of redistributing income to (and subsidizing consumption of) the poor. This paper measures the effectiveness with which publicly-financed transfers redistribute income. We find that overall social assistance programs are poorly targeted. The sum of social assistance programs is regressive in absolute terms, reinforcing the pattern of total private transfers (domestic and international remittances). Additionally, social assistance per capita transfers are relatively small, which limits the impact of individual programs on social welfare, poverty and inequality. Programs' design features, budget allocations and fragmentation of interventions curb the overall effect on poverty and inequality. In addition, the lack of proper documentation prevents about 20 percent of the poorest Dominican families from benefiting from social assistance. The welfare impact of current social assistance expenditures would greatly benefit from a consolidation of interventions with fairly similar objectives and from an improvement in their overall design, targeting and monitoring and evaluation mechanisms. This paper also assesses the potential of the Unified System of Beneficiary Identification (Sistema Único de Identificación de Beneficiarios - Índice de Condiciones de Vida, SIUBEN-ICV) to improve the targeting performance of social assistance programs against other Proxy Means Test (PMT) instruments. The main finding is that the SIUBEN-ICV algorithm does a relatively good job in identifying the poor but that efforts are needed to strengthen the SIUBEN roster management and to ensure that Dominican families are not excluded due to lack of proper documentation. Moreover, the targeting of social assistance programs with an income support (consumption subsidy) objective could be improved significantly by complementing the SIUBEN-ICV selection formulas with income PMT methods. We find that Conditional Cash Transfers (CCT) programs if properly targeted and implemented, could be much more progressive in absolute terms than existing social assistance programs (e.g., could redistribute a much bigger share of the budget to the poorest segment of the population) and could generate larger welfare gains. However, given the multiple competing financing demands, the expansion of CCT should be accompanied by consolidation and elimination of other programs with similar objectives and balance against the reallocation of fiscal resources to strengthen quality and coverage of basic services in health and education for the poor. A reform of the LPG gas subsidy, oriented to put a cap of RD\$250 to the monthly transfers accruing to households consuming gas and to exclude from the subsidy the richest households (ICV-IV) according to SIUBEN, would increase the share of the program's total budget going to the poor and generate important fiscal savings (half of the original budget). However, given the pattern of households' LPG gas consumption, the (income) poorest 40 percent of households would still be better off if the gas subsidy budget were to be distributed through other transfer programs such as CCTs.*

## **Acknowledgements**

Special thanks to Carlos Eduardo Velez-Echavarría, Gillette Hall, Margaret Grosh, Sam Carlson and Emmanuel Skoufias for detailed comments to an earlier version of this work which was included in the “Dominican Republic Poverty Assessment: Achieving more pro-poor growth”, Green Cover. Funding from the DFID-IDB Enlace Social Inclusion Trust Fund for background work carried out for this research is gratefully acknowledged.

\* Social Programs Division, Regional Operation Department II, Inter-American Development Bank.

\*\* Poverty and Inequality Unit, Sustainable Development Department, Inter-American Development Bank.

## I. A BRIEF REVIEW OF SOCIAL ASSISTANCE PROGRAMS

This section briefly reviews achievements and setbacks of the social assistance reform attempts that have taken place in the DR since 2000. Social assistance (SA) programs have grown in a non-articulated fashion in a context characterized by a very high degree of institutional dispersion, political clientelism, lack of an overall strategic planning and absence of Monitoring and Evaluation (M&E) systems to assess programs' achievements and results. To understand the proliferation of social assistance interventions during the past decades, some of the features of the political economy framework that underpins public expenditure management in the DR are taken into consideration (Box 1).

In 2004, social assistance expenditures represented 25 percent of executed social spending (more than health and more than education spending). The 2005 public sector budget allocates 16.7 percent of social spending (1.3 percent of forecasted GDP) to the broad social assistance category. By comparison, health and education budget allocations represent respectively 20.1 and 25.8 percent of total social spending.<sup>1</sup> These amounts however do not include either budget allocations to gas subsidies (approximately 0.45 percent of forecasted GDP) or to electricity subsidies. Therefore, the focus on SA programs is justified by the fact that, taking subsidies into account, spending on social assistance represents approximately two thirds of total social protection expenditures, including social security expenditures.

This paper adopts the same definition of SA used by Lindert, Skoufias and Shapiro (2005). SA public (monetary and in-kind) transfers are programs for which beneficiaries do not make any direct "risk pooling" related contributions<sup>2</sup>. SA interventions are part of the broader family of social protection (SP) programs, which also include social insurance (SI) programs. SI transfers are programs for which beneficiaries make (at least partial) contributions that involve some degree of "risk pooling" in the sense that individuals know that they will receive some benefits back, but these benefits are not exactly equal to the value of their contributions.<sup>3</sup>

In 2000, the Social Cabinet was created by Presidential Decree with the mandate of coordinating and integrating the government's social policies and programs. In 2002, a first mapping of SA programs was carried out, the objective of which was to chart the legal basis, mandate and functions of programs and institutions.<sup>4</sup> This mapping revealed the existence of more than 41 SA entities and programs.<sup>5</sup> Some of these programs had been established by Presidential Decree, others within the general national budget, others by law, and others had been set up within line ministries. Nevertheless, the 2002 mapping

---

<sup>1</sup> National Budget Office (ONAPRES) figures in Lizardo, J. (2005).

<sup>2</sup> Some sort of payment or contribution might still be required from beneficiaries for example in programs where food or drugs are sold at subsidized prices. These contributions, however, are not part of a risk pooling scheme.

<sup>3</sup> Examples of SI programs could include public pensions and health insurance. Examples of SA programs include conditional cash transfers, direct food donations, school lunches, selling of food at a subsidized price and utilities subsidies.

<sup>4</sup> Baez, C. and C. Solís (2004).

<sup>5</sup> Dotel, O. and R. Cañete (2005).

provides scarce information on the objectives of SA interventions, operational characteristics and expected results.

**Box 1 The Political Economy Framework Underpinning Social Assistance Expenditures**

The 2004 Public Expenditure Review emphasizes that, in spite of low central government expenditures compared with other Latin American nations or with countries with similar income levels, the allocation of overall public spending in the DR deviates significantly from that of comparator countries in that it overemphasizes the provision of private goods, untargeted subsidies and investment. As a matter of fact, the DR has a relatively high level of subsidies compared with other countries in the region. Expenditures on social assistance and subsidies have increased in the last 10 years both as percentage of GDP and as a share of total social expenditures (Lizardo, 2005)

The environment of clientelism that has historically permeated political life since the Trujillo era (1930-1961) has generated excessive spending on private goods (or on investment projects) instead of human capital investments or other public goods because the former type of spending can be more narrowly “targeted” and often be used to reward party faithful and sponsors. Since the Trujillo era, successive governments have continued to exercise, among others, the functions of the producer and manager of key goods and services and have used social assistance expenditures as the envelope through which to support political constituencies.

During the 1996-2000 period, the National Planning Office (ONALPAN) developed for the first time a poverty map with the idea of channeling social expenditures, including social assistance, to the poorest segments of the population in a more transparent way. However, the idea of developing a targeting system to channel social assistance interventions to the most needy according to objective poverty criteria has taken shape only very recently, with the development of a per-household targeting mechanism based on proxy means testing: the Unified System of Beneficiary Identification (*Sistema Único de Identificación de Beneficiarios*, SIUBEN).

Another issue that impacts negatively the distributive characteristics of social expenditures in the DR is the lack of proper documentation (*cedula* or birth certificate) affecting many Dominican families. This affects around 20 percent of the poorest 20 percent families (in terms of income), with around 60 percent of the undocumented are poor. This situation not only prevents access of the Dominican poor to social programs (this is a requirement to become part of the SIUBEN roster) but also curtails their right to vote and thus hold elected officials accountable for more inclusive and effective social policies. There has been some recent progress in addressing this situation but more decisive progress has been limited by political patronage.

In January 2003, the Social Cabinet was put in charge of leading the social sector reordering process, including SA programs.<sup>6</sup> In 2004, a first concrete result was achieved with a budget formulation by programs. For the first time, it was possible to identify the amount of resources allocated to 16 SA institutions and to all SA-type programs financed

<sup>6</sup> Presidential Decree 623-03.

through the national budget within the state secretariats. After this first achievement, progress has been rather slow. The development of a strategic plan for social assistance that would lead to a rationalization of the interventions and a more efficient and equitable use of public resources remains a pending issue. However, some steps forward have been made, for example with the development of an updated poverty map, and, for the first time, of a per-household targeting tool: the Unified System of Beneficiary Identification (*Sistema Único de Identificación de Beneficiarios*, SIUBEN) mechanism.

Knowledge gaps on SA programs are still considerable and hard to fill. Background work done for the preparation of this paper shows that the objectives of the programs are often vaguely stated, official rules of operation missing and detailed information on within program budget allocation not available.<sup>7</sup> The estimation of the administrative costs of the programs is therefore particularly difficult. Reliable information on the characteristics of the beneficiary population is often not available. M&E of the results of the programs is particularly weak, and rigorous quantitative impact evaluations basically inexistent.<sup>8</sup> The overall weak sector accountability has contributed to the perpetration of a fertile environment for clientelistic practices and the political use of SA programs.

The reform proposals presented in the last four years have not fully addressed key issues of institutional fragmentation, overlapping, low efficiency and quality of SA expenditures. Recently, the Government has created the Social Protection Program (SPP), which consists of six sub-programs: Local and Territorial Development, Social Assistance, Inclusion of Vulnerable Groups, Support to Employment, and Social Subsidies. These six sub-programs regroup 21 programs and entities, each one with their own structure and budget. A SPP decree also sanctions the elimination of some programs.<sup>9</sup> However, most of the programs being eliminated have low budget allocations.

To some extent, the SPP outlines a less ambitious reform agenda than previous reordering plans. Fewer programs are eliminated and a greater number is passed from *ad hoc* institutions to sectoral entities. It is rather unclear which institutional mechanisms would improve the articulation between sub-programs and within sub-programs. Additionally, the SPP decree does not clearly outline links with the system defined by the Social Security Reform (SSR) law 87-01, therefore generating the risk of duplicities. For example, by design the CCT program *Comer es Primero* (Annex A.1) established under the SPP, and *Pensión Solidaria*, the solidarity pension program that represents the fully subsidized social security pillar,<sup>10</sup> run the risk of overlapping. This is particularly the case if *Comer es Primero* is directed, as proposed, to extremely poor families regardless of their age

---

<sup>7</sup> García, M. (2005); Dotel, O. and R. Cañete (2005).

<sup>8</sup> Qualitative evaluations are available only for two programs: *Tarjeta de Asistencia Escolar* (TAE), recently transformed into *Incentivo a la Asistencia Escolar* (ILAE), and the school lunch program *Programa de Alimentación Escolar* (PAE). A more quantitative evaluation of PAE is currently in a planning stage.

<sup>9</sup> Presidential Decree 1554-04.

<sup>10</sup> Article 67 Law 87-01. The Solidarity Pension would be issued to any person with disability regardless of their age, to people age 60 and above who have not contributed to social security during their working life, and mothers head of household age 45 and above with two or more children who cannot afford a basic consumption basket. See Lizardo, J. (2004).

structure.<sup>11</sup> The program taxonomy presented in the SPP Decree includes two sub-programs, Social Assistance and Social Subsidies, the interventions of which are very similar in nature. For example, the program *Comer es Primero*, which is by design a consumption subsidy intervention, is ascribed to the Presidential Plan to Fight Poverty (PPFP), as part of the SA sub-program and not as part of the Social Subsidy sub-program, where other consumption subsidy interventions are ascribed to.

Within SA programs, the institutional and operational framework of interventions related with cash/in-kind transfers and subsidies is fragmented. Within this category fall various interventions of the PPFP, such as direct food donations, as well as programs that provide food items at subsidized prices such as *Comedores Económicos* and INESPRES, the CCT *Comer es Primero*, and consumption subsidies such as LPG gas and electricity subsidies.

The Government plans to channel a number of SA programs through the SIUBEN.<sup>12</sup> *Comer es Primero* and the *Incentivo a la Asistencia Escolar* (ILAE), another CCT (described in Annex A.1), the LPG gas subsidy and the subsidized regime of the Dominican System of Social Security will all be channeled through the SIUBEN. The development of the SIUBEN, despite the weaknesses identified in its initial implementation (discussed below), represents an important effort in a country where the targeting performance of social programs has traditionally been weak. Although important, the SIUBEN is a targeting tool and, as such, it can complement but not substitute other measures that should address the weaknesses of the overall SA institutional framework discussed above to increase the quality and efficiency of SA expenditures and develop a well-structured M&E system.

## II. HOW WELL DOES SIUBEN IDENTIFY THE POOR?

- When household per capita income and income poverty measures are used as benchmark to assess the precision of the SIUBEN-ICV classification rules, the leakage rate (the fraction of beneficiaries who are non-poor, that is, the proportion of non-poor households that the SIUBEN-ICV classifies erroneously as “eligible,” over the total number of households classified as “eligible” by the SIUBEN-ICV) and the under-coverage rate (e.g., the fraction of total poor who are left out, that is, the proportion of poor households that the SIUBEN-ICV classifies erroneously as “non-eligible,” over the total number of poor households) are relatively high, respectively 46.4 and 38.2 percent nationwide.
- If an alternative income Proxy Means Test (PMT) estimated according to the methodology described in Annex A.5 (using the same set of information contained in the short SIUBEN survey) were employed to predict households’ per capita income and therefore households’ poverty, leakage and under-coverage rates would be reduced by almost 16 percentage points. The use of an income PMT formula is therefore recommended to target transfer programs that have an income support (consumption subsidy) objective.

---

<sup>11</sup> The degree of overlapping could be even worse once the Price Stabilization Institute (INESPRES) will launch its Targeted Program for Food Assistance which is meant to benefit half a million poor households selected through the SIUBEN with a monthly subsidy of RD\$523 to purchase a food basket at subsidized prices.

<sup>12</sup> Presidential Decree 1073-04.

- The targeting performance of the SIUBEN-ICV, as well as that of any other PMT aimed at predicting households' welfare, does not only depend on the precision of the formula employed to correctly identify the poor, but also on the quality of the details of the implementation of the targeting strategy. A preliminary analysis of the SIUBEN operational processes suggests the need for an institutional consolidation, an improvement of survey collection supervision and validation activities, the definition of updating procedures, and of an adequate human resources and technological support structure.

### III. AN ASSESSMENT OF THE SIUBEN-ICV CLASSIFICATION FORMULAS

The same methodology used for the development of the Living Standard Index (*Índice de Condiciones de Vida - ICV*) poverty map<sup>13</sup> is being used by the Government as a per-household targeting tool and applied as Proxy-Means Test (PMT) for the creation of the SIUBEN. The Government's objective is to build a roster of SA program beneficiaries. This section analyses the SIUBEN-ICV's formula as a per-household targeting tool and compares it to other PMT instruments. Additionally, it reviews some of the SIUBEN operational characteristics.

Although, the SIUBEN-ICV welfare index captures welfare dimensions that are more related with Unmet Basic Needs (UBNs)<sup>14</sup>, the Government plans to use the SIUBEN-ICV to channel monetary and in-kind transfers to poor households. It is therefore justified in this exercise to use monetary measures of welfare as benchmark to gauge the SIUBEN-ICV PMT capacity to identify the income poor. We carry out the analysis using as benchmark the distribution of household per capita income derived from the 2004 ENCOVI.<sup>15</sup>

A full assessment of the SIUBEN-ICV targeting performance should take into consideration three factors: (i) the overall strategy used to identify and select the universe of eligible (poor) households, which in the case of SIUBEN is a two-stage strategy, i.e., geographical targeting first followed by per-household targeting; (ii) how well the PMT is implemented in practice; and (iii) the PMT algorithm's predictive power. Regarding the second factor, the capacity of a PMT formula to identify the poor could be excellent, but if the operational implementation of the PMT (e.g., survey collection and processing) is poor, the overall targeting performance of programs will be poor. Currently, there are no available sources of information that allow a full assessment of this second factor.<sup>16</sup>

***The SIUBEN-ICV formula does a good job at identifying the poor but it could be improved: almost 6 out of 10 households belonging to the poorest 40 percent in terms of their per capita income are also classified among the poorest 40 percent according to the ICV welfare index.*** Here we focus on assessing the ability of the SIUBEN-ICV PMT to correctly distinguish poor from non-poor households (i.e. the algorithm's predictive power). The SIUBEN-ICV formula is applied to the ENCOVI household-level data to

<sup>13</sup> See Annex A.5

<sup>14</sup> See Annex A.5

<sup>15</sup> Using the distribution of household per capita expenditures does not modify the general results. In Annex 2 we report the results taking as benchmark the distribution of household per capita expenditures.

<sup>16</sup> A baseline impact evaluation survey for any of the programs targeted through the SIUBEN could be used to assess the outcome of the SIUBEN implementation.

compute an ICV score for each household. First, we simply compare household rankings into income quintiles (i.e. divide the population of households in five equal size groups: from the poorest to the richest) according to: (i) the ICV, and (ii) per capita incomes (ENCOVI). At the national level, 39.7 (58.8) percent of households in the poorest 20 (40) percent of the SIUBEN-ICV score distribution also belong to the poorest 20 (40) percent of household per capita income distribution (Table 1.1, rows 1 through 4). The coincidence between SIUBEN-ICV and the income classification is slightly stronger in urban than in rural areas. In fact, 42.8 (60.9) percent of households in the poorest 20 (40) percent of the SIUBEN-ICV score distribution are also in the poorest 20 (40) percent of the household per capita income distribution in urban areas. The same figure is 37.6 (55.5) percent in rural areas.

**Table 1.1: Households' Poverty Classification by SIUBEN-ICV/Income PMT and Per Capita Income**

	Country (%)	Urban (%)	Rural (%)
<b>SIUBEN ICV PMT – income</b>			
Correctly classified as 20% income poorest families	39.7	42.8	37.6
Correctly classified as 40% income poorest families	58.8	60.9	55.5
Correctly classified as 60% income poorest families	73.7	74.4	70.4
Always correctly classified	32.3	34.1	29.5
<b>Income PMT (SIUBEN information) – income</b>			
Correctly classified as 20% income poorest families	59.3	58.9	57.1
Correctly classified as 40% income poorest families	73.8	73.8	73.0
Correctly classified as 60% income poorest families	82.6	83.1	81.0
Always correctly classified	45.3	45.6	43.5

*Note:* Based on per capita income quintiles, for example, the first quintile (Q1) refers to the bottom 20 percent households in the per capita income distribution. Income PMT is estimated using the same information contained in the SIUBEN survey.

*Source:* Own calculations based on the SIUBEN algorithm and the 2004 ENCOVI.

How does this compare internationally? According to an index proposed by Coady, Grosh and Hoddinott (2004), the targeting performance of this hypothetical transfer program – where no mistakes are taking place during PMT implementation – would fall just below the median range for means and proxy-means targeting methods in LAC. The median targeting performance of programs in the LAC region measured by the Coady-Grosh-Hoddinot (CGH) index<sup>17</sup> was 1.56, i.e., the poor received 56 percent more than their population share. The median performance of programs using means and PMT methods was 1.55 and 1.50 respectively.

The targeting performance of any PMT model can be measured by the under-coverage rate and the leakage rate, explained above. This mainly depends on: (i) the cut off point chosen to define who is eligible and who is not (or who is poor and who is not) according to the PMT model; and (ii) the actual distribution of eligible and non-eligible (or poor and non-poor) households. Therefore, another way to assess the capacity of the SIUBEN-ICV model to classify households between poor and non-poor is to calibrate the SIUBEN cut off point in such a way that the SIUBEN algorithm applied to the ENCOVI household-level information predicts the same poverty rate obtained using the poverty line derived

<sup>17</sup> The CGH index is constructed by dividing the portion of the transferred budget received by a population quintile divided by the portion of the population in that quintile.

from the ENCOVI, i.e., 34.5 percent of all households at the national level (30.1 percent in urban areas, 42.5 percent in rural areas). In this analysis, by construction, leakage and under-coverage rates coincide. Table 1.2 (option a) reports the results. At the national level, the SIUBEN leakage (under-coverage) rate is 45.1 percent, i.e., almost 5 out of 10 households estimated as poor by the SIUBEN algorithm are not income-poor according to the ENCOVI.

**Table 1.2: SIUBEN-ICV Leakage and Under-Coverage Rates**

	Leakage			Under-coverage		
	Country	Urban	Rural	Country	Urban	Rural
<b>SIUBEN-ICV PMT</b>						
(a) ICV- PMT cut off calibrated to match income pov. rate	45.1	47.0	42.8	45.0	46.9	42.7
(b) Original ICV-PMT cut off points	46.4	46.3	46.6	38.1	47.7	26.0
<b>Income PMT (SIUBEN information)</b>						
(c) Income PMT cut off calibrated to match income pov. rate	29.4	32.4	25.8	29.5	32.5	25.8
<b>Income PMT (all variables contained in ENCOVI)</b>						
(d) Income PMT cut off calibrated to match income pov. rate	29.3	32.0	25.8	29.3	32.0	25.8
<b>Income PMT (excluding school assistance, employment)</b>						
(e) Income PMT cut off calibrated to match income pov. rate	32.5	35.9	28.1	32.5	35.9	28.1

*Notes:* (a) SIUBEN-ICV cut off points are calibrated to reproduce the same income poverty figures of the 2004 ENCOVI; (b) household per capita income poverty based on the poverty line and ENCOVI data; (c) estimation based on the same set of variables contained in the SIUBEN survey. The income PMT cut off point is calibrated so that the income PMT and ENCOVI poverty headcounts coincide; (d) estimation based on all variables included in the ENCOVI. The income PMT cut off point is calibrated so that the income PMT and ENCOVI poverty headcounts coincide; and (e) estimation based on all variables from the ENCOVI except for children's school attendance and household members' employment. The income PMT cut off point is calibrated so that the income PMT and ENCOVI poverty headcounts coincide. *Source:* Own calculations based on the SIUBEN algorithm and the 2004 ENCOVI.

On the other hand, taking the SIUBEN-ICV official cut off points as given and applying the SIUBEN-ICV algorithm to the ENCOVI household-level data, 39.9 percent (29.3 percent in urban and 58.8 percent in rural areas) of households would be considered poor at the national level (i.e., they would belong to ICV-II and ICV-I) and 6.4 percent (3.5 percent in urban and 11.7 percent in rural areas) extremely poor (i.e., they would belong to ICV-I)<sup>18</sup>. When the household classification according to the SIUBEN-ICV score is compared to the income-poverty headcount derived from the ENCOVI, a reduced under-coverage rate should be expected, i.e., a higher proportion of households that are classified as income-poor are also classified as poor by the SIUBEN (ICV-I or ICV-II). On the other hand, leakage rates should increase, i.e., it would increase the proportion of households classified as poor according to the SIUBEN-ICV, which are not indeed income-poor according to the ENCOVI. Table 1.2 (option b) confirms these predictions. At the national level the leakage rate increases slightly (4.6 out of 10 households classified as poor by the SIUBEN are not income-poor according to ENCOVI and the ENCOVI derived poverty line). On the other hand, under-coverage rates fall, i.e., 38.1 percent of income-poor households (47.7 percent in urban and 26.0 percent in rural areas) according to the ENCOVI (and the ENCOVI derived poverty line)<sup>19</sup> are not classified as poor by the SIUBEN.

<sup>18</sup> See Annex A.5 for a definition of ICV categories.

<sup>19</sup> See Dominican Republic Poverty Assessment (2005).

#### IV. ALTERNATIVE PMT TARGETING FORMULAS

***The use of an income Proxy Means Test (PMT) methodology equivalent to that described in Annex A.5 can improve targeting of transfer programs with an income support (consumption subsidy) objective.*** Given the discussion surrounding the use of the 2004 ENCOVI expenditure data, we recommend that household predicted income be used as an alternative PMT mechanism against which to compare the SIUBEN-ICV predictive power (e.g., the capacity to identify correctly poor households).<sup>20</sup> Although it is not surprising that by using the household per capita income as benchmark the predictive power of the income PMT is superior to that of the SIUBEN-ICV PMT, it is nevertheless relevant to estimate the order of magnitude of the improvement. The specific nature of SA programs might in fact justify the use of an income PMT tool over the SIUBEN-ICV mechanism, for example in the case of consumption/income subsidies or income generating programs. Given that the information contained in the SIUBEN-ICV short survey is what is needed to estimate a basic income PMT, no extra data collection activities would be needed.

The methodology used to estimate the income PMT is presented in Annex A.5. The logarithm of household per capita income is the dependent variable of the income PMT model. The model is developed for prediction purposes only and underlying behavioral patterns cannot be identified.<sup>21</sup> Table A.3.1 in Annex A.3 reports the income PMT estimation results obtained when the model is estimated using the ENCOVI but restricting the set of variables used to those that are also contained in the SIUBEN-ICV survey (henceforth “SIUBEN information”). Table 1.1 (rows 5 through 9) shows that, at the national as well as at urban and rural levels, the log per capita income PMT model (henceforth “income PMT”) does a better job than the SIUBEN-ICV model at ranking households according to the same quintile of household per capita income. 59.3 (73.8) percent of households among the poorest 20 (40) percent of the income PMT score distribution are also among the poorest 20 (40) percent of the household per capita income distribution. Therefore, if the bottom 40 percent of income poor households were the targeted population of a flat transfer, under the income PMT scheme they would receive 84 percent more than their population share. The same figure was 46 percent for the SIUBEN-ICV model.<sup>22</sup>

Next, we calibrate the income PMT cut off point so that the income PMT algorithm applied to the 2004 ENCOVI predicts the same poverty rate obtained in the income poverty estimates using the poverty line derived from the ENCOVI. By construction, as already mentioned above, leakage and under-coverage rates coincide. Table 1.2 (option c)

---

<sup>20</sup> The results of the expenditure PMT are also available.

<sup>21</sup> Using step-wise elimination of regressors with replacement, through an iterative process we removed insignificant explanatory factors keeping only those that are significant at a predetermined cut off significance level. Initially, the model started with 82 variables. At the end, 39 were left for the urban area and 32 for the rural area. The methodology is sensitive to non-normality and heteroskedasticity, thus appropriate tests were implemented.

<sup>22</sup> When household ranking by quintile of the income PMT is assessed using the distribution of household per capita expenditures, income PMT still does a better job than the SIUBEN-ICV model (see Annex A.2 for detailed results). This result is achieved in spite of the SIUBEN being designed to supposedly capture the more “structural/long term” dimension of poverty, which should be more associated with household per capita expenditures.

shows that the income PMT under-coverage (and leakage) rate is 29.4 percent at the national level, 32.4 percent at the urban and 25.8 percent at the rural level. Overall, a 16 percentage points improvement from the same figures is obtained with the SIUBEN-ICV PMT under the same set of assumptions, regardless of the geographical disaggregation considered. This means that 34 percent of non-eligible (non-poor) households classified as eligible (poor) by the SIUBEN-ICV would be correctly classified as non-poor by the income PMT and that 34 percent of eligible (poor) households classified as non-eligible (non-poor) by the SIUBEN-ICV would be correctly classified as poor by the income PMT.

These results show that there is room to improve the targeting outcome of programs with an income support (consumption subsidy) objective. Since by definition, these programs should be targeted to the income (consumption) poor, an income PMT could deliver a better targeting outcome than that obtained with the application of the SIUBEN-ICV formula. More importantly, these results are obtained with an income PMT model estimated with the ENCOVI but restricting the set of variables used in the estimation to those that are also contained in the SIUBEN-ICV survey. Therefore, the adoption of the income PMT formula would come at no additional costs. In fact, the income PMT formula could already be applied to the SIUBEN database to determine households' eligibility, for example, for the new CCT programs such as *Comer es primero* and ILAE. The income PMT formula could be applied to those households who are already in the roster of beneficiaries, when a re-certification of their eligibility status will take place.

***Avoiding perverse incentives in implementation.*** An important issue that should be taken carefully into consideration when deciding about a PMT model specification is the interaction between the objectives of the program and the specification of the PMT model. For example, if a PMT model is used to identify and select eligible families in order to provide their children with scholarships that are conditional on children's school enrollment and/or assistance, the inclusion of children's school enrollment and/or assistance in the PMT set of regressors might generate perverse outcomes. In fact, households with children not enrolled in school are probably more likely to be poor and therefore more likely to benefit from the scholarship program. If the PMT model were to be used to re-assess households' poverty situation after they have been in the program for a certain period of time, the PMT model might indeed "penalize" those households who have in fact enrolled their children in school, by attributing them a higher welfare score that might place them above the eligibility cut off for the scholarship program.

Finally, another relevant aspect is the extent to which variables included as regressors in the PMT can be verified to avoid manipulation. For example, in countries where the share of labor market informality is high, variables such as the employment status of household members are extremely difficult to validate and are likely to be manipulated. This risk is even higher when households already know that the employment status information they provide could qualify or disqualify them from receiving benefits. On the one hand, the elimination from the set of regressors of variables that could be easily manipulated might reduce the predictive power of a PMT model. On the other hand, it could help reduce targeting errors once the PMT is implemented. Table 1.1 (options d and e) reports the leakage and under-coverage rates of a different specification of the income PMT model where the full range of variables available in the ENCOVI are included without restricting the initial choice to those variables contained in the SIUBEN-ICV survey (Table A.3.2 in

Annex A.3 reports the model's estimation results). Differences with the income PMT model estimated using just the set of variables contained in the SIUBEN survey are insignificant. When income PMT model is estimated excluding children's school assistance and household members' employment status from the set of regressors, leakages and under-coverage rates increase by approximately 3 percentage points (Table A.3.3 in Annex A.3 reports the model's estimation results).

## V. KEY CHALLENGES FOR THE SIUBEN MANAGEMENT SYSTEM

***Targeting can work but design and implementation details matter to final distributive outcomes.*** As mentioned above, the targeting performance of the SIUBEN does not only depend on the predictive power of the algorithm but also on the quality of the operational process that, starting with data collection activities, leads to beneficiaries' enrollment into the SIUBEN roster. The successful implementation of this process is key to ensure a solid targeting performance of the programs adopting the SIUBEN as their beneficiary selection mechanism.

Currently the SIUBEN lacks a well developed management system. The SIUBEN Unit ascribed to the Social Cabinet is in charge of data collection, application of the SIUBEN algorithm and classification of the surveyed population in four welfare categories. In order to perform a constant updating of the roster of beneficiaries, the SIUBEN depends on the human and technology resources developed by other entities, namely the governmental entities in charge of the execution of specific programs. Given that these resources are basically not yet in place and that the protocol through which this updating will feedback into the SIUBEN is untested, there is a risk that the SIUBEN roster of beneficiaries will rapidly become obsolete.<sup>23</sup>

The experience of other countries in the Latin America and Caribbean (LAC) region<sup>24</sup> shows that: (i) a well managed roster of beneficiaries requires a constant updating with large inflows and outflows of information regarding changes in household demographic structure or eligibility conditions; and (ii) roster management is the key element to ensure accountability, transparency, efficiency and equity of transfer and subsidy programs. The roster management should be a self contained process. All stages of this process, from data collection and validation, PMT application and beneficiaries' enrollment, to household/individual information updating, should be carried out under the supervision of one entity. This entity should be responsible for the final quality of the roster of beneficiaries. The integrity of the whole process should be ensured even if specific activities are outsourced. To our knowledge, in the case of SIUBEN, the supervision of data collection activities is rather weak. Data collection is "decentralized" to various entities, e.g., NGOs and community organizations with weak supervision. On the contrary, data processing and validation is centralized, e.g., it is taking place very far from the areas where households are interviewed, therefore making it almost impossible to rely on multiple household interviews to fix problems detected in the collected information. Castañeda et al. (2005) carried out an in-depth analysis of key design and implementation

---

<sup>23</sup> According to *Comer es Primero* personnel, when the program started the validation of household-level information provided by the SIUBEN, many more households than those included in the SIUBEN list showed up asserting that they had not been interviewed by the SIUBEN in the first place.

<sup>24</sup> For example, in the case of conditional cash transfers in Mexico, Nicaragua and Colombia.

factors for household targeting system in the United States and five countries in LAC. Some of the findings of this study, summarized in Box 2, could be very useful to guide the process of consolidation of the SIUBEN.

**Box 2 Designing and Implementing Household Targeting Systems: Lessons from Latin America and the United States**

While the actual design and implementation of household targeting systems varies significantly by country, most systems involve the following basic steps: (a) collecting data on specific (potentially eligible) households via interviews (and sometimes home visits) using pre-designed questionnaires (which depend on the type of household assessment mechanism); (b) entering these data into a unified household information registry (with varying degrees of verification and consistency checks); (c) comparing household characteristics with pre-established eligibility criteria (program-specific); and (e) establishing program-specific beneficiary lists (sub-registries) for the purposes of program implementation and payroll.

Castañeda et al. (2005) presents an in-depth assessment of key design and implementation factors and their potential impact on outcomes for household targeting systems in Chile, Colombia, Costa Rica, Mexico (which all use Proxy Means Tests to target a wide-range of social programs to the poor and vulnerable), Brazil (which uses an Unverified Means Testing in which eligibility decisions for social programs, including the *Bolsa Família* Program, are based on self-reported income with little or no verification) and the United States (which uses Verified Means Testing in which eligibility for social programs is determined via an assessment of household incomes and assets with rigorous verification to improve target accuracy). A number of key messages do emerge from the cross-country analysis:

- Household targeting systems should be designed with care. The international review by Coady, Grosh and Hoddinott (2004) finds that targeting *can* work, but doesn't always. Design and implementation details matter to distributive outcomes. Too often governments want to launch programs quickly and they – and consultants hired to help them – do not pay enough attention to the necessary details that go into designing and implementing household targeting systems. These systems take time to design, pilot, and implement on a large scale (at least 18 months). Numerous factors should be considered, including: (a) an appropriate data collection strategy; (b) adequate systems management; (c) the feasibility and potential accuracy of household assessment mechanisms; (d) institutional arrangements; and (e) monitoring and oversight mechanisms to ensure transparency, credibility and control of fraud.
- Data collection processes should be carefully designed so as to ensure transparency, dynamism (open entry into registries), outreach to the (potentially) poor, cost efficiency, and administrative feasibility. The strategy for conducting interviews and collecting data is as important to the success of household targeting systems as the type of eligibility mechanism used. Both demand registration and survey-based approaches have their advantages and disadvantages. The *quasi-exhaustive survey approach* has the advantage of being cheaper (per interview) to implement. It also favors outreach to the poor. However, the survey approach in general is generally static (allowing for only infrequent registration and updates) and is found to be associated with somewhat weaker targeting accuracy in the six countries by Castañeda et al (2005). In contrast, the *on-demand applications approach* favors dynamic, on-going registration as well as regular updating and re-certification (due to the extensive network of welfare offices usually present with this approach). It was also associated with stronger targeting accuracy (lower leakage) among the cases examined Castañeda et al (2005). Nonetheless, the on-demand approach can also miss the poor (lower coverage), who may be less informed or connected. Depending on the poverty density of particular areas, mix of data collection approaches can be an effective way to balance the goals of maximizing outreach to the poor with minimizing the costs of interviewing large numbers of likely ineligible non-poor households. Micro-area poverty maps can help guide these designs choices by providing localized information on poverty prevalence and density.

## Box 2 Designing and Implementing Household Targeting Systems: Lessons from Latin America and the United States (Continued)

- Several factors pertaining to information management affect the quality of household targeting systems. First, a consolidated national database is important and can help avoid duplications and track beneficiaries, even if data are collected locally. Second, proper identification of individuals is crucial. A unique social identification number should be used – ideally one that is used on a country-wide basis to be able to link registry information and beneficiaries with other systems and programs. Moreover, software and coding systems need to be designed to link individuals with particular families (or assistance units). In the absence of a single national identification number, registry questionnaires often collect information on multiple identification numbers and characteristics and then assign a new social identification number upon registration (and codes to link individuals to families). Third, updates and re-certifications are important for tracking fraud and avoiding situations such as “ghost” beneficiaries, which can emerge as registries become dated. Fourth, database management should be designed to be able to flexibly respond to changing policies and updates and rely on common software (even if data entry is decentralized) with pre-testing of systems, well-designed manuals, and adequate training for users.
- The choice of household assessment mechanism (verified means testing, unverified means testing, proxy means testing) depends on a number of factors, including (a) cost and administrative feasibility; (b) technical feasibility, given the degree of informality in the economy; and (c) political acceptability.
- Combining household assessment with geographic targeting can improve accuracy. Most countries in LAC combine household assessment mechanisms with a certain degree of geographic targeting. The international review by Coady, Grosh and Hoddinott (2004) shows that combining multiple types of targeting mechanisms (e.g., PMT with geographic targeting) can yield higher accuracy. Areas with high concentrations or density of poverty can be prioritized for registration (e.g., with the survey-outreach approach) and program expansion although households might be let be able to apply to register in the unified household information system at any time via on-demand applications.
- Institutional roles should be clearly defined and communicated. Designing clear institutional roles is essential for the success of household targeting systems. Institutional arrangements vary significantly by country and should be tailored to local realities (ideally building on existing government structures if they work well). Nonetheless, arrangements should be made to promote quality at all levels and clear guidelines for processes should be communicated and used for oversight.
- Strong mechanisms for monitoring and oversight are crucial for all systems, but especially with decentralized data collection. While no system is 100% immune to fraud or leakages, a variety of tools should be used to minimize them. Multiple mechanisms can be used, including: supervision of interviews, verification of information, automated checks, comparing registries with other data, random-sample quality control reviews, and citizen oversight (“social controls”). Using multiple instruments strengthens the system.

Additionally, as noted before, a high percentage of members of surveyed households<sup>25</sup> who would qualify as poor according to the SIUBEN lack personal identity documents.<sup>26</sup> This is an important challenge facing the enrollment process in the SIUBEN system that requires decisive political actions to tackle the issue of undocumented individuals in the DR.

<sup>25</sup> According to the SIUBEN unit, this figure is close to 25 percent of the population surveyed at the national level.

<sup>26</sup> In other countries of the region such as Mexico and Nicaragua, beneficiaries of CCT programs are identified through other mechanisms, for example holograms and cards carrying pictures issued by CCT executing agencies. In El Salvador a similar solution is being explored. These however are temporary solutions that only serve the purpose of easing access to these programs.

## VI. DISTRIBUTIONAL CHARACTERISTICS OF SOCIAL ASSISTANCE/SOCIAL INSURANCE PROGRAMS

- At the beginning of 2004, coverage of SA programs was extremely high and its distribution neutral across quintiles. Overall, SA transfers were very poorly targeted. The sum of SA programs in question is regressive in absolute terms, reinforcing the pattern of total private transfers. If the transfers of programs such as PROMESE drugs distribution, INESPRES and LPG gas subsidies (before the implementation of the Apache Plan) had been randomly allocated (“helicopter drop” allocation), they would have benefited the poor much more than they actually did.
- Only the school lunch program (PAE) and conditional school grants (TAE), among those examined, clearly favored individuals at the poorer end of the spectrum. Nonetheless, even in these two cases, significant savings (approximately 20 percent of their monthly budget) and welfare gains could be achieved by improving their targeting and decreasing leakages.
- SA transfer unit values, which are relatively small, limit the impact of individual programs on social welfare, poverty and inequality. Nonetheless, the joint impact of a sub-sample of SA programs (TAE, PAE, PROMESE, INESPRES and LPG gas subsidies) on poverty headcounts is not negligible, although 75 percent lower than the impact of domestic and international private transfers. The design features and budget allocations of these programs (for example in favor of LPG gas subsidies) curb the overall impact on poverty and inequality measures.
- The welfare impact of social assistance programs would greatly benefit from a consolidation of fragmented interventions with similar objectives and from an improvement in their overall design and targeting mechanisms. If transfers were well targeted, they could at least partially counteract the un-equalizing impact of international private remittances.
- Social Insurance (SI) programs have extremely low coverage. Although unit benefit values are far more generous than SA benefits, the distribution of these benefits in absolute and relative terms is biased in favor of the rich and urban residents. These programs are typically accessible through employment in the formal labor market. To the extent that poor households are less likely to be employed in the formal sector, they are also less likely to benefit from it. Therefore, any marginal contribution of publicly-subsidized SI transfers to social welfare will remain low in the medium term.

In this section we measure the extent to which public subsidies and transfers in the DR redistribute income. Just for comparison purposes we also compute some distributional outcomes of private (national and international) transfers received by households.<sup>27</sup> To

---

<sup>27</sup> This includes coverage, incidence analysis and impact on poverty and inequality measures (the latter only for international remittances, given that national transfers are not net transfers). The impact on poverty measures of national transfers is calculated under the assumption that poor households are net recipients.

measure the distributional characteristics of some of the SA/SI transfer programs executed in the DR, we consider a number of indicators: (i) unit transfer values (i.e., how much each individual member of a beneficiary household receives); (ii) coverage (i.e., who receives the transfer); (iii) absolute incidence (i.e., who receives what share of the program's budget); (iv) relative incidence (i.e., which share of a particular group total income the transfer represents); (v) the Coady-Grosh-Hoddinot (CGH) index; (vi) the impact on poverty and inequality measures; and (vii) the distributional characteristic index (DCI, which measures how effective a given program is at getting the transfer budget to the most needy individuals) and its decomposition into targeting efficiency and redistributive efficiency.

The estimation of the indicators mentioned above requires the selection of: a poverty line and an individual welfare measure. We use the poverty line derived from the ENCOVI and per capita income as our welfare measure. The ENCOVI allows computing coverage for eleven SA/SI programs. However, it does not provide information on the transfer amounts households received during the survey re-calling period for any of these programs. This limitation poses a challenge for the analysis. We were able to estimate the transfer amounts for seven out of the eleven SA/SI programs in question by making assumptions based on the information derived from administrative data and, in a few cases, from these programs' rules of operations. Five of the seven programs in question fall into the SA category (described more extensively in Annex A.1):

- ***Tarjeta de Asistencia Escolar (TAE)***. TAE is a CCT program to improve children's school assistance and retention in primary education (in theory children ages 5-15 in practice older given the high coverage rates). The program ran until 2004 and was then transformed into the School Assistance Incentive (*Incentivo a la Asistencia Escolar, ILAE*). Each beneficiary eligible household received a monthly transfer of RD\$300. We assume that RD\$300 is the amount received in the month previous to the interview by households who answered to have received the TAE in the last 12 months. According to the 2004 ENCOVI, 3.4 percent of households who received the TAE did not have any household members in the age range of 1-25.
- ***School Lunch Program (Programa de Alimentación Escolar, PAE)***. PAE is a school lunch program with national coverage for children ages 5-14 enrolled in primary education (in practice, because the age criteria is not strictly applied given coverage cases). The monthly value of the school lunch received by children enrolled in pre-basic and basic school is estimated at RD\$152.7 for 2004.<sup>28</sup> According to ENCOVI, 2.5 percent of the households that received the PAE in the twelve months previous to the ENCOVI interview did not have children in the age range 5-20.

---

<sup>28</sup> The annual budget executed by the PAE program in 2004 was RD\$2,442.71 million (US\$59.2 million assuming the 2004 official average exchange rate of US\$1 = RD\$41.25). The total number of beneficiaries for the three modalities of the PAE was 1,600,418 and the number of school lunches served 288,190,388. Therefore, the estimated value of each meal was RD\$8.5. This estimated value excludes some but not all of the administrative costs of operating the program (for example recurrent costs, such as PAE staff salaries). Additionally, we assume that each child receives 180 rations per year, which is off course an upper bound. Thus, the estimated value should be considered an upper bound of monetary value of the benefits received by each child. Taking all this into consideration, the monthly monetary value of the benefit received by each child ages 5-14 enrolled in school is estimated at RD\$152.7.

- **Essential Drugs Program (Programa de Medicamentos Esenciales, PROMESE).** PROMESE provides essential drugs at subsidized prices to poor segments of the population through hospitals, rural clinics and *boticas populares* (popular pharmacies). To assess the distributional characteristics of PROMESE, we assume that each member of a household who has benefited from the program in the twelve months before the ENCOVI interview, received a monthly allocation of RD\$5.1.<sup>29</sup>
- **LPG gas subsidies.** We estimate the value of the LPG gas subsidy received monthly by each household in ENCOVI. The analysis refers to the situation before the implementation of the Apache Plan in August 2004, which tries to exclude from receiving the subsidy those LPG gas consumers purchasing gas in tanks with a capacity of more than 22.5 gallons. The estimated monthly average value of the subsidy received by households purchasing LPG is RD\$346. An estimated 1.91 million households received the subsidy (83 percent of all households).<sup>30</sup> In the next section we simulate the impact of the proposed changes in the rules of operation of the LPG gas subsidy program.
- **Price Stabilization Institute (INESPRE)/popular markets.** In principle, INESPRES intervenes primarily in remote poor areas where private commercial wholesale or retail outlets are scarce and where INESPRES would purchase whatever agricultural goods are left at the end of the day at below market prices and re-sell them at subsidized prices primarily in urban marginal areas. To assess the distributional characteristics of the program, we assume that each member of a household who benefited from the program in the twelve months previous to the ENCOVI interview received a monthly allocation of RD\$11.5.<sup>31</sup>

<sup>29</sup> This amount derives from dividing the amount of the budget that PROMESE estimates was the value of the transfer to consumers in 2003 (i.e. the difference between what consumers would have spent if they had bought the same drugs in private pharmacies, and what they actually spent purchasing these drugs through PROMESE) by the number of households who said to have benefited from the program in the twelve months previous to the ENCOVI interview. This amount was estimated at RD\$275.5 million.

<sup>30</sup> In February 2004, the difference between the market and the subsidized price per gallon of gas for household consumption was RD\$32 (the market price RD\$57 was more than double the subsidized price RD\$25). Only 58 percent of all households in the 2004 ENCOVI exclusively used LPG gas for cooking in the month previous to the interview, 25 percent used LPG gas and other types of fuel, and 17 percent did not use LPG gas for cooking. We make the assumption that all LPG gas consumed by households for cooking purposes before the implementation of the Apache Plan was subsidized. The number of LPG gallons consumed by the second group is estimated using the coefficient of a LPG gas consumption model (estimated with STATA median regression method). The model's dependent variable is the number of LPG gallons consumed by households (for the first group, it was obtained by dividing the monthly total expenditure in LPG gas for cooking by the subsidized unit price of a gallon of gas; for the second and third group, it was set at 0). The model's explanatory variables, which turn out to be significant, include geographical location, household income and total expenditure net of gas consumption, household size and schooling of the head of the household, number of adults in the household, and possession of a cooking stove and of a refrigerator. Given the estimated pattern of households' consumption, the total estimated monthly subsidy is RD\$661.8 million, which is not far from official figures (estimating the total amount of LPG subsidies at RD\$690 million in March 2004). It is likely that LPG gas purchased for cooking might also have been used for transportation purposes (the size of the tank is the same), while the percentage of households who declare to use LPG gas for lighting purposes is less than 0.5 percent of the total.

<sup>31</sup> This amount derives from dividing the amount of INESPRES/popular markets estimates of the value of the transfer to consumers in 2003 (i.e. the difference between the value of the products acquired by INESPRES and the value of the same products sold to the public) by the number of households who said

Two of the seven programs fall into the SI category:

- **Health care services received by people affiliated to the social security (SS-Health).** We assess the distributional characteristics of health care services (e.g., consultation, drugs, lab analysis, and hospitalization), which households affiliated to the social security system say to have received “for free” in the month previous to the ENCOVI interview. The unit value of each category of health care services is assumed to be equal to the average amount paid for the same category of services by those un-insured individuals who bought them in the month previous to the ENCOVI interview.
- **Retirement pensions.** The distributional characteristics of retirement pensions are assessed by considering the monthly value of retirement pensions received by all household members.<sup>32</sup>

This paper does not examine the way taxes or contributions are collected to finance neither transfers nor the redistributive impact of these taxes and contributions. Rather it assumes that these financing mechanisms are neutral from a distributional point of view. This assumption is especially strong in the analysis of the distributional characteristics of SI programs. Therefore, we decided to estimate the CGH and the distributional characteristic indexes only for SA programs. Finally the ENCOVI reports household access to a series of in-kind transfer programs such as *Comedores Económicos*, direct food donations mostly from the PFP, as well as access to an electricity subsidy program for poor urban neighborhoods. However, neither the ENCOVI data nor administrative sources allow estimating the value of the average transfer per capita of these programs. Therefore we only compute coverage rates.

Table 1.3 shows that average unit transfers vary significantly by transfer type. Unit transfers are far more generous for SI than SA programs in the DR, a pattern also observed in other countries in LAC.<sup>33</sup> The order of magnitude of the average per capita monthly international remittances and national private transfers for those households who receive private transfers is respectively 40 and 10 times greater compared to the size of SA publicly-subsidized transfers. The last column of Table 1.3 shows the percentage of total monthly transfers accruing to the richest 40% of households of the per-capita income distribution. This information is especially important for SA programs, because not only a better targeting of these programs is feasible, but it could lead to substantial fiscal savings (for example for PAE, LPG gas subsidy and INESPRES).

---

to have benefited from the program in the twelve months previous to the ENCOVI interview. The value of the transfer was estimated at RD\$455 million in 2004.

<sup>32</sup> The information contained in the ENCOVI includes the old regime of social security of the Dominican Institute of Social Security. The Social Security Reform includes generous schemes for poor segments of the population (*Pensión Solidaria*) and informal workers. See Lizardo, J. (2004).

<sup>33</sup> See Lindert, Skoufias and Shapiro (2005). They include a seven-country sample: Argentina, Brazil, Chile, Colombia, Guatemala, Mexico and Peru.

**Table 1.3: Number of Beneficiaries and Average Size of Transfers**

	Number of individuals residing in beneficiary households (thousands)	Average monthly transfer received by individuals (RD\$)	Total monthly expenditures (million RD\$)	% of total monthly expenditures accruing to the (income) richest 40 percent of the population
TAE	364.1	59.0	21.5	21.5
PAE	2810.2	50.3	141.5	20.6
PROMESE	4495.1	2.9	13.2	42.7
LPG Gas Subsidy	7669.9	86.3	661.8	57.6
INESPRE/Popular markets	3309.4	24.3	80.3	42.6
Pensions	460.6	894.8	412.1	84.5
SS-Health	274.7	253.4	69.6	58.0
<b>Private transfers (national)</b>	2124.5	619.1	1315.2	
<b>Private transfers (international)</b>	2047.8	2614.8	5354.6	

Source: Own calculations based on the 2004 ENCOVI and administrative data.

**Coverage, absolute and relative incidence: almost everyone is a beneficiary of at least one SA program but transfer unit values by program are relatively low.** Table 1.4 presents coverage figures. Overall, and consistently with the evidence for the LAC region, coverage is higher for SA than SI programs in the DR.<sup>34</sup> Coverage rates are higher for poor quintiles as compared to richer quintiles for PAE and TAE. Gas subsidy coverage prior to the implementation of the *Plan Apache* favored richer quintiles. For other programs, such as *Comedores Económicos*, PROMESE, INESPRES and electricity subsidies for poor neighborhoods coverage by income quintiles is relatively flat up to the fourth quintile and declines in the fifth quintile (poorest 20 percent of households).<sup>35</sup> Overall SA coverage is extremely high across quintiles while the pattern urban vs. rural slightly favors urban areas. As expected, overall coverage for SI programs is higher for richer quintiles and urban residents. This is not surprising given that participation in most SI programs is associated with formal employment. Overall SI coverage is among the lowest in the LAC region.<sup>36</sup> The pattern of international remittances strongly favors richer quintiles and urban areas. The coverage distribution of private national transfers tends to favor the four poorest quintiles and rural areas.

<sup>34</sup> See Lindert, Skoufias and Shapiro (2005).

<sup>35</sup> The Program of electricity subsidies for poor neighborhoods (PRA) was created in 2001 (see Annex 5.1). Its cost to the Government has been in the range of US\$5-15 million per month. In the medium-term a re-targeting of subsidies and review of the PRA will take place to address the issue of financial sustainability and effectiveness. Additionally, the generalized subsidy, which covers roughly 90 percent of the population, averaged about US\$10 million/month in the first half of 2004. See World Bank (2005).

<sup>36</sup> Lindert, Skoufias and Shapiro (2005) report Guatemala (3 percent) and Mexico (4 percent) among the countries with the lowest pension coverage.

**Table 1.4: Coverage (%)**

	Total	By Income Quintile					Urban/Rural	
		Q1	Q2	Q3	Q4	Q5	U	R
<b>Total private transfers</b>	0.413	0.323	0.381	0.425	0.460	0.476	0.416	0.408
<b>All Social Assistance</b>	0.962	0.947	0.961	0.971	0.972	0.960	0.981	0.929
<b>All Social Insurance</b>	0.077	0.040	0.069	0.081	0.091	0.106	0.089	0.056
<b>Social Assistance</b>								
TAE	0.041	0.078	0.053	0.040	0.025	0.010	0.019	0.082
PAE	0.320	0.502	0.424	0.341	0.222	0.110	0.266	0.416
PROMESE	0.511	0.541	0.553	0.556	0.513	0.394	0.523	0.490
Gas Subsidy	0.872	0.737	0.862	0.916	0.921	0.926	0.944	0.746
<i>Comedores Económicos</i>	0.019	0.022	0.017	0.017	0.020	0.021	0.020	0.018
Direct food donations	0.022	0.028	0.027	0.018	0.020	0.019	0.020	0.026
INESPRE/ Popular markets	0.376	0.388	0.404	0.417	0.368	0.305	0.400	0.334
Electricity subsidies poor neighborhoods	0.144	0.143	0.140	0.165	0.156	0.114	0.148	0.136
<b>Social Insurance</b>								
Pensions	0.052	0.022	0.042	0.049	0.062	0.087	0.063	0.034
SS-Health	0.031	0.019	0.032	0.037	0.041	0.027	0.034	0.026
<b>Private transfers (national)</b>	0.242	0.259	0.241	0.253	0.260	0.195	0.220	0.281
<b>Private transfers (international)</b>	0.233	0.098	0.184	0.229	0.289	0.364	0.262	0.181

*Note:* Coverage: (Number of individuals in the group who live in a household where at least one member receives the transfer)/(Number of individuals in the group) e.g., 0.3 means 30 percent.

*Source:* Own calculations based on the 2004 ENCOVI.

Absolute incidence figures (Table 1.5) show who gets what share of the program's total budget. In 2004, among SA programs, TAE and PAE transferred the highest percentage of total program resources to individuals in the poorest 40 percent of families, while LPG gas subsidies transferred the highest percentage of the overall budget (57.6 percent) to the richest 40 percent of households and to urban areas (75.2 percent). Still, TAE and PAE distributed 21.5 percent and 20.6 percent of their total budget, respectively, to the richest 40 percent of the population. When the five SA programs in question are considered jointly, 50.2 percent of total budget resources accrue to the richest 40 percent of the population and 69.9 percent to urban areas. Among SI programs, retirement pensions transferred over 94 percent of total budget to the richest three quintiles of the population, and jointly the two SI programs in question were more regressive than the five SA programs. Private transfers, especially international remittances, reinforce the regressive pattern across quintiles and the urban bias observed for publicly-subsidized transfers.

***Coady-Grosh-Hoddinot (CGH) index: are the poor getting more than they would get if transfers were distributed by “helicopter drop”?*** This measure is related to absolute incidence and is defined as the proportion of total transfers accounted for by a specific population group divided by that group's population share (Table 1.6). Given each program's total budget, the CGH index provides an estimate of how much more (or less) a certain population group actually receives under the program's targeting scheme than under a scheme that would transfer the same budget according to the share of each group over the total population (neutral targeting). A CGH index value greater than one indicates progressive targeting, and a value less than one indicates a regressive outcome, with unity denoting neutral targeting.

**Table 1.5: Incidence Analysis (%)**

	Total	By Income Quintile					Urban/Rural	
		Q1	Q2	Q3	Q4	Q5	U	R
<b>ABSOLUTE INCIDENCE</b>								
<b>All private transfers</b>	1.000	0.019	0.041	0.064	0.122	0.754	0.764	0.236
<b>All Social Assistance</b>	1.000	0.141	0.170	0.196	0.218	0.276	0.696	0.304
<b>All Social Insurance</b>	1.000	0.027	0.059	0.107	0.193	0.614	0.822	0.178
<b>Social Assistance</b>								
TAE	1.000	0.349	0.242	0.194	0.149	0.066	0.284	0.716
PAE	1.000	0.319	0.266	0.209	0.136	0.070	0.519	0.481
PROMESE	1.000	0.169	0.192	0.213	0.224	0.203	0.659	0.341
Gas Subsidy	1.000	0.091	0.143	0.190	0.237	0.339	0.752	0.248
INESPRE/Popular markets	1.000	0.167	0.192	0.215	0.213	0.212	0.683	0.317
<b>Social Insurance</b>								
Pensions	1.000	0.019	0.044	0.091	0.178	0.668	0.840	0.160
SS-Health	1.000	0.073	0.148	0.200	0.281	0.299	0.716	0.284
<b>Private transfers (national)</b>	1.000	0.069	0.108	0.142	0.224	0.456	0.687	0.313
<b>Private transfers (international)</b>	1.000	0.007	0.024	0.044	0.097	0.828	0.783	0.217
<b>RELATIVE INCIDENCE</b>								
<b>All private transfers</b>	0.144	0.075	0.079	0.079	0.095	0.186	0.150	0.128
<b>All Social Assistance</b>	0.021	0.079	0.047	0.035	0.024	0.010	0.020	0.024
<b>All Social Insurance</b>	0.010	0.008	0.008	0.010	0.011	0.011	0.012	0.007
<b>Social Assistance</b>								
TAE	0.000	0.004	0.002	0.001	0.000	0.000	0.000	0.001
PAE	0.003	0.026	0.011	0.005	0.002	0.000	0.002	0.006
PROMESE	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Gas Subsidy	0.014	0.035	0.027	0.023	0.018	0.008	0.015	0.013
INESPRE/Popular markets	0.002	0.008	0.004	0.003	0.002	0.001	0.002	0.002
<b>Social Insurance</b>								
Pensions	0.009	0.005	0.005	0.007	0.009	0.010	0.010	0.005
SS-Health	0.002	0.003	0.003	0.003	0.002	0.001	0.001	0.002
<b>Private transfers (national)</b>	0.028	0.053	0.041	0.035	0.034	0.022	0.027	0.033
<b>Private transfers (international)</b>	0.116	0.022	0.037	0.044	0.061	0.163	0.124	0.094

*Note:* Absolute Incidence: (Total aggregated transfer amount received by all individuals in the group)/(Total aggregated transfer amount received by all individuals in the population).

Relative Incidence: (Total transfer amount received by all individuals in the group)/(Total income of individuals in the group).

*Source:* Own calculations based on the 2004 ENCOVI.

TAE transferred 74.4 (47.8) percent more to the poorest two (four) deciles than under a uniform targeting scheme. The same figure for PAE is 59.4 (46.3) percent. These values are above the median value (1.4) for the CGH targeting accuracy index for “typical” SA programs in a sample of LAC countries.<sup>37</sup> Instead, the distributions of PROMESE, INESPRES and especially of gas subsidy resources are extremely regressive, even compared to other SA programs in LAC. For PROMESE, INESPRES and gas subsidies, a random selection of beneficiaries (“helicopter drop” allocation) would have benefited the poor more than what the scheme in place did.

<sup>37</sup> See Lindert, Skoufias and Shapiro (2005).

**Table 1.6: CGH Targeting Accuracy Index**

	Bottom %			
	10%	20%	30%	40%
<b>All Social Assistance</b>	0.686	0.704	0.740	0.776
<b>Social Assistance</b>				
TAE	2.015	1.744	1.615	1.478
PAE	1.732	1.594	1.522	1.463
PROMESE	0.809	0.844	0.885	0.902
Gas Subsidy	0.397	0.456	0.522	0.587
INESPRE/Popular markets	0.777	0.836	0.871	0.898

*Note:* The CGH index: (Percent of total transfer amount received by the group)/(Share of total national population represented by the group).

Larger numbers indicate that a program is more progressive.

*Source:* Own calculations based on the 2004 ENCOVI.

Relative incidence analysis represents a measurement of the relative importance of transfers as a share of each quintile's income. Relative incidence therefore depends on the unit value of the transfers received, the transfer coverage and the levels of post-transfer incomes for each quintile. Table 1.5 shows that, overall, SA transfers (and especially PAE and gas subsidies) are progressive in relative terms, representing a higher share of income for the poorest quintiles. Household private national transfers follow the same pattern, while international remittances are, in relative terms, strongly regressive.

**Table 1.7: Poverty and Inequality Impact**

	Poverty Indicators				Inequality Indicators			
	FGT0	FGT1	FGT2	Gini	GE(-1)	GE(0)	GE(1)	GE(2)
Initial situation	0.408	0.163	0.089	0.536	1.065	0.519	0.657	2.961
<b>Eliminating all private transfers</b>	0.462	0.199	0.114	0.524	1.201	0.505	0.589	2.217
<b>Eliminating all SA</b>	0.427	0.178	0.100	0.545	1.290	0.541	0.678	3.081
<b>Eliminating all SI</b>	0.413	0.166	0.091	0.537	1.061	0.520	0.658	2.976
<b>Social Assistance</b>								
Eliminating TAE	0.408	0.164	0.089	0.537	1.071	0.521	0.658	2.964
Eliminating PAE	0.412	0.167	0.092	0.539	1.120	0.527	0.662	2.981
Eliminating PROMESE	0.409	0.164	0.089	0.537	0.970	0.519	0.658	2.963
Eliminating Gas Subsidy	0.420	0.171	0.094	0.541	1.889	0.532	0.669	3.040
Eliminating INESPRES/Popular markets	0.409	0.165	0.090	0.537	1.019	0.521	0.659	2.971
<b>Social Insurance</b>								
Eliminating Pensions	0.411	0.165	0.090	0.536	1.060	0.518	0.657	2.967
Eliminating SS-Health	0.409	0.164	0.089	0.537	1.066	0.521	0.659	2.970
<b>Eliminating private transfers (national)</b>	0.428	0.179	0.101	0.545	1.290	0.544	0.680	3.125
<b>Eliminating private transfers (internat.)</b>	0.439	0.181	0.100	0.515	0.991	0.479	0.567	2.089

*Note:* The income aggregate used to compute the poverty and inequality measures includes all transfers.

*Source:* Own calculations based on the 2004 ENCOVI.

**Impact on poverty and inequality measures.** Next, we look at the estimated impact of publicly-subsidized transfers and private international transfers on poverty and inequality measures.<sup>38</sup> We start from an initial situation in which 40.8 percent of individuals are

<sup>38</sup> The approach adopted does not take into consideration possible behavioral responses (for example households changing their labor market participation with and without transfers).

income poor and the income Gini inequality is 0.536. Table 1.7 shows that, despite the coverage of the SA programs in question, when programs are considered individually their poverty and inequality impact is insignificant, except for gas subsidies, whose elimination triggers an increase of 3 percent in poverty incidence. When considered jointly, the five SA programs in question decrease poverty headcounts by 1.9 percentage points, depth and severity of poverty by 8.8 and 12.6 percent respectively and decrease income inequality as measured by the Gini index from 0.545 to 0.536. On the other end, international transfers reduce poverty headcounts by a much greater amount (3.2 percentage points) but they also increase income Gini substantially from 0.515 to 0.536. National transfers also have a big impact (2.0 percentage points) on the poverty headcount, depth and severity of poverty.

***Distributional characteristic index (DCI): how effective are SA programs in getting benefits to the poorest individuals?*** Table 1.8 presents the distributional characteristics of the programs in question based on a parameterization of a model developed for taxation by Atkinson and Stiglitz (1980).<sup>39</sup> Underlying the objective of subsidies and targeted transfers must be the view that extra income to low income (poor) households is more socially valuable than extra income to high income (non-poor) households. If this is the case, then we could assume that given the initial per capita income (welfare), an individual's welfare weight in an hypothetical "social welfare function" should be heavier the greater is the gap between her initial per capita income (welfare) and a reference income (welfare) level (in our case the poverty line). We could also assume that greater social "aversion to inequality" is associated with higher welfare weights for those individuals whose income (welfare) lays below the reference level, and with smaller welfare weights for those individuals whose income (welfare) is above the reference level. If there is no aversion to inequality all individuals have the same welfare weight, greater inequality aversion is associated with higher values of epsilon (Table 1.8).

Table 1.8 shows three different sets of results. The first set refers to the distributional characteristic index (DCI) of each program and can be interpreted as the marginal social value of a unit of budget resources transferred to an individual through the program in question. It basically measures how effective a given program is at getting the transfer budget to the neediest individuals. This measure is independent of the size of the budget, i.e., scaling up or down the benefits and budget of the program will not change its distributional characteristics. Programs in which those receiving relatively high share of the budget have higher welfare weights (i.e., are relatively needy) will obviously have relatively high welfare impacts, i.e., better distributional characteristics.

For each program, the distributional characteristic measure can be decomposed into the sum of its targeting efficiency and redistributive efficiency. For a given program "A" and a group of identified beneficiaries, the targeting efficiency measure give the social welfare impact of an equivalent program which transfers the same budget of program "A" to the same group of beneficiaries (according to the program eligibility rules) but in equal amounts. The redistributive efficiency measure can be interpreted as the adjustment that needs to be made to allow for differentiation of the transfers across individuals. If the redistributive efficiency is positive it means that the differentiation of transfers across

---

<sup>39</sup> See Coady and Skoufias (2004) for details on the model.

individuals makes the overall distributional characteristics of a given program more progressive (typically if the size of the transfer depends on the size of the household, through demographic targeting). If redistributive efficiency is negative the opposite is true, i.e., the differentiation of transfers across individuals makes the overall distributional characteristics of a given program more regressive.

**Table 1.8: Distributional Characteristic Index (DCI)**

DISTRIBUTIONAL CHARACTERISTIC	Epsilon			
	0.5	1	1.5	2
All Social Assistance	0.883	0.961	1.258	1.927
TAE	1.203	1.673	2.647	4.650
PAE	1.170	1.576	2.411	4.114
PROMESE	0.950	1.084	1.465	2.298
LPG Gas subsidy	0.801	0.787	0.931	1.309
INESPRE/Popular markets	0.942	1.067	1.428	2.214
<b>Targeting Efficiency</b>				
All Social Assistance	0.978	1.157	1.618	2.603
TAE	1.249	1.791	2.900	5.184
PAE	1.163	1.554	2.358	3.989
PROMESE	1.016	1.223	1.720	2.769
LPG Gas subsidy	0.942	1.065	1.417	2.177
INESPRE/Popular markets	1.005	1.197	1.662	2.640
<b>Redistributive Efficiency</b>				
All Social Assistance	-0.094	-0.196	-0.360	-0.676
TAE	-0.046	-0.117	-0.253	-0.534
PAE	0.007	0.022	0.054	0.126
PROMESE	-0.066	-0.139	-0.255	-0.471
LPG Gas subsidy	-0.141	-0.278	-0.486	-0.868
INESPRE/Popular markets	-0.063	-0.130	-0.234	-0.426

*Note:* Greater distributional characteristic numbers indicate greater distributional power. Distributional power is increased when a greater proportion of transfer recipients are poor (targeting efficiency), and when the monthly value of transfers that poor people receive exceeds the monthly value of transfers that wealthy people receive (redistributive efficiency).

*Source:* Own calculations based on the 2004 ENCOVI.

Table 1.8 shows that TAE and PAE are more effective than PROMESE, LPG gas subsidies and INESPRES/Popular markets at redistributing income. The DCI increases as epsilon increases. This increase is greater for TAE and PAE than for the other three programs, which means that TAE and PAE reach poor households more effectively than they reach the moderately poor. The absolute value of the targeting efficiency index exceeds the value of the redistributive efficiency index. Additionally redistributive efficiency is negative for all programs but PAE, given that PAE benefits are the only ones explicitly dependent on the size of the household (number of children ages 5-14 enrolled in school).<sup>40</sup> The worst performer in terms of DCI is, once again, the LPG gas subsidy program.

<sup>40</sup> Although this analysis, given data restrictions, does not take into consideration that PROMESE and INESPRES/popular markets benefits might actually depend on the size of the household.

## VII. SIMULATION OF THE DISTRIBUTIONAL OUTCOMES OF *COMER ES PRIMERO*, ILAE AND THE NEW REGIME OF LPG GAS SUBSIDIES

- Conditional Cash Transfer (CCT) programs such as *Comer es Primero* and ILAE, if properly targeted and implemented, could be much more progressive in absolute terms than existing SA programs (i.e., they would redistribute a much bigger share of the budget to the poorest segment of the population) and could generate greater welfare gains.
- Given the present tight fiscal situation, the expansion of CCT should not be carried out without consolidating and eliminating other SA programs with similar objectives on the one hand, and on the other end, without re-allocating part of the saving from such consolidation to strengthen quality and coverage of basic services in health and education for the poorest segments of the population.
- A reform of the LPG gas subsidy oriented to put a cap of RD\$250 to the monthly transfers accruing to households consuming gas and to exclude from the subsidy the richest households (ICV-IV) according to SIUBEN, would increase the share of the program's total budget going to the poor and generate important fiscal savings (49 percent of the original budget). However, given the pattern of households' LPG gas consumption, the (income) poorest 40 percent of households would still be better off if the gas subsidy budget were to be randomly distributed.

In this section we examine the redistributive potential of *Comer es Primero* and ILAE, two CCT programs recently launched by the Government, and of the proposed changes in the rules of operation of the LPG gas subsidy. This analysis is carried out through micro-simulations using the ENCOVI household-level data, the programs' rules of operation and the Government's coverage targets. The analysis takes into consideration only first round effects, i.e., it does not attempt to model (beneficiary and non-beneficiary) households' behavioral responses to the introduction of new transfer schemes.

Technical assistance provided as part of the Social Crisis Response Adjustment Loan (SCRAL) by the World Bank strengthened the institutional capacities of two conditional cash transfer (CCT) programs mentioned above: ILAE and *Comer es Primero*. As mentioned above, the ILAE substituted in 2004 the "Tarjeta de Asistencia Escolar" (TAE) initiated in 2001. The TAE expanded to 100,000 mothers in early 2003, with very weak targeting, payment, verification and evaluation systems, raising concerns that mothers were being selected based on political allegiances and checks were being lost and/or misappropriated, with little ability to assess if poor children's' attendance was being positively affected. Under the SCRAL, the program developed a comprehensive operational manual for the TAE which created the conditions to improve procedures for beneficiary selection (through the updated National Poverty Map and new per household targeting mechanisms), payments, attendance verification and evaluation. By July 2004 the Ministry of Education had begun to apply these new targeting criteria to their database of 100,000 beneficiaries. In September 2004 the TAE was renamed into ILAE. The operational manual for ILAE was then revised to integrate the SIUBEN targeting instrument and to include payments per child attending school (rather than per household).

In November 2004 the Government began its second CCT program, *Comer es Primero*, designed to support child health and nutrition. *Comer es Primero* also uses the SIUBEN to select beneficiary households. The operational manual for *Comer es Primero* was developed under the SCRAL and cross-linked to the manual for ILAE, so that beneficiary targeting, payments, conditionality verification, and impact evaluation are consistent.

According to the rules of operation of *Comer es Primero*, all households classified as ECV-I (extremely poor) by the SIUBEN are eligible to receive a monthly transfer of RD\$550 in 2005. The estimated universe of eligible households is 148,646. The monthly budget required to achieve this coverage is RD\$81.7 million (approximately US\$2.8 million).<sup>41</sup> ILAE is also meant to benefit ICV-I households (e.g., the poorest households according to the SIUBEN-ICV) with children between 5 and 15 enrolled in basic education. Rules require ILAE households to be enrolled in *Comer es Primero*. The Government's target for 2005 is to benefit 80,000 households with ILAE. In the simulation, we assume that all eligible children in selected households enroll in school and therefore receive the school grant. Beneficiary households would receive RD\$300 monthly for up to two children enrolled in school and RD\$150 for each additional eligible child. Given that the size of the transfer a household receives by the ILAE depends on household demographic structure, the cost of covering 80,000 households would vary depending on the selected targeting strategy. Approximately RD\$30 million (US\$1.03 million) are needed monthly to achieve the ILAE target.<sup>42</sup> We report the results of two different scenarios of expansion for *Comer es Primero* and the joint *Comer es Primero-ILAE* program and assess their distributional outcomes:<sup>43</sup>

- (i) SIUBEN extreme poverty map/geographical targeting and ICV PMT (selection based on incidence). The program expands first to municipalities with the highest incidence of extreme poverty according to the SIUBEN poverty map, and in these municipalities only households categorized as ICV-I are incorporated.

---

<sup>41</sup> US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

<sup>42</sup> US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

<sup>43</sup> We also simulate five other scenarios: (c) Income extreme poverty gap map/geographical targeting and income PMT (selection based on incidence), where the program expands first to municipalities with the highest extreme poverty gap according to the income poverty map, and, in these municipalities, only households categorized as extremely poor by the income PMT are incorporated; (d) SIUBEN extreme poverty map geographical targeting and ICV PMT (selection based on number of extremely poor households), where the program expands first to municipalities with the highest number of extreme poverty households according to the SIUBEN poverty map, and in these municipalities only households categorized as ICV-I are incorporated; (e) Income extreme poverty map geographical targeting and income PMT (selection based on number of extremely poor households), where the program expands first to municipalities with the highest number of extreme poor households according to the income poverty map, and in these municipalities only households categorized as extremely poor by income-PMT are incorporated; (f) SIUBEN extreme poverty map/geographical targeting only (selection based on incidence), where the program expands first to municipalities with the highest incidence of extreme poverty according to the SIUBEN poverty map and in these municipalities all households are incorporated; (g) Income extreme poverty map/geographical targeting only (selection based on incidence), where the program expands first to municipalities with the highest incidence of extreme poverty households according to the income poverty map, and in these municipalities all households are incorporated. The distributional outcomes of scenario (c) are basically the same of scenario (a) and the outcomes of both are superior to any other scenario. Results for coverage, absolute incidence and relative incidence are available in Annex A.4.

- (ii) Income extreme poverty map/geographical targeting and income PMT (selection based on incidence). The program expands first to municipalities with the highest incidence of extreme poverty according to the income poverty map, and in these municipalities, only households categorized as extremely poor by the income PMT are incorporated.

Additionally, we simulate the distributional outcome of the Government's proposal to modify the gas subsidy regime. Under the *Plan Apache* implemented since August 2004, LPG gas is sold at subsidized prices only if buyers purchase it in tanks of 22.5 gallons or less. Under the Government's new proposal households would receive a maximum monthly allowance of RDS\$250 to purchase LPG gas at a subsidized price. In the simulation, we assume that eligible households are those classified as ICV-I, ICV-II and ICV-III according to the SIUBEN. We keep constant the pattern of household gas consumption estimated in the previous section.

In terms of coverage of both *Comer es Primero* and *Comer es Primero-ILAE*, option (b) ensures the highest percentage of individuals benefiting from the transfers in the lower quintiles of the per capita income distribution (Table 1.9). Option (b) also clearly maximizes the share of total program resources going to the poorest 40 percent of families of the per capita income distribution. Both options have the potential to deliver a bigger portion of the program budget to the neediest households than any other SA program presented in Table 1.5, including PAE and TAE. The CGH index (Table 1.10) confirms that the CCT schemes have the potential to be much more progressive than the TAE and the PAE, especially under scenario (b) and when *Comer es Primero* and ILAE are operated jointly.

Table 1.9 shows that the proposed reform for the LPG gas subsidy would reduce its overall coverage, making the coverage across quintiles more progressive and it would eliminate the urban bias. The reform would also reduce the regressivity of the subsidy in absolute terms, i.e., poorer households would receive a much greater share of the whole budget. Still, as the CGH index shows, because of gas consumption patterns, the poorest 40 percent of the population would still be better off if the gas subsidy budget were to be distributed randomly.

**Table 1.9: Coverage, Absolute and Relative Incidence**

Program/Targeting strategy	Total	By Income Quintile					By Area	
		Q1	Q2	Q3	Q4	Q5	Urban	Rural
<b>COVERAGE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (a)	0.060	0.160	0.072	0.036	0.026	0.009	0.030	0.115
Targeting option (b)	0.084	0.233	0.098	0.054	0.025	0.009	0.055	0.136
<b><i>Comer es Primero</i></b>								
Targeting option (a)	0.060	0.160	0.072	0.036	0.026	0.009	0.030	0.115
Targeting option (b)	0.084	0.233	0.098	0.054	0.025	0.009	0.055	0.136
<b>Gas subsidy reform</b>	<b>0.766</b>	<b>0.725</b>	<b>0.834</b>	<b>0.860</b>	<b>0.808</b>	<b>0.602</b>	<b>0.794</b>	<b>0.716</b>
<b>ABSOLUTE INCIDENCE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (a)	1.000	0.449	0.232	0.145	0.123	0.050	0.338	0.662
Targeting option (b)	1.000	0.536	0.241	0.137	0.062	0.023	0.403	0.597
<b><i>Comer es Primero</i></b>								
Targeting option (a)	1.000	0.398	0.230	0.162	0.146	0.064	0.343	0.657
Targeting option (b)	1.000	0.515	0.247	0.144	0.069	0.025	0.408	0.592
<b>Gas subsidy reform</b>	<b>1.000</b>	<b>0.123</b>	<b>0.183</b>	<b>0.223</b>	<b>0.245</b>	<b>0.225</b>	<b>0.695</b>	<b>0.305</b>
<b>RELATIVE INCIDENCE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (a)	0.002	0.030	0.008	0.003	0.002	0.000	0.001	0.006
Targeting option (b)	0.002	0.037	0.008	0.003	0.001	0.000	0.001	0.006
<b><i>Comer es Primero</i></b>								
Targeting option (a)	0.002	0.020	0.006	0.003	0.001	0.000	0.001	0.004
Targeting option (b)	0.002	0.026	0.006	0.002	0.001	0.000	0.001	0.004
<b>Gas subsidy reform</b>	<b>0.007</b>	<b>0.023</b>	<b>0.017</b>	<b>0.014</b>	<b>0.009</b>	<b>0.003</b>	<b>0.007</b>	<b>0.008</b>

*Note:* Poverty map at the municipality level. Coverage: (Number of individuals in the group who live in a household where at least one member receives the transfer)/(Number of individuals in the group). Absolute Incidence: (Total aggregated transfer amount received by all individuals in the group)/(Total aggregated transfer amount received by all individuals in the population). Relative Incidence: (Total transfer amount received by the individuals in the group)/(Total income for the individuals in the group).

*Source:* Own calculations based on the 2004 ENCOVI.

Given the initial budget allocation, the impact of *Comer es Primero* and ILAE on measures of extreme poverty and inequality is still relatively small. In the best case scenario, extreme poverty falls by 0.5 percentage points. To put this result into perspective, we should observe that only the LPG gas subsidy, among the programs analyzed in the previous section, produced a greater impact on poverty headcounts (1.2 percentage point increase). This impact was nonetheless achieved with a budget six times bigger than the one allocated to *Comer es Primero* and ILAE in this exercise. Table 1.11 also shows that the “reformed” LPG gas subsidy increases the poverty headcount by just 0.6 percentage points, which represents 50 percent of the 1.2 percentage point increase obtained with the pre-Apache Plan regime of gas subsidies (e.g. before the subsidy was targeted to those consumers purchasing LPG gas in containers of 22.5 gallons or less). This result is however obtained with the half of the original budget. Our simulations also show that, assuming perfect targeting, in order to cut poverty headcount by 5 percentage points by means of a flat transfer like *Comer es Primero*, more than US\$15 million would be needed

monthly. To cut poverty by half from 42 to 21 percent, approximately US\$65 million would be needed monthly.<sup>44</sup>

**Table 1.10: CGH Targeting Accuracy Index**

Program/Targeting strategy	Bottom %			
	10%	20%	30%	40%
<b>Comer es Primero + ILAE</b>				
Targeting option (a)	2.608	2.247	1.929	1.704
Targeting option (b)	3.191	2.682	2.235	1.943
<b>Comer es Primero</b>				
Targeting option (a)	2.235	1.989	1.728	1.570
Targeting option (b)	2.979	2.574	2.175	1.905
<b>Gas subsidy reform</b>	0.542	0.615	0.691	0.766

Note: Greater distributional characteristic numbers indicate greater distributional power. Distributional power is increased when a greater proportion of transfer recipients are poor (targeting efficiency), and when the monthly value of transfers that poor people receive exceeds the monthly value of transfers that wealthy people receive (redistributive efficiency).

Source: Own calculations based on the 2004 ENCOVI.

**Table 1.11: Extreme Poverty and Inequality Impact**

Program/Targeting strategy	Extreme poverty				Inequality			
	FGT0	FGT1	FGT2	Gini	GE(-1)	GE(0)	GE(1)	GE(2)
Initial situation	0.148	0.051	0.026	0.541	1.369	0.531	0.670	3.050
<b>Adding Comer es Primero + ILAE</b>								
Targeting option (a)	0.143	0.048	0.024	0.539	1.297	0.523	0.666	3.034
Targeting option (b)	0.143	0.047	0.023	0.539	1.261	0.521	0.665	3.034
<b>Adding Comer es Primero</b>								
Targeting option (a)	0.145	0.049	0.025	0.540	1.311	0.525	0.667	3.038
Targeting option (b)	0.144	0.048	0.024	0.539	1.278	0.523	0.667	3.038
<b>Eliminating LPG gas subsidies</b>								
Initial situation	0.415	0.167	0.092	0.538	1.018	0.524	0.663	3.0085234
<b>Eliminating LPG gas subsidies</b>	0.421	0.172	0.095	0.541	1.359	0.528	0.670	3.050

Note: For the simulation of *Comer es Primero* and ILAE, the income aggregate used to measure FGT and inequality indicators in the “initial situation” (FGT0) is the income aggregate used for the poverty profile net of the estimated TAE benefits given that ILAE would substitute the TAE. For the LPG gas subsidy reform, the “initial situation” FGT and inequality measures were calculated using the same income aggregate of the poverty profile adding the estimated benefit of the “reformed” LPG gas subsidy.

Source: Own calculations based on the 2004 ENCOVI.

In terms of distributional characteristics, one *peso* spent in the two scenarios of expansion of *Comer es Primero* and ILAE would potentially have a much greater welfare impact than one *peso* spent in PAE or the TAE. Additionally, the fact that ILAE transfers are dependent on the number of children enrolled in school mitigates the negative redistributive efficiency characteristics of *Comer es Primero*, although a cap to the total number of children enrolled in ILAE should be considered. Table 1.12 also shows that the welfare impact of one *peso* is greater if that *peso* were spent under the “reformed” LPG gas

<sup>44</sup> US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

subsidy regime rather than under the pre-Apache plan regime. The greater is the degree of aversion to inequality, the higher is the difference between the estimated welfare impacts of the two regimes.

The evidence therefore points to the fact that potentially important welfare gains could be incurred by improving the targeting of existing SA programs. CCT programs could provide a vehicle to achieve these gains. It should nevertheless be noticed that in countries where CCT programs have been successful in increasing household investment in health, education and nutrition of their children, considerable supply-side investments also took place.<sup>45</sup> Given the present tight fiscal situation, the expansion of CCT interventions should include consolidating and eliminating transfer and subsidy programs with similar objectives and, re-allocating part of the resulting fiscal savings to strengthen quality and coverage of basic services in health and education (where investment as percentage of GDP is one of the lowest in LAC) for the poorest segments of the population.

**Table 1.12: Distributional Characteristic**

Program/Targeting strategy	Epsilon			
	0.5	1.0	1.5	2.0
<b>DISTRIBUTIONAL CHARACTERISTIC</b>				
<b><i>Comer es Primero</i> + ILAE</b>				
Targeting option (a)	0.934	1.016	1.250	1.690
Targeting option (b)	1.010	1.158	1.473	2.033
<b><i>Comer es Primero</i></b>				
Targeting option (a)	0.888	0.924	1.100	1.453
Targeting option (b)	0.987	1.104	1.373	1.860
<b>Gas subsidy reform</b>	0.898	0.957	1.203	1.768
<b>TARGETING EFFICIENCY</b>				
<b><i>Comer es Primero</i> + ILAE</b>				
Targeting option (a)	0.999	1.135	1.436	1.973
Targeting option (b)	1.019	1.172	1.492	2.056
<b><i>Comer es Primero</i></b>				
Targeting option (a)	0.999	1.135	1.436	1.973
Targeting option (b)	1.019	1.172	1.492	2.056
<b>Gas subsidy reform</b>	0.997	1.172	1.605	2.525
<b>REDISTRIBUTIVE EFFICIENCY</b>				
<b><i>Comer es Primero</i> + ILAE</b>				
Targeting option (a)	-0.064	-0.120	-0.187	-0.283
Targeting option (b)	-0.009	-0.015	-0.019	-0.023
<b><i>Comer es Primero</i></b>				
Targeting option (a)	-0.111	-0.211	-0.336	-0.519
Targeting option (b)	-0.032	-0.068	-0.119	-0.196
<b>Gas subsidy reform</b>	-0.099	-0.214	-0.402	-0.758

*Note:* Greater distributional characteristic numbers indicate greater distributional power. Distributional power is increased when a greater proportion of transfer recipients are poor (targeting efficiency), and when the monthly value of transfers that poor people receive exceeds the monthly value of transfers that wealthy people receive (redistributive efficiency). Targeting efficiency outcomes of *Comer es Primero* and *Comer es Primero* + ILAE are the same.

*Source:* Own calculations based on the ENCOVI.

<sup>45</sup> For example, in the case of a low-income country such as Nicaragua and a middle-income country such as Mexico. See Levy and Rodriguez (2005).

Moreover, it is recommended that some of the design features adopted by *Comer es Primero*, for example the obligation of the household to use earmarked transfers to purchase only a specific list of food items in a handful of authorized shops, be reviewed. Not only a scheme such as this might be prone to corrupt practices, it also prevents households from investing part of the transfers they receive in productive activities. Recent evidence suggests that transfers might help alleviating households' liquidity constraints for productive investments, which in turn raise long term living standards through increased consumption, therefore reducing long term welfare dependency.<sup>46</sup> Finally, to be able to link short-term poverty alleviation with medium term poverty reduction objectives it is recommended that the implementation of CCT programs be based on well-developed M&E system of beneficiary households' compliance with the established eligibility conditioning.

---

<sup>46</sup> See Gertler, Martinez and Rubio (2005) on *Oportunidades*, the Mexican CCT program.

## BIBLIOGRAPHY

- Baez, C. and C. Solís Araya. 2004. "Avances y Estancamientos en la Reforma del Sector Social en la República Dominicana, 2000-2004" Consulting Report for the Technical Secretariat of the Presidency and the Inter-American Development Bank, Santo Domingo, Dominican Republic.
- Castaneda, T. et al. 2005. "Designing and Implementing Household Targeting Systems: Lessons from Latin America and the United States", Mimeo, World Bank and DFID.
- Coady, D., M. Grosh, and J. Hoddinott. 2004. Targeting of transfers in developing countries: review of lessons and experience." World Bank, Washington, D.C.
- Coady, D. and E. Skoufias. 2004. "On the Targeting and Redistributive Efficiencies of Alternative Transfer Instruments." Review of Income and Wealth 50(1): 11-27.
- Cumpa, Martin. 2005. "Estimaciones de la pobreza en la República Dominicana con la Encuesta de Condiciones de Vida." Informe de Consultoría Preparado para el Banco Central de la Republica Dominicana. Mimeo.
- Deaton, A., 2005. "Measuring Poverty in a Growing World or Measuring Growth in a Poor World". The Review of Economics and Statistics vol. lxxxvii No. 1.
- Deaton, A. and M. Grosh. 2000. "Designing Household Surveys Questionnaires for Developing Countries: Lessons from 15 years of the Living Standard Measurement Surveys (LSMS)". World Bank, Washington, D.C.
- Deaton, A. 1997. *The Analysis of Household Surveys*, Johns Hopkins University Press.
- De Ferranti, D., G. Perry, F. Ferreira and M. Walton. 2003. Inequality in Latin America & the Caribbean: Breaking with History? World Bank, Washington D.C.
- Dotel, O. and R. Cañete. 2005. "Análisis de los desafíos institucionales de implementación de los programas focalizados", consulting report for the Inter-American Development Bank, Santo Domingo, Dominican Republic.
- Garcia, M. 2005. "Mapping social assistance programs in the Dominican Republic" consulting report for the Inter-American Development Bank, Santo Domingo, Dominican Republic.
- Gertler, P., S. Martinez and M. Rubio. 2005. "The Effect of OPORTUNIDADES on Raising Household Consumption through Productive Investments in Micro-Enterprise and Agricultural Production." Technical Document No. 19 on the Evaluation of OPORTUNIDADES 2004. OPORTUNIDADES, SEDESOL, Mexico City, Mexico.
- Inter-American Development Bank and World Bank (2005). "Dominican Republic Poverty Assessment: Achieving more Pro-Poor Growth", Green Cover, Washington D.C.

- Levy, S. and E. Rodriguez. 2005. "Economic Crisis, Political Transition and Poverty Policy Reform: Mexico's *Progresa-Oportunidades* Program" Policy Dialogue Series, Inter-American Development Bank, Washington D.C.
- Lindert, K., Skoufias E. and J. Shapiro (2005) "How Effectively do Public Transfers in Latin America Redistribute Income"? LACEA working paper, World Bank, Washington D.C.
- Lizardo, J. 2005 "El gasto social en la Republica Dominicana 1995-2005: Tendencias y Desafios" Economic Analysis Unit, Technical Secretariat of the Presidency, Santo Domingo, Dominican Republic.
- Lizardo, J. 2004. "Dime de cuánto dispones y te diré para cuánto te alcanza: la reforma de salud y seguridad social en la República Dominicana." Report prepared for the Center for Governance and Social Management of INTEC University and UNDP, Santo Domingo, Dominican Republic.
- Morrillo Perez, A., A. Guerrero and Y. Alcántara. 2005. "Focalización de la pobreza en la Republica Dominicana" Technical Secretariat of the Presidency, Nacional Planning Office, UNDP and World Bank, Santo Domingo
- World Bank (2004). Dominican Republic's Public Expenditure Review.

## ANNEX A.1: MAPPING OF SELECTED SA PROGRAMS

### Box A.1.1: School Lunch Program/*Programa de Alimentación Escolar* (PAE)

**Program's stated objectives:** Increase school attendance and reduce drop out rates in public schools at pre-school and basic education levels; improve students' learning; contribute to increase community participation in school activities; support local agricultural and agro-industrial production; improve children's nutritional habits; and improve living conditions of households with school age children.

**Geographical coverage:** National coverage through three modalities: (i) PAE – started operating in urban marginal areas of Santo Domingo and other cities in 1992, and currently it is operating nationally (1.4 million students in 2004); (ii) PAE - for border areas (PAE –*Fronterizo*), operating since 1994 and covers the provinces at the border with Haiti (50,000 students in 2004); and (iii) PAE – *Real*, operating since 2000 in rural areas of difficult access (84,500 students in 2004)

**Executing agency:** SEE, through the General Directorate of Students' and Teachers' Welfare (*Dirección General de Bienestar Estudiantil y Docente, DGBED*).

**2004 executed budget:** RD\$1,513.2 million (US\$36.7 million).

**2005 assigned budget:** RD\$2,500.0 million (US\$84.45 million).

**Estimated administrative costs:** Not available.

**Source of financing:** National budget plus World Food Program and USAID donations until 2004. In PAE – *Fronterizo* and PAE – *Real* limited communities' contributions are included by design.

**Stated eligibility criteria:** Children between 5 and 14 enrolled in public pre-school and basic education schools.

**Type and frequency of the transfer:** In-kind transfers. Daily food rations for 180 days a year during the school year. In the PAE food supplies are provided and distributed by 11 private firms contracted by the DGBED. In PAE - *Fronterizo*, ingredients are bought but food rations are prepared daily by community members. In PAE – *Real*, ingredients are bought mostly locally and food rations are prepared locally.

**Beneficiary families' responsibilities:** In PAE - *Fronterizo* and PAE – *Real*, communities participate in the preparation of food rations and provide necessary inputs such as cooking fuel or materials and labor to build school kitchens.

**Targeting of interventions:** PAE – started in urban marginal areas: pre-school and basic education at public schools of poor urban neighborhoods. PAE - *Fronterizo*: pre-school and basic education at public schools of provinces at the border with Haiti. PAE – *Real*: pre-school and basic education at public schools with more than 600 students located in poor rural areas of difficult access where parents' school committees are functioning.

**Rules of operation:** The operational manuals of PAE-*Fronterizo* and PAE-*Real*, both financed with donor resources, are available and published.

**Organizational structure:** The program is executed by the DGBED, but each of the three modalities has its own independent structure within the DGBED. At the regional and district level, the SEE personnel is in charge of the supervision of the program's three modalities.

**M&E system:** No monitoring activity of a program's outcomes or impact evaluation has been carried out until now. An evaluation of PAE, including its impact on program's outcomes and impact is underway right now, with results expected to be ready by September 2005. This includes review of the three modalities, incidence analysis, and an assessment of nutritional, enrollment and academic performance impacts.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.2: Comer es Primero

**Program's stated objectives:** Address the food and nutritional emergency needs of extremely poor households by complementing their income; reduce the incidence of malnutrition and undernourishment, especially among infants.

**Type of transfer:** CCT. **Geographical coverage:** National coverage. Program's goal for 2005: 200,000 households.

**Executing agency:** Pre-investment Fund (*Fondo de Pre-Inversión*, FONDOPRE) within the Office of the Presidency (the program belongs to the Presidential Plan to Fight Poverty, PFPF).

**2005 assigned budget:** RD\$999,3 million (US\$34.4 million). RD\$8.8 million executed January - March 2005.

**Estimated administrative costs:** Not available. **Source of financing:** National budget.

**Complementarities with other programs:** With the *Incentivo a la Asistencia Escolar* (ILAE) executed by the SEE; the immunization extension plan (*Plan Ampliado de Inmunizaciones*, PAI); and maternal-infant care program (*Programa Materno-Infantil*) of the State *Secretariat* of Public Health and Social Assistance (*Secretaría de Estado de Salud Pública y Asistencia Social*, SESPAS).

**Targeting and household eligibility criteria:** PMT. Extremely poor households (ICV-I) according to the SIUBEN. The program plans to expand progressively prioritizing areas with the highest incidence and density of extremely poor households according to the official ICV poverty map.

**Type and frequency of the transfer:** Eligible households would receive a monthly transfer of RD\$550. Transfers are charged on electronic cards called *Tarjetas Solidarias*. Transfers can only be used to buy food items (a list of items consistent with consumption patterns of poor households has been identified) in authorized shops (currently there are approximately 56 shops serving the first 16,000 beneficiary households). The *Tarjeta Solidaria* is issued to heads of household with valid personal identification.

**Conditionalities:** (i) Use the *Tarjeta Solidaria* to buy only food items; (ii) all undocumented members of the household need to obtain a personal identification (birth certificate or identity card); (iii) mother's and/or household head participation to yearly training sessions mainly on nutrition, preventive health, and hygiene; (iv) compliance with the immunization plan and children's growth monitoring protocol, as defined by SESPAS for households with children 5 years old and younger.

**Period of eligibility:** 3 years and a half. **Rules of operation:** A program's operational manual exists.

**Organizational structure:** A Central Coordination Unit (CCU) is currently being staffed. Four coordination offices will depend from the CCU: (i) planning and monitoring; (ii) training; (iii) financial and administration; and (iv) general attention services to the population. A unit to manage the information system will also be created. The program will also have regional coordination offices in each of the 9 regions. The roster of beneficiaries is provided by the SIUBEN Unit ascribed to the Social Cabinet. The program's CCU will be in charge of validating the information provided by the SIUBEN. All requests for modification of the SIUBEN records and those coming from households not previously surveyed will be channeled to the SIUBEN. The CCU will be responsible to provide the Administrator of Social Subsidy (ADESS) with the list of active beneficiary households. ADESS is an entity recently created by Presidential Decree 1560-04 to execute all payments of subsidies and transfers. ADESS will be responsible to authorize the payment of the transfers through the financial institutions participating in the program. The CCU is responsible for the pre-selection of food stores participating in the program. The food store final selection is under the responsibility of the ADESS. The SESPAS is responsible for recording household participation in the health protocol (conditionality). The CCU, through its regional offices, will be responsible to monitor household compliance with the co-responsibilities defined by the program. This process will be carried out every four months. The program's staff will verify that beneficiary households possess written records showing compliance with preventive health care visits, vaccinations, training, and household members' identification documents (or proof that these documents are being processed). Representatives of SESPAS and ILAE/SEE as well as members of civil society organizations with a role of observers will participate in these events.

**M&E system:** The CCU is responsible for all monitoring activities. The design of M&E activities envisages an active participation of civil society organizations. The operational manual includes the commitment to an external impact evaluation, which would be carried out after three years and a half of execution.

*Note:* US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.3 Tarjeta de Asistencia Escolar (TAE)

**Program's stated objectives:** Guarantee access to and permanence in the education system, reduce drop out rates, reduce analphabetism, link families to children's progression in the educational system, and promote equity through the delivery of transfers to mothers.

**Geographical coverage:** Rural and marginal urban areas. In March 2003, the program was in 88 SEE districts, 2,115 schools and 29 provinces, benefiting about 100,000 households.

**Executing agency:** State Secretariat of Education (SEE), through its Planning Office.

**Type of transfer:** Conditional cash transfer (over compliance was not monitored).

**Amount of transfers executed in 2004:** RD\$236.6 million (US\$5.7 million).

**Administrative costs in 2004:** Not known.

**Source of financing:** National budget.

**Household eligibility criteria:** Poor households with children between 5 and 15 years old enrolled in school receive a monthly cash transfer. No quantitative criterion was associated to the definition of poor household. Since the very beginning, a pre-requisite for mother enrollment was the possession of a valid personal identification document. This pre-requisite determined the exclusion of 1 out of 5 mothers deemed eligible.

**Type and frequency of the transfer:** Monthly cash transfer of RD\$300 per eligible household (in reality the distribution was often irregular). Transfers were independent of the size of the household. Payments were made through checks.

**Conditionality:** Children's enrollment in school. Children's assistance should be above 85 percent. Children's performance was also supposed to be monitored.

**Targeting and selection of beneficiaries:** During the first phase of the program's expansion, the 1997 poverty map elaborated by the National Planning Office (*Oficina Nacional de Planeación*, ONAPLAN) was used to select the municipalities. Schools with less than 300 students were selected in these municipalities and their final eligibility was decided by Regional and District Directors. Selected schools were mainly rural and concentrated in specific geographical areas. During the second phase of the program's expansion in June 2002, schools with 750 students or more located in urban marginal areas mainly in Santo Domingo and Santiago were selected. In this phase, the official 1997 poverty map was not used. The identification of urban marginal areas supposedly was carried out through specific case studies. During the program's first expansion phase, the identification of eligible mothers was carried out by the parents' school committee and other community organizations. Only in a second stage, eligible household socioeconomic information was gathered. According to the program's rule, the criteria that should have been used to identify eligible mothers were: (i) women heads of household, and (ii) families whose parents were unemployed or under-employed but not self-employed. Given these criteria, the beneficiary selection mechanism was problematic. A depuration of the roster of beneficiaries that took place at the beginning of 2004 revealed numerous cases of mothers with no children or who did not meet other eligibility criteria (e.g., some were SEE employees or were using fake identification numbers). As a result of an initial revision of specific cases, during January-September 2004, 3,700 mothers were taken off the roster of beneficiaries.

**Rules of eligibility and operation:** Not published.

**Organizational structure:** TAE lacked a well-defined operational structure and a bare minimum logistical structure to monitor children's enrollment and assistance and ensure a smooth and on time payment process. Insufficient resources were devoted to the execution of the program.

**M&E system:** Basically inexistent.

**Reforms to the TAE:** The design of a plan to strengthen TAE's operations started at the end of 2003. In late 2004, the restructuring plan for the TAE program began to be implemented under a new name, *Incentivo a la Asistencia Escolar* (ILAE) and with a brand new team of about 15 people in the SEE.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004).

*Source:* Based on García (2005).

### Box A.1.4 School Assistance Incentives/*Incentivo a la Asistencia Escolar (ILAE)*

**Program's stated objectives:** Improve the educational achievements of children of extremely poor households (ICV-I according to the SIUBEN); improve school assistance and reduce drop out rates among children ages 5 through 15.

**Type of transfer:** Conditional cash transfer.

**Geographical coverage:** Rural and urban areas. Program's goal for 2005: 80,000 households.

**Executing agency:** State Secretariat of Education (SEE), through a National Coordination Unit (NCU).

**2005 assigned budget:** RD\$489.7 million (US\$16.85 million). No execution took place between January and March 2005. The official ILAE launch is planned for September 2005, at the beginning of the school year.

**Estimated administrative costs:** Still to be determined.

**Source of financing:** National budget.

**Complementarities with other programs:** With *Comer es Primero*.

**Targeting and household eligibility criteria:** Proxy-means testing. Extremely poor households (ICV-I) according to the SIUBEN with children between 5 and 15 enrolled in basic education. Households must be beneficiary of the program *Comer es Primero*. Therefore the ILAE will be implemented in geographical areas prioritized by the program *Comer es Primero*.

**Type and frequency of the transfer:** The size of the cash transfer varies according to the number of eligible children in a given family. A family with up to two children ages 5 through 15 enrolled in basic education would receive RD\$300 monthly and RD\$150 for each additional eligible child. Currently the program does not define a cap on the total amount of grants received by eligible households. Payments would be carried out every other month, five times a year, for a total of 10 months. Transfers would be charged to the *Tarjeta Solidaria* (the same card that will be used by *Comer es Primero* and GLP gas subsidies). The *Tarjeta Solidaria* is issued to the head of the household (mothers will not necessarily be the direct recipients, as previously established in the TAE program where payments were made through checks. The reason seems to be that women are less likely than men to possess valid personal identification, however this is not corroborated by the data).

**Conditionalities:** Children's enrollment and regular assistance to school (minimum 85 percent of the time).

**Period of eligibility:** Minimum period of 3 years.

**Rules of operation:** An official operational manual is available.

**Organizational structure:** The whole ILAE organizational structure depends from the NCU. A regional coordination unit will be placed in each regional office of the SEE. Regional coordination units will supervise the work of SEE staff responsible for the adequate operation of the program at the district level, including the auditing of student assistance records. The ILAE district coordinators will be technical personnel of the SEE who will be re-assigned to the ILAE. The NCU will be responsible for validating household socioeconomic data contained in the SIUBEN and for channeling to the SIUBEN office all updating requests. The NCU will also be responsible for bi-monthly generating the list of households eligible for receiving the transfers. This list will be transmitted to the ADESS, which will authorize the payments. As of April 2005, the ILAE organizational and logistic structure was in its very early stages of implementation. According to the NCU coordinator, about 270 SEE personnel will be involved in the ILAE operation.

**M&E system:** Specified in the operational manual. Not yet in place.

*Note:* US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.5: LPG (*Gas Propano Líquido*) / Gas Subsidies

**Program's stated objective:** Conceived as a poverty alleviation program to allow poor household access to low price fuel for domestic use.

**Geographical coverage:** Urban and rural.

**Executing agency:** State Secretariat of Industry and Commerce (*Secretaría de Estado de Industria y Comercio*, SSIC).

**Type of transfer:** Consumption subsidy. GLP suppliers sell gas at a subsidized price.

**Execution structure:** The State Secretariat of Finance (*Secretaría de Estado de Finanzas*, SSF) transfers resources to three GLP import firms to compensate for the difference between the market price and the subsidized GLP price. SSIC supervises and controls GLP commercialization and validates the amounts to be disbursed to GLP suppliers by the SSF.

**Amount of transfers executed in 2004:** RD\$5,608 million (US\$136 million). Budget executed between January and March 2005: RD\$ 1,589 (US\$54.6 million).

**Administrative costs in 2004:** Estimated administrative costs were RD\$180 million. Starting in January 2005, the program's administrative and operational costs are covered by a RD\$4 charge on each GLP gallon sold at market price.

**Source of financing:** National budget.

**Targeting and household eligibility criteria:** Households purchasing GLP in containers of 22.5 gallons or less (there is no way of determining whether GLP gas is for domestic, transport or commercial use). The application of this criterion started in August 2004 within the framework of the so called "Apache Plan" to dismantle generalized gas subsidies, and exclude large consumers from the subsidy (those who buy in containers bigger than 22.5 gallons). As of June 2005, the GLP subsidy would be targeted to poor households via the SIUBEN (probably to ICV-I, ICV-II and ICV-III households).

**Type and frequency of the transfer:** Consumers purchasing GLP in containers of 22.5 gallons or less buy GLP at a subsidized price (currently RD\$25 per gallon). The difference between the subsidized price and the parity import price is covered up by fiscal resources. The price of the subsidized gallon was fixed by the Government in 2003 at RD\$25 and has remained constant since then. Given the parity import price fluctuations, the value of the subsidy increased from RD\$2.94 in February 2003 to RD\$35.3 in August 2004, decreasing to RD\$19.72 in April 2005. Currently there are no limits neither on the GLP amount (or value) purchased by each household nor on the frequency of purchasing. The GLP reform proposal that should be implemented through the SIUBEN would entail a maximum monthly transfer of RD\$250 per eligible household for the purchase of 10 gallons of GLP (assuming that GLP subsidized price remains constant at RD\$25 per gallon). The monthly transfer would be paid to eligible households through the *Tarjeta Solidaria* and be earmarked only to purchase GLP gas.

**Rules of operation:** Exist and are published (Decree 1068-04 and Resolution N. 96 September 2004, SSIC).

**Targeting methods:** As of August 2004, self-selection of households purchasing GLP gas in containers of 22.5 gallons or less. As of June 2005, the subsidy would be targeted through the SIUBEN.

**Organizational structure:** The organizational structure of the program is not documented. About 1,300 individuals are involved in the supervision of GLP commercialization and monitoring of GLP suppliers' compliance with the rules.

**M&E system:** With the exception of operational monitoring mechanisms implemented by the SSIC through its supervisors, no other M&E mechanism is in place.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.6: Power Outage Reduction Program/*Programa de Reducción de Apagones (PRA)*

**Program's objectives:** Alleviate the impact of tariff increases on poor households after the elimination of generalized subsidies and of the supply of electricity for a minimum of 18-20 hours in urban marginal areas. The long term goal is to cultivate among the poor "a culture of electricity bill payment" that can survive beyond this program. The power outage reduction program (PRA) was established in 2002.

**Type of transfer:** Consumption subsidy.

**Geographical coverage:** Mainly urban. The ENCOVI reports rural coverage for the electricity subsidy. This might be due to the fact that in 2003 (therefore within the ENCOVI recalling period) the Government re-instated generalized subsidies, which started to be phased out in December 2003.

**Responsible Agency:** Dominican Corporation of State Electricity Companies (*Compañía Dominicana de Empresas de Electricidad*, CDEE).

**2004 executed budget:** RD\$4,335.2 million (US\$105 million).

**2005 executed budget:** RD\$3,654.2 million (US\$125 million) between January and March 2005.

**Estimated administrative costs:** Monthly personnel costs are RD\$2.5 million.

**Source of financing:** National budget. Distribution companies committed to cover 25 percent of the gross spending on PRA, while the Government meets 75 percent of the gross spending. Revenues that accrued from customer bill payments should have been apportioned as follows: 32 percent retained by the distributors as payment for the services provided, 20 percent earmarked for improvements, maintenance and emergency repairs of basic electricity infrastructure in poor neighborhoods, and 48 percent allocated to the Government to cover the cost of the electricity provided by the CDEE. Bill collection rates reached 30 percent in 2002 before falling in 2003. Overall, households' lack of metering, thus bills are more often issued to the community rather than to individual households.

**Targeting and household eligibility criteria:** Households and small entrepreneurs residing in poor urban marginal areas. 93 urban marginal areas were covered in 2003, and 300 were covered in 2004 according to unofficial sources.

**Rules of operation:** Exist. Small consumers pay a monthly flat fee in the range of RD\$100-RD\$300. Small businesses pay monthly tariffs between RD\$500 and RD\$1,000. Special tariffs are available for medium size businesses.

**Organizational structure:** The executing unit employees 210 individuals

**M&E system:** Qualitative evaluations have taken place and point to very low bill collection rates and Government non-compliance with the investment of resources in electricity infrastructure upgrading. The PRA provides a perverse incentive and an easy solution for distribution companies to solve a problem with a large non-performing group of consumers. A proper M&E system is not in place.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005); and Public Expenditure Review, World Bank (2004).

### Box A.1.7: Comedores Económicos

**Program's stated objectives:** Improve the nutritional status of the population and the access of low income individuals to food.

**Type of transfer:** In-kind transfer (food) or consumption subsidy (food sold at subsidized prices).

**Geographical coverage:** In theory universal, in practice concentrated in urban marginal areas (34 comedores) and prisons.

**Executing Agency:** *Comedores Económicos del Estado* of the Office of the Presidency. Established in 1942.

**2004 executed budget:** RD\$206.5 million (US\$5 million).

**2005 assigned budget:** RD\$ 697.6 million (US\$24 million)

**Estimated administrative costs:** 12.6 percent in 2004 according to official information.

**Source of financing:** National budget (62 percent) and cost recovery (38 percent). Each food ration is sold at RD\$5, while the production cost of one ration is estimated at RD\$16.7

**Targeting and household eligibility criteria:** Self-selection. No eligibility criteria established with the exception of food rations prepared for prison inmates. Strikingly, the legal framework potentially allows food rations to be sold to wedding and birthday parties, receptions to both private and public institutions. The Presidential Decree 1554-04 includes the program into the Sub-program of Social Assistance, therefore the program should be targeted through the SIUBEN, with the exception of the inmate population.

**Rules of operation:** Do not exist.

**Organizational structure:** The executing unit employs 210 individuals.

**M&E system:** No monitoring or evaluation of the program's results has ever taken place.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.8: Price Stabilization Institute (INESPRE) – Popular Markets

**Program's stated objectives:** Promote and support the participation and integration of producers and consumers with the goal of contributing to the integral development of the production structure and improving the supply of basic food items to urban and rural areas. The Institute's mandate is to guarantee the supply of basic food items and regulate prices to protect consumers and producers. In principle, INESPRES intervenes primarily in remoter, poorer rural areas where private commercial wholesale or retail outlets are scarce and where INESPRES can purchase whatever goods are left at the end of the day at just below the market price (therefore, in theory, contributing to the profitability of producers by offering them a channel for the commercialization of their products) and then re-sell them in marginal urban and remote rural areas at subsidized prices (therefore improving consumers' access to basic staples). INESPRES also handles rice, onions, garlic, fruit, milk, chicken, and tuna imports to be sold at subsidized prices.

**Type of transfer:** Commercialization subsidies for producers; consumption subsidies for consumers.

**Geographical coverage:** National.

**Executing agency:** INESPRES is ascribed to the Office of the Presidency.

**2004 executed budget:** RD\$1,423.9 (US\$34 million). Estimated total value of the transfers to consumers (i.e., difference between the value of goods acquired from producers and the value of the products sold to the public) where RD\$455 (US\$11 million).

**2005 assigned transfers:** From national budget to INESPRES: RD\$457.1 million (US\$15.75 million).

**Estimated administrative costs:** Administrative costs related to the organization of popular markets (not including personnel salaries) were 12.8 percent of the total value of the transfers to consumers in 2004.

**Source of financing:** National budget (41.5 percent) and proceeds from food selling (58.5 percent) in 2004

**Targeting and household eligibility criteria:** Basic food producers and general population (self-selection). Planning to use official poverty map to set up *mercados populares* (popular markets).

**M&E system:** Not in place.

*Note:* US\$1 = RD\$41.24 (BCRD official average exchange rate for the year 2004); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

### Box A.1.9 Essential Drugs Program (PROMESE)/Popular Pharmacies (*Boticas Populares*)

**Program's stated objectives:** Initially the program was conceived to finance and manage popular pharmacies (*Boticas Populares*) and to sell generic and essential drugs at a reduced price to poor people. PROMESE has expanded its original mandate and now procures pharmaceuticals for all public health facilities, and more than half of its purchases are now destined to public hospitals to which it also provides some medical inputs and equipment.

**Type of transfer:** Consumption subsidy: selling of generic and essential drugs at reduced (subsidized) prices. When drugs are donated instead, PROMESE should be considered an in-kind transfer.

**Geographical coverage:** National. Total number of *Boticas Populares* is 419 (119 in Santo Domingo and 300 elsewhere). Drugs are also procured for 152 hospitals and 900 rural clinics.

**Executing agency:** Executing Unit PROMESE-CAL in SESPAS but ascribed to the Office of the Presidency. The program was first established in 1984.

**2005 allocated budget:** RD\$1,285.7 million (US\$ 44.2 million). Budget executed in January 2005: RD\$10.4 million (US\$0.35 million).

**Transfers' value in 2003:** PROMESE estimates that the value of the transfers to consumers in 2003 was RD\$275.5 million (US\$9.48 million).

**Administrative costs in 2004:** Not available for 2003 or 2004. In 2002 estimated administrative costs were 23.9 percent.

**Source of financing:** National budget and cost recovery.

**Targeting and household eligibility criteria:** The executing agency is applying some sort of geographical targeting to decide where to open or re-locate popular pharmacies. There are no specific eligibility criteria for the population. Presidential Decree 1555-04 places PROMESE within the Social Subsidy Sub-program. It is therefore expected that the program will adopt the official poverty map and the SIUBEN selection mechanism as its targeting mechanism. Under the subsidized regime of Social Security, eligible individuals are expected to receive drugs free of charges through PROMESE.

**Organizational structure:** PROMESE-CAL's execution is supervised by an executive board. A Director and a Deputy Director head the program, under whom five managers operate. One of its departments is in charge of the popular pharmacies and it has personnel of 1,168 persons, 62.5 percent of whom work in the 419 popular pharmacies.

**M&E system:** None.

*Note:* US\$1 = RD\$29.04 (BCRD official average exchange rate for the year 2003); US\$1 = RD\$29.06 (BCRD official average exchange rate for the period January – March 2005).

*Source:* Based on García (2005).

**ANNEX A.2: INCOME PMT PREDICTIVE POWER  
ACCORDING TO HOUSEHOLD PER CAPITA EXPENDITURES**

**Table A.2.1: Household Poverty Classification by SIUBEN-ICV - Income and Per Capita Expenditures PMT**

	Country (%)	Urban (%)	Rural (%)
<b>SIUBEN ICV PMT – expenditures</b>			
Correctly classified as 20% income poorest families	44.1	43.0	43.1
Correctly classified as 40% income poorest families	59.3	60.9	56.7
Always correctly classified	33.3	32.9	31.1
<b>Income PMT – expenditures</b>			
Correctly classified as 20% income poorest families	58.5	59.2	56.5
Correctly classified as 40% income poorest families	71.9	71.9	70.6
Always correctly classified	44.0	43.6	42.4

*Note:* Q1 refers to the bottom 20 percent of household per capita expenditure distribution. Income PMT was estimated using the same information contained in the SIUBEN survey.

*Source:* Own calculations based on the SIUBEN algorithm and the 2004 ENCOVI.

## ANNEX A.3: INCOME PROXY MEANS TEST (PMT) ESTIMATION RESULTS

**Table A.3.1: Income PMT (SIUBEN Information)**

the set of regressors is restricted to variables that are also contained in the SIUBEN survey

Independent variables	Urban Area			Rural Area		
	Coeff.	t	Sig.	Coeff.	t	Sig.
<b>Geographical dummies (regions)</b>						
National District	-0.058	-2.508	0.012			
Valdesia				-0.102	-3.199	0.001
East	0.110	3.930	0.000			
del Valle	-0.286	-7.535	0.000	-0.222	-5.970	0.000
Enriquillo	-0.150	-4.226	0.000	-0.112	-2.455	0.014
<b>Household composition</b>						
Log number of household's members	-0.975	-37.878	0.000	-0.955	-34.998	0.000
Head of household's gender	0.070	2.635	0.008			
Household type (1=head of household and spouse, 0= otherwise)	0.095	2.490	0.013			
Household type (1=head of household, spouse and children, 0= otherwise)				-0.071	-2.418	0.016
Household type (1=single-headed, 0=otherwise)	-0.092	-2.863	0.004	-0.162	-3.995	0.000
# of household's members age 45-59	-0.032	-2.097	0.036			
Household's members residing abroad (yes=1; no=0)	0.340	11.571	0.000	0.403	9.120	0.000
<b>Human capital</b>						
Household heads' years of education (square)	0.002	10.890	0.000	0.023	7.312	0.000
Spouse's years of education (square)	0.001	3.270	0.001	0.019	5.035	0.000
Household heads' literacy (1=literate, 0=illiterate)	0.073	2.486	0.013			
# of literate members of the households older than 14	0.059	4.233	0.000	0.067	4.649	0.000
# of members age 15-18 attending school	-0.102	-5.044	0.000			
Log of spouse's age	-0.042	-4.385	0.000	-0.039	-4.004	0.000
<b>Dwelling characteristics</b>						
Dwelling is rented (1=yes, 0=otherwise)	-0.137	-6.253	0.000			
Dwelling is owned and paid off (1=yes, 0=otherwise)				-0.202	-2.080	0.038
Walls are "bloques" or cement (1=yes, 0=otherwise)	0.073	3.022	0.003			
Roof made of zinc (1=yes, 0= otherwise)	-0.068	-2.736	0.006			
Floor made of granite, marble, ceramic (1=yes, 0= otherwise)	0.180	3.972	0.000	0.165	2.004	0.045
Floor made of mosaic (1=yes, 0= otherwise)	0.073	2.311	0.021			
# of rooms	0.087	8.913	0.000			
# of rooms (square)				0.013	8.253	0.000
Apartment (1=yes, 0= otherwise)	0.097	2.733	0.006			
<b>Equipment</b>						
Car (1=yes, 0=no)	0.241	8.744	0.000	0.321	7.947	0.000
Air conditioning (1=yes, 0=no)	0.297	6.202	0.000	0.316	2.848	0.004
TV (1=yes, 0=no)	0.099	3.438	0.001	0.084	3.118	0.002
Washing machine (1=yes, 0=no)	0.080	3.312	0.001	0.148	5.491	0.000
Refrigerator (1= yes, 0=no)	0.067	2.592	0.010			
Computer (1= yes, 0=no)	0.086	2.151	0.032	0.281	2.861	0.004
<b>Basic Services</b>						
sanitario de arrastre privado (1=yes, 0=otherwise)	0.161	5.595	0.000	0.146	4.716	0.000
sanitario de inodoro de arrastre compartido (1=yes, 0=otherwise)	0.151	3.816	0.000	0.174	2.373	0.018
sanitario de foso, letrina compartida (1=yes, 0=otherwise)	0.094	2.722	0.007			
Public water connection inside the dwelling (1=yes, 0=otherwise)	0.062	3.004	0.003			
Public water connection outside the dwelling (1=yes, 0=otherwise)				-0.101	-4.046	0.000
agua de remanantial, río, arroyo (1=yes, 0=otherwise)				-0.118	-3.559	0.000
Lighting (1=electricity connection, 0= otherwise)	0.205	2.728	0.006			
Garbage elimination (1=burning, 0= otherwise)				0.076	3.388	0.001
<b>Employment and job characteristics</b>						
Head of household employed (1=yes, 0=no)	0.164	6.576	0.000	0.195	6.419	0.000
Spouse employed (1= yes, 0=no)	0.250	10.313	0.000	0.218	7.472	0.000
# of household's members employed	0.213	12.861	0.000	0.201	10.595	0.000
Head of household is a salaried worker (1=yes, 0=no)	0.170	5.463	0.000	0.135	3.398	0.001
Head of household is an employer (1=yes, 0=no)	0.482	8.009	0.000	0.509	7.006	0.000
Head of household is self-employed (1=yes, 0=no)	0.277	8.767	0.000	0.225	5.907	0.000
<b>(Constant)</b>	<b>7.832</b>	<b>89.069</b>	<b>0.000</b>	<b>8.211</b>	<b>192.893</b>	<b>0.000</b>
<b>R<sup>2</sup></b>	<b>0.511</b>			<b>0.484</b>		
<b>Number of observations</b>	<b>5834</b>			<b>3991</b>		

Source: Own estimates based on the 2004 ENCOVI

**Table A.3.2: Income PMT (All variables contained in ENCOVI)**  
the full set of variables contained in the 2004 ENCOVI are used as regressors

Independent variables	Urban Area			Rural Area		
	Coeff.	t	Sig.	Coeff	t	Sig.
<b>Geographical dummies (regions)</b>						
Valdesia				-0.085	-2.702	0.007
East	0.119	4.382	0.000	0.095	2.347	0.019
North-Central	0.057	2.134	0.033			
del Valle	-0.236	-6.277	0.000	-0.211	-5.794	0.000
Enriquillo	-0.117	-3.310	0.001			
<b>Human capital</b>						
Household heads' years of education				0.019	6.115	0.000
Household heads' years of education (square)	0.001	9.954	0.000			
Spouse's years of education	0.000	2.622	0.009	0.003	3.540	0.000
Spouse's years of education (cubic)				0.000	-2.585	0.010
Years of education of household's members older than 18 (square)	0.000	2.209	0.027			
Years of education of household's members older than 18 (cubic)				0.000	2.077	0.038
# of members age 15-18 attending school	-0.075	-3.619	0.000			
# of members age 15-18 attending school (square)						
# of literate members of the households older than 14	0.042	2.865	0.004	0.058	3.904	0.000
# of literate members of the households older than 14 (square)						
Log of spouse's age	-0.031	-3.608	0.000	-0.047	-4.992	0.000
Head of household is a migrant (relative to his/her birthplace)	-0.055	-2.973	0.003			
Head of household migrated relative to five years ago	0.081	2.342	0.019			
<b>Household composition</b>						
Log number of household's members	-1.006	-24.254	0.000	-0.872	-24.611	0.000
Head of household's gender	0.054	2.093	0.036			
Household's members residing abroad (yes=1; no=0)	0.293	9.981	0.000	0.356	8.127	0.000
# of household's members age 25-44	0.026	2.043	0.041			
# of head of household's siblings	-0.037	-3.593	0.000	-0.041	-3.615	0.000
Household type (1=single-headed, 0=otherwise)				-0.131	-3.258	0.001
<b>Dwelling characteristics</b>						
on an unpaved street or road (1=yes, 0= otherwise)	0.083	4.232	0.000			
# of household's members per room	0.074	2.916	0.004			
# of rooms	0.168	4.280	0.000			
# of rooms (square)	-0.008	-2.013	0.044	0.011	6.724	0.000
Dwelling is rented (1=yes, 0=otherwise)	-0.127	-5.816	0.000			
Dwelling is owned and paid off (1=yes, 0=otherwise)				0.068	2.653	0.008
Walls are "bloques" or cement (1=yes, 0=otherwise)	0.067	2.782	0.005			
Roof made of "concreto" (1=yes, 0= otherwise)				0.092	2.597	0.009
Roof made of zinc (1=yes, 0= otherwise)	-0.055	-2.265	0.024			
Floor made of granite, marble, ceramic (1=yes, 0= otherwise)	0.130	2.992	0.003			
Apartment (1=yes, 0= otherwise)	0.089	2.557	0.011			
<b>Equipment</b>						
Car (1=yes, 0=no)	0.186	6.789	0.000	0.279	6.921	0.000
Air conditioning (1=yes, 0=no)	0.233	4.829	0.000	0.308	2.844	0.004
Electric generator (1=yes, 0=no)	0.167	4.756	0.000	0.272	4.947	0.000
Water cistern (1=yes, 0=no)	0.108	2.997	0.003			
Radio or stereo (1=yes, 0=no)	0.069	3.434	0.001			
Internet (1=yes, 0=no)	0.159	2.726	0.006			
Washing machine (1=yes, 0=no)	0.057	2.449	0.014	0.122	4.550	0.000
Heater (1=yes, 0=no)						
TV (1=yes, 0=no)	0.076	2.702	0.007	0.049	1.817	0.069
<b>Basic Services</b>						
sanitario de arrastre privado (1=yes, 0=otherwise)	0.139	4.897	0.000	0.132	3.607	0.000
sanitario de inodoro de arrastre compartido (1=yes, 0=otherwise)	0.140	3.543	0.000	0.209	2.839	0.005
sanitario de foso, letrina privada (1=yes, 0=otherwise)				0.056	2.069	0.039
sanitario de foso, letrina compartida (1=yes, 0=otherwise)	0.085	2.472	0.013			
Public water connection inside the dwelling (1=yes, 0=otherwise)	0.051	2.457	0.014			
Public water connection outside the dwelling (1=yes, 0=otherwise)				-0.091	-3.752	0.000
agua de remanantial, rio, arroyo (1=yes, 0=otherwise)				-0.107	-3.269	0.001

Lighting (1=electricity connection, 0= otherwise)	0.179	2.417	0.016			
Garbage collection (1=by the municipality, 0= otherwise)	0.046	2.070	0.039			
Garbage elimination (1=burning, 0= otherwise)				0.069	3.125	0.002
Telephone service connection (1=yes, 0=no)	0.137	6.194	0.000	0.091	3.278	0.001
<b>Employment and job characteristics</b>						
Head of household employed (1=yes, 0=no)	0.188	7.455	0.000	0.239	7.786	0.000
Spouse employed (1= yes, 0=no)	0.252	10.493	0.000	0.237	8.211	0.000
# of household's members employed	0.208	12.687	0.000	0.275	7.716	0.000
# of household's members employed (square)				-0.027	-2.290	0.022
Head of household is a salaried worker (1=yes, 0=no)	0.118	3.583	0.000	0.091	2.233	0.026
Head of household is an employer (1=yes, 0=no)	0.428	6.680	0.000	0.408	5.638	0.000
Head of household is self-employed (1=yes, 0=no)	0.209	6.132	0.000	0.147	3.778	0.000
Head of household is a domestic worker (1=yes, 0=no)						
Head works in food processing, textiles and shoe industry (yes=1)				-0.179	-4.167	0.000
Head works in other industry (1=yes, 0=no)	0.133	3.171	0.002			
Head works in the water and electricity and construction sectors	0.087	2.513	0.012	0.264	6.243	0.000
Head works in the retail sector, restaurants, hotels (1=yes, 0=no)	0.109	4.044	0.000	0.089	2.846	0.004
Head works in transport, communication, finance (1=yes, 0=no)	0.136	4.015	0.000			
Head is director or manager (1=yes, 0=no)				0.236	2.596	0.009
Head is a professional or a specialist (1=yes, 0=no)						
Head is a service personnel or seller (1=yes, 0=no)	-0.097	-3.383	0.001			
Head works as a handworker, apprentice (1=yes, 0=no)	-0.100	-3.704	0.000	-0.176	-5.813	0.000
Head works in a firm with less than 6 employees (1=yes, 0=no)	-0.066	-1.970	0.049			
Head is affiliated to social security (1=yes, 0=no)	0.059	2.547	0.011	0.108	3.364	0.001
<b>(Constant)</b>	7.638	67.469	0.000	8.127	174.176	0.000
<b>Number of significant variables</b>	55			42		
<b>R<sup>2</sup></b>	0.528			0.507		
<b>Number of observations</b>	5834			3991		

Source: Own estimates based on the 2004 ENCOVI

**Table A.3.3: Income PMT (excluding school assistance, employment)**

**the full set of variables contained in the 2004 ENCOVI are used as regressors except children's school attendance and household member's employment status**

Independent variables	Urban Area			Rural Area		
	Coeff	t	Sig.	B	t	Sig.
<b>Geographical dummies (regions)</b>						
Valdesia				-0.089	-2.703	0.007
East	0.124	4.365	0.000			
North-Central	0.069	2.437	0.015			
del Valle	-0.259	-6.598	0.000	-0.217	-5.771	0.000
Enriquillo	-0.151	-4.079	0.000	-0.108	-2.300	0.021
<b>Human capital</b>						
Household heads' years of education				0.022	6.532	0.000
Household heads' years of education (square)	0.002	10.935	0.000			
Spouse's years of education (square)	0.001	3.302	0.001	0.001	4.984	0.000
Years of education of household's members older than 18	0.014	5.508	0.000			
Years of education of household's members older than 18 (cubic)				0.000	2.117	0.034
# of literate members of the households older than 14	0.042	2.419	0.016	0.096	6.085	0.000
Head of household is a migrant (relative to his/her birthplace)	-0.056	-2.927	0.003			
Spouse's age				-0.002	-3.145	0.002
Household heads' age (cubic)				0.000	-3.488	0.000
Other members' age				0.013	5.764	0.000
Other members' age (cubic)				0.000	-4.338	0.000
<b>Household composition</b>						
Number of household's members				0.106	4.876	0.000
Log number of household's members	-1.008	-26.170	0.000	-1.173	-16.735	0.000
Head of household's gender	0.117	5.354	0.000	0.146	4.782	0.000
Household's members residing abroad (yes=1; no=0)	0.257	8.364	0.000	0.290	6.365	0.000
# of household's members age 15-24	0.015	2.754	0.006			
# of household's members age 25-44	0.128	7.753	0.000			
# of household's members age 55-49 (square)	0.035	3.423	0.001			
# of head of household's siblings	-0.031	-2.943	0.003			
# of head of household's men siblings (square)				-0.011	-2.920	0.004
# of head of household's women siblings				-0.070	-4.371	0.000
Household type (1=head of household and spouse, 0= otherwise)				0.164	3.384	0.001
Household type (1=single-headed, 0=otherwise)				-0.116	-2.576	0.010
<b>Dwelling characteristics</b>						
# of rooms	0.098	7.244	0.000			
# of rooms (square)				0.012	7.002	0.000
Walls are "bloques" or cement (1=yes, 0=otherwise)	0.084	3.432	0.001			
Floor made of granite, marble, ceramic (1=yes, 0= otherwise)	0.103	2.277	0.023			
Dwelling is rented (1=yes, 0=otherwise)	-0.110	-4.892	0.000			
Dwelling is owned, no liability on it (1=yes, 0=otherwise)				0.065	2.492	0.013
Apartment (1=yes, 0= otherwise)	0.112	3.141	0.002			
on an unpaved street or road (1=yes, 0= otherwise)	0.086	4.136	0.000			
# of household's members per room	0.049	2.136	0.033			
<b>Equipment</b>						
Car (1=yes, 0=no)	0.244	8.596	0.000	0.303	7.187	0.000
Electric generator (1=yes, 0=no)	0.182	4.939	0.000	0.317	5.541	0.000
Air conditioning (1=yes, 0=no)	0.251	4.976	0.000			
Washing machine (1=yes, 0=no)	0.055	2.233	0.026	0.138	5.041	0.000
Water cistern (1=yes, 0=no)	0.117	3.108	0.002			
Radio or stereo (1=yes, 0=no)	0.079	3.738	0.000			
TV (1=yes, 0=no)	0.066	2.245	0.025			
Computer (1= yes, 0=no)				0.248	2.489	0.013
Internet (1= yes, 0=no)	0.144	2.344	0.019			
<b>Basic Services</b>						
sanitario de arrastre privado (1=yes, 0=otherwise)	0.133	4.552	0.000	0.118	3.664	0.000
sanitario de inodoro de arrastre compartido (1=yes, 0=otherwise)	0.143	3.494	0.000	0.174	2.296	0.022
sanitario de foso, letrina compartida (1=yes, 0=otherwise)	0.087	2.420	0.016			
Public water connection inside the dwelling (1=yes, 0=otherwise)	0.056	2.602	0.009			
Public water connection outside the dwelling (1=yes, 0=otherwise)				-0.093	-3.603	0.000

<i>agua de remanantial, río, arroyo</i> (1=yes, 0=otherwise)				-0.094	-2.740	0.006
Lighting (1=electricity connection, 0= otherwise)	0.197	2.540	0.011			
Telephone service connection (1=yes, 0=no)	0.154	6.662	0.000	0.109	3.733	0.000
Garbage elimination (1=burning, 0= otherwise)				0.062	2.660	0.008
<b>(Constant)</b>	7.876	86.537	0.000	8.300	162.433	0.000
<b>Number of significant variables</b>	37			32		
<b>R<sup>2</sup></b>	0.475			0.449		
<b>Number of observations</b>	5834			3991		

*Source:* Own estimates based on the 2004 ENCOVI

## ANNEX A.4: FULL SIMULATION RESULTS

**Table A.5.4.1 Coverage, Absolute and Relative Incidence**

Program/Targeting strategy	Total	By Income Quintile					By Area	
		Q1	Q2	Q3	Q4	Q5	Urban	Rural
<b>COVERAGE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (c)	0.084	0.232	0.098	0.055	0.026	0.009	0.054	0.138
Targeting option (d)	0.061	0.161	0.072	0.036	0.026	0.009	0.030	0.115
Targeting option (e)	0.084	0.163	0.136	0.083	0.031	0.009	0.107	0.043
Targeting option (f)	0.067	0.156	0.073	0.050	0.034	0.021	0.041	0.113
Targeting option (g)	0.070	0.166	0.072	0.053	0.037	0.024	0.049	0.108
<b><i>Comer es Primero</i></b>								
Targeting option (c)	0.084	0.232	0.098	0.055	0.026	0.009	0.054	0.138
Targeting option (d)	0.061	0.161	0.072	0.036	0.026	0.009	0.030	0.115
Targeting option (e)	0.084	0.163	0.136	0.083	0.031	0.009	0.107	0.043
Targeting option (f)	0.067	0.156	0.073	0.050	0.034	0.021	0.041	0.113
Targeting option (g)	0.070	0.166	0.072	0.053	0.037	0.024	0.049	0.108
<b>ABSOLUTE INCIDENCE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (c)	1.000	0.511	0.245	0.146	0.072	0.026	0.401	0.599
Targeting option (d)	1.000	0.400	0.230	0.162	0.146	0.062	0.343	0.657
Targeting option (e)	1.000	0.367	0.322	0.216	0.075	0.020	0.812	0.188
Targeting option (f)	1.000	0.370	0.207	0.173	0.145	0.105	0.402	0.598
Targeting option (g)	1.000	0.390	0.195	0.170	0.138	0.107	0.450	0.550
<b><i>Comer es Primero</i></b>								
Targeting option (c)	1.000	0.532	0.240	0.139	0.064	0.025	0.392	0.608
Targeting option (d)	1.000	0.452	0.232	0.145	0.123	0.049	0.339	0.661
Targeting option (e)	1.000	0.385	0.319	0.202	0.071	0.022	0.783	0.217
Targeting option (f)	1.000	0.411	0.210	0.165	0.127	0.088	0.403	0.597
Targeting option (g)	1.000	0.424	0.199	0.161	0.123	0.091	0.444	0.556
<b>RELATIVE INCIDENCE</b>								
<b><i>Comer es Primero</i> + ILAE</b>								
Targeting option (c)	0.002	0.025	0.006	0.002	0.001	0.000	0.001	0.004
Targeting option (d)	0.002	0.020	0.006	0.003	0.001	0.000	0.001	0.004
Targeting option (e)	0.002	0.018	0.008	0.003	0.001	0.000	0.002	0.001
Targeting option (f)	0.002	0.018	0.005	0.003	0.001	0.000	0.001	0.004
Targeting option (g)	0.002	0.019	0.005	0.003	0.001	0.000	0.001	0.004
<b><i>Comer es Primero</i></b>								
Targeting option (c)	0.002	0.037	0.008	0.003	0.001	0.000	0.001	0.006
Targeting option (d)	0.002	0.030	0.008	0.003	0.002	0.000	0.001	0.006
Targeting option (e)	0.002	0.027	0.011	0.004	0.001	0.000	0.003	0.002
Targeting option (f)	0.002	0.028	0.007	0.004	0.002	0.000	0.001	0.005
Targeting option (g)	0.002	0.029	0.007	0.003	0.002	0.000	0.001	0.005

*Note:* Poverty map at the municipality level. Coverage: (Number of individuals in the group who live in a household where at least one member receives the transfer)/(Number of individuals in the group). Absolute Incidence: (Total aggregated transfer amount received by all individuals in the group)/(Total aggregated transfer amount received by all individuals in the population). Relative Incidence: (Total transfer amount received by individuals in the group)/(Total income of individuals in the group).

*Source:* Own calculations based on the 2004 ENCOVI.

## ANNEX A.5: THE ICV AND INCOME POVERTY MAPS: COMPLEMENTARITIES AND DIFFERENCES

Poverty maps are important instruments to target pro-poor public policies. In this Annex we explain the rationale behind the development of an income poverty map, as a complement to the official Living Standards Index (*Índice de Condiciones de Vida - ICV*) map, which is the result of an important effort the Government of the Dominican Republic has undertaken in the past two years. We also discuss the methodology behind the estimation of the two maps and the complementarities and differences between the two targeting tools.

The official ICV poverty map is capturing households' welfare dimensions which are more related with access to basic services and dwellings' conditions. The income poverty map captures households' welfare dimensions related with income generation and consumption capacity, therefore it is based on a welfare indicator which is more sensitive to economic cycle fluctuations. Additionally, the income poverty map is better suited than the current ICV poverty map to study the geographical distribution of poverty measures such as poverty gap and severity and inequality measures.<sup>1</sup> The income and the ICV poverty maps are therefore complementary targeting tools. The use of one rather than the other, or a combination of the two would depend on the type of targeted intervention/program considered, as discussed in Chapter 2.

### Income poverty map

The methodology used to estimate the income poverty map can be summarized in four steps. First, a model<sup>2</sup> that predicts households' per capita income is estimated by using the information contained in the ENCOVI 2004 and selecting a set of explanatory variables contained in both the ENCOVI and the 2002 National Census of Population and Dwellings. Among the regressors we include: (a) location variables such as regional dummies; (b) households' demographic composition and characteristics (among others: number of households' members, gender of the head of the household, whether a household is single-headed, whether household members reside abroad); (c) households' human capital characteristics (for example years of schooling and literacy of different household members); (d) dwelling's characteristics; (e) households' asset ownership (among others: car, air conditioning, television); (f) access to basic services; and (g) employment situation and job characteristics of household members. The model is developed for prediction purposes only and underlying behavioral patterns cannot be identified.<sup>3</sup> Two regressions are estimated, one for the urban sub-sample and one for the rural sub-sample of the ENCOVI. Second, the coefficients of the estimated model (see A.5.4) are applied to the information of the 2002 Census to predict households' per capita income. Third, given the monthly per capita extreme poverty (RD\$2082) and poverty (RD\$1069) lines estimated from

<sup>1</sup> The same would be true with an expenditure based poverty map.

<sup>2</sup> Using as dependent variable the logarithm of household's per capita income.

<sup>3</sup> Using step-wise elimination of regressors with replacement, an iterative process removes insignificant explanatory factors keeping only those that are significant at a predetermined cut-off significance level (95%). The methodology is sensitive to nonnormality and heteroskedasticity, so appropriate tests need to be implemented. See Elbers et al. (2003)

ENCOVI, and households' predicted per capita income poverty and inequality measures can be estimated for different geographical areas (municipalities, provinces, regions).

### ICV Poverty Map

The ICV poverty map is built on a welfare indicator which is a re-scaled linear combination of 17 socio-demographic variables presented in Box A.5.1. These variables are contained in both the 2002 Census and the Demographic and Health Survey (DHS) 2002.

<b>Box A.5.1: ICV Poverty Map Variables</b>
<ul style="list-style-type: none"><li>• floor material of the dwelling</li><li>• walls materials</li><li>• ceiling material</li><li>• number of person per room</li><li>• access to water (type)</li><li>• access to sewerage system (type)</li><li>• dwelling illumination system</li><li>• access to garbage elimination system (type)</li><li>• cooking fuel (type)</li><li>• dwelling type</li><li>• dwelling equipment (i.e. available assets)</li><li>• years of education of the head of household</li><li>• average years of education of the household (including only adults 15 year old and older)</li><li>• percentage of household members 5 years old or younger</li><li>• percentage of household members 15 years old or older who are employed</li><li>• school assistance of 6-14 year old children</li><li>• gender of the head of household</li></ul>

The methodology used to estimate the ICV index (see Box A.5.2) constrains the index to take values between 0 and 100. Higher standards of living are associated to higher ICV values. In order to classify each household according to its poverty status, the official poverty map defines cut off points on the ICV index scale (see Table A.5.1).<sup>4</sup>

<sup>4</sup> When the previous poverty map was estimated in 1997 cut off points were generated endogenously by k-mean cluster analysis. For the updated ICV poverty map cut off points were determined by applying the 1997 ICV weights to the DHS 2002 observations and calibrating the cut off points in such a way that the distribution of DHS 2002 households across each of the four ICV welfare categories (poverty-I; poverty-II, non-poor III; non-poor IV) coincided with the distribution obtained in 1997 for urban and rural areas. However, since cut off points were not determined endogenously, there is no assurance that the ICV methodology identifies poverty groups who are really homogeneous.

### Box A.5.2: ICV index Estimation Methodology

The ICV model was estimated from DHS 2002 data by:

- re-coding the 17 selected variables according to an ordinal scale. For each re-coded variable, the minimum value, which is 0, corresponds to the category most highly correlated with the lowest standards of living, the highest value corresponds to the category most highly correlated with the highest standard of living.
- transforming categorical into continuous variable by qualitative principal components method and re-scaling their values such that 0 is the minimum and 100 the maximum.
- extracting, from the set of re-scaled selected variable, four factors for the urban area and four factors for rural area by means of factorial analysis. Each factor is a linear combination of the re-scaled selected variables the weights of which are estimated by principal components methods.
- estimating by principal components methods the weights of the four factors, the linear combination of which represents the ICV. Two set of weights are estimated: one for rural and one for urban areas. transforming all the weights (of the re-scaled selected variables' and factors' linear combinations) so that final weights sum up to 1.

The ICV model was then applied to the 2002 Census observations to estimate an ICV value for each household (and each individual within a household) who is then classified in one of the four welfare categories. Poverty estimates for different geographical areas are then obtained from the ICV distribution in those specific areas.

There are important methodological

differences between the ICV and the income poverty map. First, as briefly described above, the methodology applied to estimate the ICV poverty map is based on a re-coding and re-

weighting of the original variables, censoring the ICV welfare index to take a value within a close interval 0 to 100. As a result, the ICV map cannot be used to either analyze differences in the distribution of poverty gap/severity and inequality measures across geographical areas or to assess the association of these measures with other welfare measures. On the contrary, the estimated households' per capita income takes value within an open interval and its distribution is not "censored" at the tails. Therefore the income poverty map represents an important analytical tool that can be used to analyze differences in the distribution of poverty gap/severity and inequality measures, thus complementing the analysis on the geographical distribution of poverty headcounts (FGT<sub>0</sub>) provided by the ICV poverty map.

**Table A.5.1: ICV Cut Off Points**

ICV Category	Urban	Rural
ICV-I equivalent to extreme poverty	0.0 – 43.0	0.0 – 32.0
ICV-II equivalent to poverty	43.0 – 58.5	32.3 – 52.5
ICV-III Non poor	58.5 – 75.8	52.5 – 73.9
ICV-IV Non poor	75.8 – 100.0	73.9 - 100

*Source:* Morrillo, Guerrero and Alcántara (2004)

### SIUBEN-ICV and Income-PMT weights

The ICV welfare index gives a high weight to variables related with dwellings' physical characteristics and equipment and access to basic services (60 percent). Human capital variables and households' demographic and employment status weigh respectively 30 and 10 percent (see

Table A.5.2). In the income poverty map model, the variance decomposition of households' estimated income shows that variables related with dwellings' physical characteristics and equipment and access to basic services account for only 26 percent of the overall variance (see Table A.5.3). A much bigger share (45 per cent) is accounted for by households' demographic variables, while human capital and employment variables account jointly for 26 percent of the total variance.

**Table A.5.2: Variance decomposition household's estimated income per capita**

	<b>Urban</b>	<b>Rural</b>	<b>Total</b>
Regional dummies	5.4	6.4	5.7
Human capital	15.6	17.4	16.2
Household composition	8.8	11.8	9.8
Dwelling characteristics	9.7	7.9	9.1
Equipment	20.5	16.7	19.2
Basic Services	14.3	13.4	14.0
Employment and job characteristics	25.5	26.4	25.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Source:* Own estimates based on the 2002 Census and 2004 ENCOVI

**Table A.5.3: SIUBEN-ICV final weights by geographical area**

		<b>Urban</b>	<b>Rural</b>
Dwelling characteristics	Floor's main material	2.9	4.9
	Walls' main material	4.0	5.7
	Roof's main material	4.5	6.1
	Type of dwelling	3.2	3.5
	Crowding	3.1	3.9
	Equipment	4.1	8.3
Basic Services	Water supply system	3.9	5.3
	Sewerage elimination system	4.7	6.3
	Garbage elimination system	2.6	6.4
	Type of lighting	11.0	8.2
Human capital	Cooking fuel	11.0	8.2
	Years of education members older than 15	13.7	13.1
	Household head's years of education	13.7	13.1
Household composition	School assistance children age 6-14	3.8	4.2
	Gender of the head of household	2.4	0.0
Employment	Proportion of children younger than 5	5.1	0.0
	Share of household's members older than 15 who are employed	6.0	2.9
<b>Total</b>		<b>100.0</b>	<b>100.0</b>

*Source:* Own estimates from SIUBEN-ICV formula

## Estimation Results of the Income Poverty Map Model

**Table A.5.4: Income PMT (All variables contained in ENCOVI)  
the full set of variables contained in the 2004 ENCOVI are used as regressors**

Independent variables	Urban Area			Rural Area		
	Coeff.	t	Sig.	Coeff	t	Sig.
<b>Geographical dummies (regions)</b>						
Valdesia				-0.085	-2.702	0.007
East	0.119	4.382	0.000	0.095	2.347	0.019
North-Central	0.057	2.134	0.033			
del Valle	-0.236	-6.277	0.000	-0.211	-5.794	0.000
Enriquillo	-0.117	-3.310	0.001			
<b>Human capital</b>						
Household heads' years of education				0.019	6.115	0.000
Household heads' years of education (square)	0.001	9.954	0.000			
Spouse's years of education	0.000	2.622	0.009	0.003	3.540	0.000
Spouse's years of education (cubic)				0.000	-2.585	0.010
Years of education of household's members older than 18 (square)	0.000	2.209	0.027			
Years of education of household's members older than 18 (cubic)				0.000	2.077	0.038
# of members age 15-18 attending school	-0.075	-3.619	0.000			
# of members age 15-18 attending school (square)						
# of literate members of the households older than 14	0.042	2.865	0.004	0.058	3.904	0.000
# of literate members of the households older than 14 (square)						
Log of spouse's age	-0.031	-3.608	0.000	-0.047	-4.992	0.000
Head of household is a migrant (relative to his/her birthplace)	-0.055	-2.973	0.003			
Head of household migrated relative to five years ago	0.081	2.342	0.019			
<b>Household composition</b>						
Log number of household's members	-1.006	-24.254	0.000	-0.872	-24.611	0.000
Head of household's gender	0.054	2.093	0.036			
Household's members residing abroad (yes=1; no=0)	0.293	9.981	0.000	0.356	8.127	0.000
# of household's members age 25-44	0.026	2.043	0.041			
# of head of household's siblings	-0.037	-3.593	0.000	-0.041	-3.615	0.000
Household type (1=single-headed, 0=otherwise)				-0.131	-3.258	0.001
<b>Dwelling characteristics</b>						
on an unpaved street or road (1=yes, 0= otherwise)	0.083	4.232	0.000			
# of household's members per room	0.074	2.916	0.004			
# of rooms	0.168	4.280	0.000			
# of rooms (square)	-0.008	-2.013	0.044	0.011	6.724	0.000
Dwelling is rented (1=yes, 0=otherwise)	-0.127	-5.816	0.000			
Dwelling is owned and paid off (1=yes, 0=otherwise)				0.068	2.653	0.008
Walls are "bloques" or cement (1=yes, 0=otherwise)	0.067	2.782	0.005			
Roof made of "concreto" (1=yes, 0= otherwise)				0.092	2.597	0.009
Roof made of zinc (1=yes, 0= otherwise)	-0.055	-2.265	0.024			
Floor made of granite, marble, ceramic (1=yes, 0= otherwise)	0.130	2.992	0.003			
Apartment (1=yes, 0= otherwise)	0.089	2.557	0.011			
<b>Equipment</b>						
Car (1=yes, 0=no)	0.186	6.789	0.000	0.279	6.921	0.000
Air conditioning (1=yes, 0=no)	0.233	4.829	0.000	0.308	2.844	0.004
Electric generator (1=yes, 0=no)	0.167	4.756	0.000	0.272	4.947	0.000
Water cistern (1=yes, 0=no)	0.108	2.997	0.003			
Radio or stereo (1=yes, 0=no)	0.069	3.434	0.001			
Internet (1=yes, 0=no)	0.159	2.726	0.006			
Washing machine (1=yes, 0=no)	0.057	2.449	0.014	0.122	4.550	0.000
Heater (1=yes, 0=no)						
TV (1=yes, 0=no)	0.076	2.702	0.007	0.049	1.817	0.069

**Table A.5.4: Income PMT (All variables contained in ENCOVI)  
the full set of variables contained in the 2004 ENCOVI are used as regressors  
(Continued)**

<b>Basic Services</b>						
<i>sanitario de arrastre privado</i> (1=yes, 0=otherwise)	0.139	4.897	0.000	0.132	3.607	0.000
<i>sanitario de inodoro de arrastre compartido</i> (1=yes, 0=otherwise)	0.140	3.543	0.000	0.209	2.839	0.005
<i>sanitario de foso, letrina privada</i> (1=yes, 0=otherwise)				0.056	2.069	0.039
<i>sanitario de foso, letrina compartida</i> (1=yes, 0=otherwise)	0.085	2.472	0.013			
Public water connection inside the dwelling (1=yes, 0=otherwise)	0.051	2.457	0.014			
Public water connection outside the dwelling (1=yes, 0=otherwise)				-0.091	-3.752	0.000
<i>agua de remanantial, rio, arroyo</i> (1=yes, 0=otherwise)				-0.107	-3.269	0.001
Lighting (1=electricity connection, 0= otherwise)	0.179	2.417	0.016			
Garbage collection (1=by the municipality, 0= otherwise)	0.046	2.070	0.039			
Garbage elimination (1=burning, 0= otherwise)				0.069	3.125	0.002
Telephone service connection (1=yes, 0=no)	0.137	6.194	0.000	0.091	3.278	0.001
<b>Employment and job characteristics</b>						
Head of household employed (1=yes, 0=no)	0.188	7.455	0.000	0.239	7.786	0.000
Spouse employed (1= yes, 0=no)	0.252	10.493	0.000	0.237	8.211	0.000
# of household's members employed	0.208	12.687	0.000	0.275	7.716	0.000
# of household's members employed (square)				-0.027	-2.290	0.022
Head of household is a salaried worker (1=yes, 0=no)	0.118	3.583	0.000	0.091	2.233	0.026
Head of household is an employer (1=yes, 0=no)	0.428	6.680	0.000	0.408	5.638	0.000
Head of household is self-employed (1=yes, 0=no)	0.209	6.132	0.000	0.147	3.778	0.000
Head of household is a domestic worker (1=yes, 0=no)						
Head works in food processing, textiles and shoe industry (yes=1)				-0.179	-4.167	0.000
Head works in other industry (1=yes, 0=no)	0.133	3.171	0.002			
Head works in the water and electricity and construction sectors	0.087	2.513	0.012	0.264	6.243	0.000
Head works in the retail sector, restaurants, hotels (1=yes, 0=no)	0.109	4.044	0.000	0.089	2.846	0.004
Head works in transport, communication, finance (1=yes, 0=no)	0.136	4.015	0.000			
Head is director or manager (1=yes, 0=no)				0.236	2.596	0.009
Head is a professional or a specialist (1=yes, 0=no)						
Head is a service personnel or seller (1=yes, 0=no)	-0.097	-3.383	0.001			
Head works as a handworker, apprentice (1=yes, 0=no)	-0.100	-3.704	0.000	-0.176	-5.813	0.000
Head works in a firm with less than 6 employees (1=yes, 0=no)	-0.066	-1.970	0.049			
Head is affiliated to social security (1=yes, 0=no)	0.059	2.547	0.011	0.108	3.364	0.001
<b>(Constant)</b>	7.638	67.469	0.000	8.127	174.176	0.000
<b>Number of significant variables</b>	55			42		
<b>R<sup>2</sup></b>	0.528			0.507		
<b>Number of observations</b>	5834			3991		

*Source:* Own estimates based on the 2004 ENCOVI