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Strengthening Institutions to Improve Public Expenditure Accountability

Conditional Cash Transfers Program in Guatemala Policy Simulation and Cost Effectiveness Analysis

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Policy Simulation Analysis

This component of the project engages institutions in a dynamic analysis of policy alternatives for the main projects in each country.

The objective of the policy simulation analysis is to identify more efficient options to improve public policies, giving policy-makers enough information to re-allocate resources, to focus public efforts on vulnerable groups, and to select the most cost-effective alternative to achieve the goals of the country.

The final result will be a more informed debate about the execution and further evaluation of different social programs.

ABSTRACT:

CCT Program Analysis in Guatemala

In 2008, the government of Guatemala (GOG) decided that the best way to deal with the problem of poverty in Guatemala was through the implementation of a program that enables the poorest families in the country to send their children to school and to regularly visit health centers and posts for consults and controls. The initiative aimed to replicate the model promoted in different countries in Latin America.

Under the name, "Mi Familia Progresa", the GOG decided to create a program based on conditional cash transfers (CCT), with the objective of fostering human capital in Guatemalan people through improvement in education and health outcomes. This was seen to be the first step towards eradicating the permanent and intergenerational cycle of poverty and inequality.

After four years of implementation, FUNDESA decided to measure the first results of the CCT program by considering the impact on the beneficiary families from the poorest municipalities in Guatemala (municipalities are the unit of analysis). The aim was to evaluate if the program had any significant impact with respect to the number of children graduating in the first three levels of primary education, and on the number of consults and controls registered at each municipality.

The first step in the analysis took into account the costs associated with the implementation of the program, describing the annual increment in the budget allocated for the initiative and in the number of municipalities that benefited. After gathering the disaggregated data provided by the Ministry of Public Finances, we calculated the amount of resources transferred to each municipality—and to each family—during the period 2008 to 2011.

Then, using the most recent information provided by the institution in charge of the program—the Social Cohesion Committee— the analysis involved the use of the Difference-in-Differences methodology to compare a set of beneficiary municipalities against a control group with the same characteristics, trying to isolate the effect of the implementation of the CCT Program. With 5 percent significance, the preliminary results demonstrated a positive impact on education and health variables, a measure of the effectiveness of the program.

Similar programs in Latin America have shown the same results, "Oportunidades" in Mexico[1] and "Bolsa Familia" in Brazil[2] being two examples. These programs showed that during the last ten years, the social programs to reduce poverty through the implementation of conditional cash transfers have had a positive impact in the poorest areas of the region. However, they have involved far greater cost when compared to initiatives implemented by similar entities during the same period of time. The authors of the most recent evaluations of these programs suggested an examination of different alternatives to reduce costs, and also a reconsideration of the way the programs have been operationalized.

Taking these observations into consideration, we compared the results of the CCT Program in Guatemala with two other programs that were discontinued by the GOG with the creation of "Mi Familia Progresa". For the education sector, we used as reference the Scholarships Program for Girls. The objective of this program was to increase the number of children who remain in school until they graduate, with the incentive of the periodic payment of a money transfer. For the health sector, we used as reference the Extension of Coverage Program. Its objective was to allocate additional resources to delivery of health services to the poorest families in Guatemala, periodically visiting households instead of only motivating patients to visit the health centers and posts on a regular basis.

Using these references and processing the most reliable data, we found that these two programs had a lower cost-effectiveness ratio in comparison to the CCT Program in Guatemala, highlighting the necessity of paying more attention to the manner in which this initiative has been implemented, especially in terms of the costs associated with its functioning (i.e. administrative costs).

It is important to mention that after presenting these preliminary results, the GOG decided to continue with the implementation of the program because of its potential to reduce income inequalities among citizens (i.e. measured by the GINI Coefficient). To achieve our objective of evaluating the program to guarantee its transparency over time, we decided to simulate the effect of the program in reducing inequalities among citizens, working on the basic assumption that the program could be extended to the whole country (for details see Appendix A).

After running a couple of simulations using a linear programming model (considering some variables for population growth and the poverty rate in the 22 provinces in Guatemala), we obtained two key values for the analysis: (1) the cost of implementing the program at the national level for families with a per capita income below the poverty line of US$ 2.00 a day, and (2) the GINI Coefficient as a measure of income inequality among the citizens before and after the implementation of the CCT Program.

With this information, we estimated the cost of reducing the GINI Coefficient as a measure of the cost-benefit ratio of implementing the CCT Program in Guatemala. The results indicated that the GOG should invest US$ 22.576 million a year to reduce the GINI Coefficient by 0.01 points. However, this measure wasn´t enough to assess whether or not the initiative is desirable. Taking this into account, we also compared this figure with a series of modifications to the current model implemented in the country, introducing variations in the age of the beneficiaries and the manner in which the payment is made.

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[1] J. Rafael Calderón Colín (2012). ***"Alcances y limitaciones de Progresa-Oportunidades en la ruptura de la pobreza intergeneracional. Propuesta de un modelo integral de evaluación".*** Universidad Nacional Autónoma de México: Facultad de Ciencias Políticas y Sociales (agosto de 2012).

[2] María Antonieta Del Tedesco Lins (2011). ***"Transferencias Condicionadas: Brasil y el Programa Bolsa Familia".*** II Seminario Internacional de Política Social. Instituto de Relaciones Internacionales de la Universidad de Sao Paulo.

We structured two scenarios that are explained in detail in Chapter 7 of this document. Nevertheless, the basic structure of our analysis is explained here:

- First scenario: families will receive the health transfer if they have children under 15 years of age, and they will also receive the education transfer if any of these children are studying at the primary level. Families will be considered beneficiaries if their daily income is below US$ 2.00 per capita.

- Second scenario: families will receive the health transfer if they have children under 5 years of age, and they will receive the education transfer if they report any children studying at the primary level. Families will be selected as beneficiaries if their daily income is below US$ 2.00 per capita.

In each scenario we also considered a second variable: whether the transfer to the beneficiaries will be defined per child or per family (independent of how many children they have). This consideration will allow us to compare four different alternatives, depending on whether the health and/or the education transfer will be defined per family or per child.

The most efficient alternative was the one that established both the education and the health transfer per family, aligning the benefits during the life of each child. This is the most efficient alternative, not because it is the cheaper one, but because it guarantees a lower cost for every 0.01 point reduction in the GINI Coefficient (US$ 22.203 million). It is important to note that we have identified other options which have a greater impact on reducing the GINI Coefficient. Higher costs to achieve this goal could be a deterrent. However, it is preferable and more efficient to allocate more funds to the most efficient alternative; the option that will further reduce the GINI Coefficient with the same amount of money.

Our main conclusion is that the GOG should introduce modifications in the way the CCT Program has been implemented. The first modification is complementary transfers during the life of the child, with the health transfer being made in the first 5 years of life, and the education transfer to assist the child to attend school. The second modification is that the transfers should be paid to the families independent of the number of children.

To address the reduction of poverty in the country we need to address the conditions that will promote self-development, and which will generate sufficient income for individuals and families to improve their lives. Based on evidence gathered by international and multilateral institutions across the world that promotes CCT Programs, they are seen as a very attractive option. CCT Programs confront poverty at its roots, providing direct assistance to the more vulnerable groups in the country. On the other hand, however, these programs have been dramatically affected by populist practices, clientelism, lack of transparency and efficiency, and consequently, deterioration in the conditions of life among the youth.

Our conclusion is that there are some worrying results in the evaluation of the implementation of the CCT Program in Guatemala which were not visible earlier. The deterioration in a couple of social outcomes (such as an increase in teenage pregnancy and overall decline in enrolment in primary education), and a greater dependence on welfare programs have resulted in an unsatisfactory evaluation. It is possible that these results are not only attributable to the implementation of the CCT program, but neither did the conditional cash transfers contribute to offsetting these negative consequences.

Government officials, groups promoting governmental interventions in poor areas, multilateral agencies, and even a large part of the population recognize the rationale for seeing such programs as a tool to reduce poverty and make public the positive results derived from the implementation of conditional transfers. However, what no one sees —or only a few do—is the purpose behind the implementation of these programs, characterized by problems of transparency and inefficiency. This is why we are committed to continue working on identifying alternatives for a better future.

1. CCT Programs in Latin America the New Strategy for Social Policies

Those who live in conditions of poverty undoubtedly need effort, creativity, innovation, and perseverance to not only cope with their situation, but also enable them to achieve bigger and better things; our duty as a society is to help them to find these opportunities.

In this regard, Santiago Levy and Evelyne Rodriguez confirm the importance of implementing social programs in order to reduce poverty: [3] "While achieving sustained economic growth is essential to generate stable and well-paid jobs and to create the material conditions that enable a sustainable improvement of living standards, it is clear that by itself is still insufficient to expand opportunities for progress in all regions, to create a more equitable distribution of wealth, and to eliminate the conditions of marginalization experienced by many people."

A new set of programs supported by the Inter-American Development Bank (IADB) provides conditional cash transfers to families to motivate an increase in school enrolment and use of health services. The conditional cash transfer programs have been oriented to reduce poverty, promote human capital accumulation, and improve access to basic social services.

These three countries (México, Brazil and Argentina) help more than 16.7 million people living in Latin America

Source: IADB / ECLAC (2011).

	Country	CCT Program
	México	"Oportunidades"
	Guatemala	"Mi Familia Progresa"
	El Salvador	"Red Solidaria"
	Honduras	"PRAF"
	Nicaragua	"Red de Protección Social"
	Costa Rica	"Superémonos"
	Panamá	"Red de Oportunidades"
	Dominican R.	"Solidaridad"
	Jamaica	"PATH"
	Colombia	"Familias en Acción"
	Ecuador	"Bono de Desarrollo"
	Peru	"Juntos"
	Brazil	"Bolsa Familia"
	Uruguay	"Asignación Familiar"
	Paraguay	"Teko-Porá"
	Argentina	"Plan Familias"

[3] Santiago Levy and Evelyne Rodriguez (2005). ***"Sin Herencia de Pobreza: El Programa PROGRESA-OPORTUNIDADES en México".*** Inter American Development Bank: Mexico, D.F.

In addition to the program implemented in Guatemala, 15 other countries in the region have initiated such programs during the last decade, in most cases with the support of multilateral agencies (i.e. World Bank and IADB). The three larger programs in the region ("Plan Familias" in Argentina, "Bolsa Familia" in Brazil, and "Oportunidades" in Mexico) have so far helped a total of 16.7 million families living in extreme poverty in Latin America.[4]

CCT Programs were introduced in Mexico and Brazil as part of larger efforts to make safety nets more effective, replace poorly targeted subsidies, or integrate smaller programs. Colombia's nation-wide program, on the other hand, has generated important and positive evaluation results and has received sustained support from the World Bank.

All this information gives us a general idea about the relevance of CCT Programs in the region, and is one of the key social policies implemented by governments in the continent. Specialists and technocrats across the political spectrum have suggested the implementation of money transfers to reduce poverty, and, in turn, stimulate improvements in education and health conditions of the people.

It is important to note that some programs are nation-wide, others serve a regional or target population, and yet others are small-scale pilot projects (e.g. the implementation of "Solidario" in Chile). Nevertheless, all these programs have in common the necessity of evaluating results in the middle and long term, a task not all countries are willing to undertake, primarily because of the lack of transparency.

The World Bank has stated that CCT Programs are the solution for poverty in the present and in the future. However, our main objective is to use available data to evaluate the results of the "Mi Familia Progresa" program implemented during the four years of the government of Alvaro Colom — from "Unidad Nacional de la Esperanza" social-democrat party. The results will provide us sound evidence to demonstrate the feasibility of its implementation and the areas where it will be necessary to address specific improvements.

2. The Reality for Education & Health Sectors What is the Social Context in Guatemala?

The major part of this report consists of the analysis of specific programs that directly affect social investment in the country. The objective of this component is to evaluate the capacity of the government's programs to achieve improvements in social variables, complementing the information with the cost of developing these initiatives.

The selection of the CCT Program in Guatemala was made on the basis of its relevance in the country's social reality. It is a program for which a large outlay of funds is required from the nation´s general budget. The analysis will measure specific variables that will reveal if the program is indeed improving the life conditions of people, and help determine if the program should continue being implemented or if other alternatives need to be considered.

Before presenting the analysis for the conditional cash transfers program, it is important to describe the social reality in Guatemala during the period of analysis, highlighting the most relevant information on the education and health sectors. These two sectors are essential for the project, and are defined as the core themes of analysis.

[4] As a reference, in 2011 **ECLAC** estimated that almost 33.2 percent of Latin Americans live in poverty (about 182 million people), and 12.6 percent live in extreme poverty (60 million people).

The Social Priorities of the Education Sector

Beyond the specific aspects of this sector which have been explained in other reports elaborated by FUNDESA, there are some characteristics that should be outlined before conducting a detailed analysis of the CCT Program in the country. With the policy of achieving better results on educational variables, the last government defined a multi-annual strategy for education in Guatemala, covering the period 2008–2011. The Education Plan—Plan de Educación —stipulated eight policies, four of them directly related to specific indicators that will provide information about the effectiveness of the programs oriented to improving education in Guatemala.
The four policies are:

1) Quality Policy. To improve the capabilities of the teachers.
2) Coverage Policy. To favor the poor in order to increase primary enrolment.
3) Equity Policy. To introduce girls into the educational system and retain them until graduation.
4) Bilingual Education. To promote mandatory bilingual education in Mayan regions.

To support the implementation of these policies, the Ministry of Education allocated significant funds to those programs directed at achieving higher standards of education, especially programs with the potential of impacting the education of boys and girls at the primary level. With this goal in mind, the Ministry of Education made a commitment to monitor two variables: the graduation rate, and the results on standardized tests.

Both these variables, or their components, were tools to measure the effectiveness of the programs, and were the main criteria for the allocation of more funds in the yearly budget of the institution.

The Social Priorities of the Health Sector

Following the same pattern established for the education sector, the last government defined a multi-annual strategy for health in Guatemala, covering the period 2008—2011. The Health Plan—Plan de Salud —stipulated five challenges, three of them directly related to specific indicators. These indicators provided information about the effectiveness of the programs oriented to improving the health status of the country.

The three challenges are:

1) Preventive Health. To develop a model of integrated health attention and preventive health, and increase coverage and quality of services.
2) Medicines for all. To promote and strengthen strategies oriented to the provision of medicines, recognizing alternatives and substitutes.
3) Environmental Protection. To improve sanitation and quality of services to reduce diseases that directly affect maternal and child mortality.

In order to help achieve these policies, the Ministry of Health budgeted for more and better health services, directed primarily to the rural areas which have the biggest deficit in health services. The Ministry of Health agreed to regular monitoring of two variables: the provision of health services (controls and consults), and the child mortality rate for children under 5 years of age.

Origins of the CCT Program in Guatemala

Within this framework, the Government of Guatemala decided in 2008 that the implementation of a CCT Program could be a very effective solution to the education and health realities that Guatemalans faced. Defining this initiative as the "flagship program" of Alvaro Colom´s administration, the "Mi Familia Progresa" was created by the Executive Branch on April 16, 2008, under the direction of the President and coordinated by the Social Cohesion Committee.

The government made a commitment to generate better qualified human resources in Guatemala, with the objective of promoting investment in the education, health and nutrition of lower-income families.

"Mi Familia Progresa"— MIFAPRO—focused its attention on the poorest families of Guatemala with children under 15 years of age. The beneficiaries were selected from the poorest municipalities, and the benefit consisted in the provision of funds to incentivize performance in schools, and to motivate consults and controls related with health diagnosis and treatment.

The families had joint responsibility to improve the education and health variables defined in the national plans for these sectors. With at least 80 percent assistance, the first responsibility of the beneficiaries was to send children to school till graduation at the end of the school year. With these accomplished, parents received a bonus every two months: an equivalent of US$ 18.50 for each month the children attended school. This transfer was granted to the family irrespective of the number of children.

Similarly, the families could get a second monthly transfer of an equivalent of US$ 18.50 if they met the requirement of periodically visiting the health centers and posts for diagnosis and treatment. In this case too, parents received this bonus every two months, independent of the number of children under 15 years of age.

It is important to note that the program only lasted four years. The new government has decided to reconsider the implementation of the program and to re-evaluate if it is the best way to reduce poverty. This is why FUNDESA expects that this analysis is important to assess the cost of implementation of the program, and its effect, significant or marginal, on the selected variables for the education and health sectors.

3. The Cost Side of the CCT Program: How Much Money was Allocated?

The first part of the analysis is the definition of all the costs associated with the program, including those related to its administration and execution. The General Budget of the Nation was consulted to gather information on the total amount allocated over the duration of the program, from 2008 to 2011, focusing attention on actual rather than budgeted data. The actual budget identifies executed funds, which could differ from budgeted data, but it effectively shows public expenditure.

The main cost of the program is directly related to the amount of money transferred to the beneficiaries, but there are other costs that should be taken into account. In addition to the amount of cash transfers, the Executive Branch budgets for personnel, equipment, materials, payment for utilities, buildings, rent, advertising, etc. Because these additional costs are directly linked to the execution of the program, they should also be included in the analysis.

How Much Does it Cost to Implement the CCT Program?

The following table shows the amount of resources that the CCT Program received during the last four years of its implementation and the approved budget for 2012. Although virtually no beneficiary was covered during 2008, the GOG allocated US$ 11.2 million, distributed among municipalities for gathering information and census data.

(numbers in millions)	2008	2009	2010	2011
GDP at Current Prices	$37,874.5	$39,295.7	$41,251.3	$45,571.4
General Budget	$04,878.9	$06,176.8	$06,412.9	$07,226.2
MIFAPRO´s Budget	$00,011.2	$00,099.9	$00,142.4	$00,132.4
Administrative Costs	$00,010.9	$00,007.9	$00,009.8	$00,015.4
MIFAPRO / GDP	0.03%	0.25%	0.35%	0.29%
MIFAPRO / Budget	0.23%	1.62%	2.22%	1.83%
Admin. Costs / MIFAPRO	98.1%	7.89%	6.91%	11.6%

This magnitude of resources constitutes a large share of the general budget, evidence of the importance of the CCT Program for the present administration. With a more in-depth analysis, the program can be compared with other institutions which also depend on funds from the central government.

In 2011, only five institutions were allocated more resources than the CCT Program (1.83 per cent of the budget); but there were also institutions that received fewer resources than the CCT Program, not counting decentralized dependencies that provide services in the public sector, including education and health sectors.

Ministries and Dependencies	% of Budget		Ministries and Dependencies	% of Budget
Education Ministry	14.82%		Agriculture Ministry	01.31%
Communications Ministry	09.93%		Labor Ministry	01.06%
Health Ministry	07.18%		Public Finances Ministry	00.55%
Interior Ministry (governance)	05.85%		Economy Ministry	00.49%
Defense Ministry (army)	02.78%		Environment Ministry	00.25%

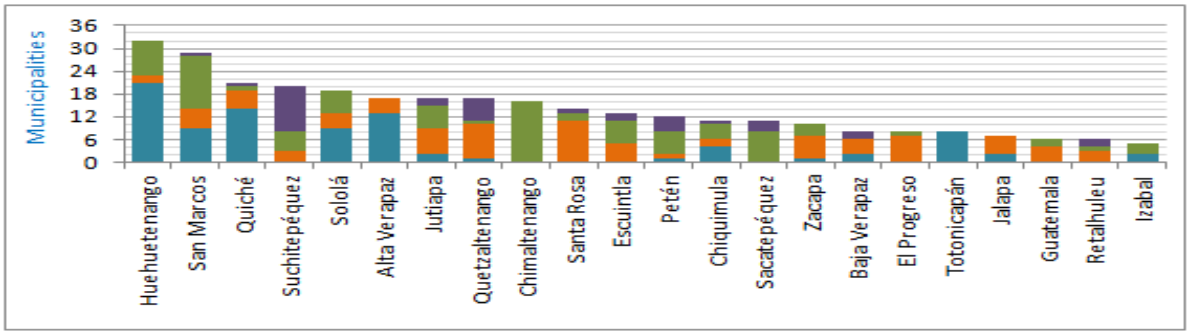
It is also very important to identify the number of beneficiaries who received the conditional cash transfer; initially the criterion for fund allocation was people living in a municipality with an average income below the poverty line.

After prioritizing these criteria, the list of beneficiaries in 2008 included families from 89 municipalities, with an average of 2,000 families per municipality. Nevertheless, if we analyze the most recent information provided by program functionaries, the program covered 916,852 families in 2011, 2,488,900 beneficiaries distributed in 307 municipalities.

The next table illustrates the distribution of beneficiaries by gender and age:

	Total	Boys	Girls
Beneficiaries:	2,488,900	1,261,532	1,227,368
00-6 years old	0,799,030	0,405,963	0,393,067
6-15 years old	1,689,870	0,855,569	0,834,301

It is important to note that not all municipalities have benefited since the program´s foundation, but its coverage has expanded exponentially each year. This growth in the number of municipalities that receive benefits of the CCT Program does not correspond to socio-economic or demographic criteria.



Growth in the coverage of municipalities:

2008:	89	2009:	+87	2010:	+ 94	2011:	+ 37	TOTAL = 307 municipalities

Nevertheless, the numbers reveal that the coverage of the program has increased due to the demand that as many families as possible be covered. This has meant huge expenditure without assessing if there has been a positive impact of the program´s goals with regard to poverty, education, and health conditions. In addition, the authorities of "Mi Familia Progresa" have presented us with the complete list of beneficiaries which shows that the CCT Program in Guatemala affects, directly or indirectly, more or less 3.2 million people, or 22.8 percent of Guatemala´s population.

This information is very useful for our analysis because it shows the relevance of the CCT Program in the country, implying that on-going improvements are necessary to achieve a greater impact on the population.

Finally, it is important to include in our description and functioning of the CCT Program, a consideration of the administrative costs over the last years, as represented in the table at the beginning of this chapter. The Ministry of Public Finances outlined the specific budget lines for the CCT Program, and, since 2008, the administrative costs are registered under a series of items, excluding two budget lines that are directly linked to the payment of the transfers to families: (1) Budget Line 151: Leasing of Property, and (2) Budget Line 419: Monetary Transfers to People.

Leaving aside these two budget lines from the general budget of the CCT Program, historically we can identify the share of the administrative costs at around 8.8 percent of MIFAPRO´s budget, without much variation over the years, the only exception being 2008. These costs were

programmed for support activities which did not directly affect the families, but were necessary for the implementation of the program.

Nevertheless, we should work towards improving the administration of funds, emphasizing the necessity of continued accountability, not only by providing information on how the funds are being spent, but also considering alternative ways of achieving higher levels of efficiency.

4. The Effectiveness of the CCT ProgramWhat Were the Social Outcomes?

The methodology used by FUNDESA in the analysis of the impact of the CCT Program in Guatemala is based on a comparison of results obtained from among a group of municipalities who benefited by the program in the education and health sectors, and a control group of municipalities that didn´t receive any benefit up to the time the analysis was concluded.
The analysis was based on the selection of two groups of municipalities that comply with a series of socio-economic and demographic similarities, the only difference being if they were part of the CCT Program or not. We recognize that there may exist conditions beyond the implementation of the program that could influence the results, the main source of bias being poverty level and population size.

After the selection of municipalities, our main hypothesis was that the implementation of the CCT Program results in a significant increase in the performance of the evaluated variables on education and health. This increase, when compared with results obtained from the municipalities in the control group, should be more than the "natural tendency" of both study groups.

What are the main variables that we have to focus on?

The effectiveness of the program will be measured through the achievement of the objectives stated by the CCT Program itself. These objectives will be the point of reference to define which variables will be selected to determine if there is a significant improvement in the lives of the beneficiaries.

OBJECTIVE: Education Conditions	OBJECTIVE: Health Services
Increase attendance at primary education level and school graduation for children between 6 and 15 years.	Improve the health status of poor families with children between 0 and 15 years and/or pregnant women.

We want to emphasize that the variables selected to evaluate the effectiveness of the resources are related to the objectives of the program, but are not the result of the monitoring system of the program. Measured variables are disaggregated at the municipal level, collecting the latest information published in the Statistical Yearbook of both Ministries.

In the case of the EDUCATION variable, we selected a simple monitoring variable that evaluates the number of children graduating at every level of primary education.[5] In the case of the HEALTH variable, we selected variation in the provision of services, which includes the amount of services (i.e. consults and controls) provided to the population of a municipality.

[5] Taking into consideration that the program was effectively implemented for three years, **experts have recommended focusing the analysis on the first three levels of primary education**. This selection criterion only evaluates children who have received the benefits of the CCT Program since its implementation. Nevertheless, we have considered including other variables and education levels in future analyses as the program continues evolving.

EDUCATION VARIABLE		HEALTH VARIABLE
Alumnos Aprobados: 1°, 2° y 3° Primaria (Number of Children Graduating) Education Ministry annually provides data about how many children graduate at each level of primary education in each municipality.		Servicios: Consultas y Controles (Provision of Health Services) Health Ministry provides a list of the services (i.e. consults and controls) that are provided every year in each municipality.
This information is provided annually: http://www.mineduc.gob.gt/portal/index.asp (Platform for Social Investments Information)		This information is provided annually: http://www.sigsa.mspas.gob.gt (Platform for Social Investments Information)

These variables will form the basis of the analysis, taking the year 2007 as the starting point in the implementation of the CCT Program, and a future date for a comparison to determine if the program has been effective. The hypotheses used in the analysis are presented next.

- HYPOTHESIS: Education Conditions

The provision of funds to the families will be a greater incentive to send children to school, with a direct impact on the rates of attendance and graduation at primary levels.

- HYPOTHESIS: Health Services

The provision of funds to the families will be a greater incentive to visit health centers and posts, with a direct impact on the number of consultations and controls, which, in turn, will indirectly affect long-term variables such as child mortality.

The hypotheses will be tested through the evaluation of these variables along the timeline of the project, expecting to define results in the short term and long term. It will be difficult to assess any significant impact after only three years of implementation, but the analysis will be useful as a monitoring tool that will allow policy-makers to implement any changes.

How to Evaluate the Effectiveness of the CCT Program

In this section we present the methodology used to analyze the effectiveness of the CCT Program in Guatemala, with the objective to measure the real impact of the program on the social variables discussed earlier. The analysis attempts to evaluate if the CCT Program, where implemented, had a more positive effect over normal improvements in the variables in the same timeframe.

The impact of a policy or an outcome can be estimated by computing a double difference, one over time (before and after), and one across subjects (between beneficiaries and non-beneficiaries). If average data is available for the sample beneficiaries and non-beneficiaries for at least two time periods, the Difference-in-Differences (DID) method produces estimates of impacts that are in principle more plausible than those based on a single difference (either over time or between groups).

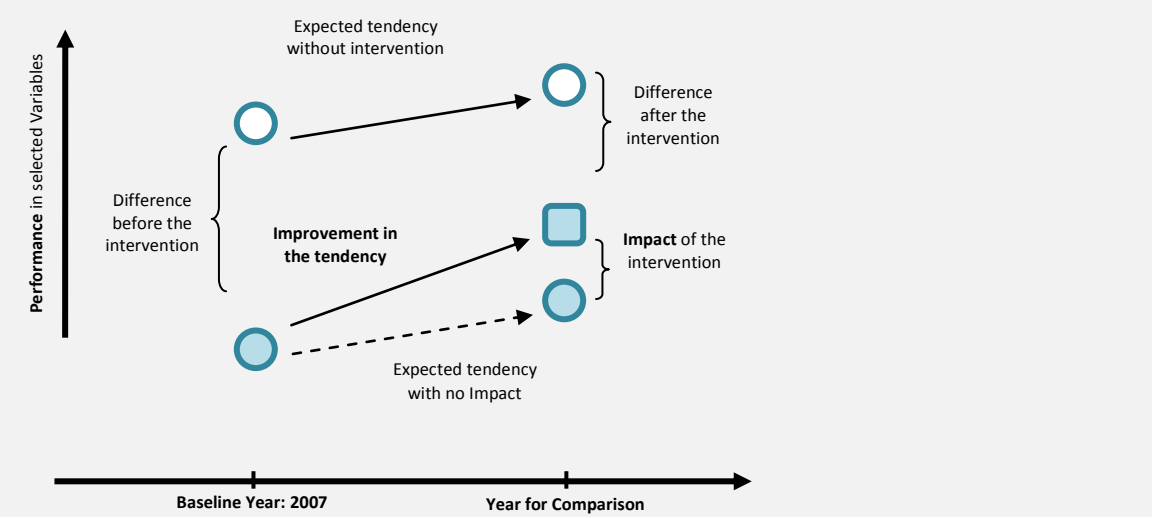
This type of analysis will permit us to determine if the CCT Program, as mentioned before, introduces a significant marginal effect on the variables for the education and health sectors, and what has been the cost of its implementation.

There are two ways to explain how double differencing produces impact estimates.[6] The first is to start out with the difference in outcomes between beneficiaries and non-beneficiaries, measured after the intervention has taken place (i.e. the implementation of "Mi Familia Progresa"). As previously mentioned, such a difference does not reveal the effect of the intervention since the beneficiaries differ from non-beneficiaries even in the absence of the intervention. This is what has been called Selection Bias.

Now, let us assume we have data on the outcome variable for the sample beneficiaries and non-beneficiaries before the intervention takes place. Subtracting the pre-intervention difference in outcomes from the post-intervention difference eliminates one kind of selection bias, namely, that related to time-invariant individual characteristics. In other words, if what differentiates beneficiaries and non-beneficiaries is fixed in time, subtracting the pre-intervention differences eliminates selection bias and produces a plausible estimate of the impact of the intervention.

- EXPECTED RESULTS: Evaluation of the Impact of the CCT Program

The impact of the program will be evaluated by comparing two singular groups of municipalities—the treatment group and the control group—in two different time's periods, examining if the observed difference is statistically significant. The following scheme better illustrates this concept:



Group without the implementation of the intervention
Group with the implementation of the intervention (without impact)
Group with the implementation of the intervention (with impact)

The framework of analysis illustrates what is expected to happen with and without a significant impact of the intervention. We assume that there exists a logical tendency in the performance of the variables which improves due to the general functioning of society. Nevertheless, the reason to implement the intervention is to positively affect this tendency, aiming to produce a relevant impact on the variables, and reducing the gap with respect to the non-beneficiaries.

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[6] Europe Union, Regional Policy Inforegio. "**Counterfactual Impact Evaluation: Difference-in-differences**". Article published through: EVALSED: the resource for the evaluation of socio-economic development. To obtain more information visit: http://ec.europa.eu/regional_policy/

The conclusion arrived at is that, if the intervention has a significant impact on the performance of the selected variables, it will be feasible to determine a difference between the expected and the observed tendency. This comparison will be made between groups and between years.

APPLICATION: Situations when DID is Applicable

The applicability of the DID method depends on whether the outcome is replicable over time; that is, equivalent measurements can be taken repeatedly in successive time periods, and that this can be done independent of the implementation of the policy. In the case of "Mi Familia Progresa", we picked out variables measured by institutions independent of the program to guarantee replication over time.

Another issue that is relevant for the applicability of DID is whether data on the outcome variable are routinely collected as part of official statistics, or on an ad hoc basis. In the latter case, a serious obstacle to the applicability of DID often come from the fact that no thought was given before the intervention to collect detailed data needed for the analysis.

If comparable pre-intervention data are lacking, one can resort to retrospective measurement, taken after the policy is implemented but with reference to both the pre-intervention period as well as the post-intervention period. The danger of such a strategy is contamination between measures relating to different time periods but collected during the same interview.

The applicability of the method also requires that the intervention is of a discrete (binary) nature: one needs units that are exposed and units that are not exposed to the policy. Interventions of a continuous nature cannot be easily analyzed with this method.

- METHOD: The Main Steps Involved

The application of the DID requires a sequential method of analysis, adapting collected data to the needs of the investigator. It is important to mention that DID is used only to evaluate the effectiveness of the intervention, as in the case of the CCT Program in Guatemala. The cost of the intervention will be measured separately, describing only the quantum of resources allocated for obtaining results.

The steps involved in the application of DID are as follows:

Step 1: Defining the outcome variables. The analysis can be conducted with respect to as many outcome variables as there is data for. We will report results for four outcome variables—three for education (graduation rate in the 1^{st}, 2^{nd} and 3^{rd} grades of primary level), and one for health services (number of consults and controls).

Step 2: Defining the time dimension. The first period indicates the year before the CCT Program was introduced, and the second period includes, for this report, the results of the program three years after its implementation. It is important to clarify that the choice of period clearly distinguishes a "before" and "after" intervention period.

Step 3: Computing the double difference. The basic analysis is simply a matter of computing averages for the two groups in the two time periods, thus arriving at a value corresponding to the four circles displayed in the previously illustrated scheme. These averages are best displayed in a

"2x2 table" format, the rows being the groups compared and the columns the time periods. The simple differences are found in the two margins, while the difference- in-differences is shown in the lowest right box of the table.

	Baseline Year	Comparison Year	
Group with the intervention	Average result	Average result	Diff#
Group without the intervention	Average result	Average result	Diff#
	Diff#	Diff#	DID

Step 4: Using regression to validate the DID results. Using the same data that produced the DID estimate, one can easily estimate a regression equation which will indicate if the difference-in-differences is statistically significant. The regression will generate the same numbers presented in the "2x2 table", but with standard errors for each coefficient.
The regression equation to be estimated is presented below:

$$Y_{i,t} = \propto + \beta T_i + \gamma P_t + \delta(T_i * P_t) + \varepsilon_{i,t}$$

Where:

$Y_{i,t}$ = the performance change in the selected variable
T_i = binary variable: 1 if municipality receives the program; 0 if it does not
P_t = binary variable: 1 indicating comparison year; 0 indicating baseline year
$T_i * P_t$ =interaction term; it represents the actual treatment variable
$\varepsilon_{i,t}$ =the usual error term of the regression
$\propto$, β, γ and δ are the regression coefficients to be estimated

Despite its wide applicability, the DID method is not a panacea for impact evaluation. The simplicity of the method lies in that no complex data is required to be estimated, only aggregated data on policy outcomes, collected before and after the intervention. However, on the more conceptual side, the simplicity of the method comes at a price in terms of assumptions: the crucial identifying assumption to obtain impact estimates is that the counterfactual trend is the same for treated and non-treated units. This assumption can only be tested (and relaxed if violated) if more data are available. In making explicit the trade-off between data and assumptions, the DID method is a useful tool for impact analysis
of this kind of intervention.

Was the CCT Program Effective in Improving Social Variables?

To make the analysis as objective as possible, we first selected the two groups of municipalities that will be included in the evaluation for their cost-efficiency. The main criterion was the level of poverty reported by the Planning and Programming Secretary of the Government in 2007 (the institution in charge of evaluating the level of poverty nation-wide). The reason for this selection is that the CCT Program is oriented to beneficiaries from the poorest families in the municipalities according to the information provided by this institution.

Nevertheless, in order to maintain two homogenous groups, we eliminate atypical values for poverty level and for size of population (too high or too low) in both sets of municipalities—those benefited by the program or not. With a list of 333 municipalities in Guatemala, 187 benefited and 146 not

(data reported by the Program as on September 2010), the final result of the sampling process is presented next:

	Benefited Municipalities	Non-Benefited Municipalities
Number of Municipalities:	187	146
Sample:	105	100
Average Level of Poverty	65.5%	60.5%
Average Population	32,400 people	28,600 people

The eliminated municipalities in both groups do not follow an economic, social, or political criterion. The only criterion used to define a municipality´s inclusion was its participation (or not) in the CCT Program, being eliminated if its poverty level or size of population was too high or too low, which could introduce bias in the analysis. The final objective was to maintain a set of groups as homogenous as possible.

It is important to state that the "cut-off" date (September of 2010) was arbitrary, dependent only on when we had enough information for our analysis. The program continued with its expansion after this date, as presented before, but we did not have access to databases or to information about the beneficiaries after that date, thus increasing the probability of not having included pertinent data in a more robust analysis.

- COSTS: Amount of Funds Allocated per Municipality

With respect to the cost: after defining the municipalities included in the sample, we identified the resources allocated to each municipality that benefited from the program. We took into account the information registered in the nation´s general budget, considering the funds received by each municipality during the period of analysis.

It is important to mention that we use municipalities as the basic unit of analysis, taking into consideration that the government also uses this criterion to allocate the resources. The beneficiary municipalities were published by the government in its annual report.[7]

- EFFECTIVENESS: Performance of the Selected Variables

As regards the effectiveness of the program, we measured the results for each municipality selected, both those benefited and those not. We first obtain the data for the baseline year (2007); next, we obtain the data for the comparison year. For the purpose of this document, we used 2010 as the comparison year for both the education and health sectors.

After gathering the data for both groups of municipalities— baseline year and comparison year—we proceed to fulfill the DID table, evaluating the impact of the implementation of the CCT Program. The results in the last row of the table below indicate the difference by group, and the results in the last column indicate the difference by year. The box in the bottom right corner indicates the effectiveness of the variable. [8]

[7] *Mi Familia Progresa*. "**Rendición de Cuentas 2010-2011**". Available at: http://mifamiliaprogresa.gob.gt

[8] A **positive DID** (orange box above) implies that the **intervention was effective** due to the biggest difference between years and between those who benefited and those who did not.

EDUCATION: Results for the "Number of Children Graduating":

Primary: First Level	Baseline Year	Comparison Year	
Group with the intervention	992	1,077	85
Group without the intervention	816	857	41
	176	220	44

Primary: Second Level	Baseline Year	Comparison Year	
Group with the intervention	879	975	96
Group without the intervention	750	807	57
	129	168	39

Primary: Third Level	Baseline Year	Comparison Year	
Group with the intervention	816	906	90
Group without the intervention	699	745	46
	117	161	44

HEALTH: Results for the "Provision of Health Services":

	Baseline Year	Comparison Year	
Group with the intervention	185,612	274,397	88,785
Group without the intervention	153,734	196,861	43,128
	31,878	77,536	45,658

The previous tables present the variation between the two groups—beneficiary and non-beneficiary—comparing two different years —before the intervention and three years later. Each cell indicates the average quantity per municipality for every scenario.

In the case of education, the boxes indicate the average value for the number of graduating children in the set of selected municipalities for each one of the three analyzed levels. In the case of health, the boxes indicate the average value for the provision of health services.

These results have been used to evaluate the effectiveness of the program, enabling us to confirm that the CCT Program introduces a significant difference. This brief analysis demonstrates that the implementation of the CCT Program in poor municipalities has a positive impact on:

a) The number of children graduating in the first three levels of primary education. On average, their number is higher at the first level (44 students per year), 39 students per year at the second level, and 44 students per year at the third level.

b) The number of services provided by the municipality. On average, 45,658 services per year are provided to beneficiaries, higher than in the other group.

What is the Cost-Effectiveness Ratio for the CCT Program?

As mentioned before, it is difficult to fully evaluate the effectiveness of a program after only three years of functioning, but the available information can help to determine the impact of the

intervention at an early stage, which, in turn, will help us to make suggestions about the validity of the program. Therefore, these results are only a first general approximation of the impact of the intervention, and it is important to expand the analysis in future efforts by including other variables and selection criteria in the samples. Nevertheless, some valuable insights deserve mention.

EDUCATION:

Recognizing the gap between beneficiary and non-beneficiary municipalities, we can conclude that, at first glance, the initiative has a positive impact.

After three years of implementation, the number of children graduating in the first three years of primary education has been higher in the group benefited by the program rather than in the other group. One reason for this increment could be that the target population was larger in municipalities where the CCT Program was implemented; it is therefore reasonable to conclude that there is an incentive to increase the number of students in schools. In addition, the enrolment rate in these municipalities before the implementation of the initiative was lower than in the control group.

These two factors combined could be the reason why the number of graduating children increased.

In short, those municipalities which benefited from the program had, in comparison with the other set of municipalities, an additional increment in the number of graduating children in the first three levels of primary education. This evidence indicates that the initiative has been effective in the short term.
Nevertheless, it is also important to evaluate the cost of this positive impact. We have to determine the amount of resources needed to increase the number of graduating children at each level of primary education (first to third year), and compare the results with other standards of efficiency.

We have to first assess the amount of resources that the CCT Program assigned to each one of the six levels of primary education. To do this, we take the average per municipality funds allocated by the CCT Program each year,[9] and divide it by the number of children graduating at each level (year 2010).

	TOTAL	1st	2nd	3rd	4th	5th	6th
Grad. Children	2,171,614	452,537	407,958	376,337	341,913	305,809	287,060
Share	100%	21%	19%	17%	16%	14%	13%
Budget	$282,266	$58,821	$53,026	$48,916	$44,442	$39,749	$37,312

With this information, we were able to calculate the cost of an additional number of graduating children in every one of the first three levels of primary education. The next table presents the cost for an additional child to graduate in the first three levels of primary education, using as incentive the CCT Program:

	1st Grade	2nd Grade	3rd Grade
CCT Program´s Budget per	$58,821	$53,026	$48,916

[9] Sine the total CCT Program budget covers transfers for both the education and health sectors, we assume that **half (50 percent) of the average funds allocated by the program each year correspond to each sector**.

Municipality (annual)			
Additional Graduating Children per Municipality, per Year	44	39	44
Annual Cost of an Additional Child Graduating	$1,336.8	$1,359.7	$1,111.7

Although the CCT Program has been effective after three years of implementation, i.e. It increases the number of children graduating in the first three levels of primary education, it is relatively expensive; however, we have to evaluate a similar alternative to arrive at a more accurate reference for cost comparison.

HEALTH:

Similar to the education variable, the impact on the health variable has been significant despite the short life of the program. After three years of the CCT Program's implementation, the growth in the provision of health services has been higher in the municipalities where the program was introduced.

One reason for this increment is the prioritization of health for people in the poorest communities. Second, medical attention in these municipalities has in the past been precarious and very expensive, especially in terms of cost of transportation from rural areas. With the implementation of the program, the demand for health services has increased. These two factors combined could help us understand the increase in the number of services provided in poor municipalities.

Therefore, municipalities which have benefited from the program have, in comparison with the other set of municipalities, an additional increment in the number of services provided at health posts, centers, and hospitals. This evidence indicates that the initiative has been effective in the short term.

But it is also important to evaluate the cost of this positive impact. We have to determine the amount of resources required to increase the number of services, and further, as we have done in this report, compare the results with other standards of efficiency.

We have to initially determine the amount of resources that the CCT Program will require to provide health services to a sample set of municipalities. To make this possible, we take the average per municipality funds allocated by the CCT Program each year,[10] using an average for the years under analysis. With this information, we can calculate the cost of the additional increase in the number of services provided to the beneficiary group.

The table below illustrates the cost of providing an additional health service in poor municipalities, using as incentive the CCT Program:

	AVERAGE	2009	2010
CCT Program´s Budget per Municipality	$272,450	$282,266	$262,634
Additional Services Provided per Municipality	22,829	45,658	
Annual Cost of Providing an Additional Service	$11.93		

[10] Because the total CCT Program budget covers transfers for the both education and health sectors, we assume that **half (50 percent) of the average funds allocated by the program each year correspond to each sector**.

As before, here too we can conclude that, although the CCT Program has been effective after three years of implementation in increasing the number of health services provided, we still have to compare this cost with other possible alternatives that may have demonstrated the same degree of effectiveness.

Again, in both cases it is important to have a point of reference to determine if the CCT Program has been as effective as it could be, or if other cheaper options with the same level of effectiveness are available. It will be difficult to find similar programs for comparison, but we can search for those programs that had been implemented by the GOG with the same objectives for the education and health sectors.

5. Defining Alternatives for the CCT Program Can we Evaluate any other Option?

In his book, waiting for Godot, Henry Levin[11] tries to explain the importance of conducting cost-effectiveness analyses to evaluate alternatives to current governmental programs: "While this audience is usually very circumspect when it comes to estimating the effectiveness of alternatives, it is completely lax when referring to costs. The path that is often followed is based on the assumption that budgets or expenditure statements contain the requisite information and that it is necessary only to read the appropriate figures from such statements or get an accountant or manager to provide the right numbers".
The importance of this kind of analysis was very ably illustrated by the author. However, these gains can only be accomplished by identifying ways in which existing resources can be used more efficiently. This is the purpose of our analysis: to arrive at a method for choosing among alternatives in order to select those that are able to accomplish a given result.
The first approximation to this type of methodology will involve the analysis and comparison of different facility types within the sectors which have in common the achievement of similar goals—like those presented for the CCT Program. For the two sectors analyzed—education and health—we go on to present a couple of alternatives, paying attention to the cost-effectiveness ratios of each option.

Basic assumptions will contribute to an accurate understanding of the process of achieving some results, indicating how the search team conducted the analysis to get specific data. These assumptions will be mentioned in a timely fashion to better explain the considered scenario.

How to Incentivize School Attendance in Guatemala

During at least 10 years, the Ministry of Education has promoted scholarships in rural areas with the objective of increasing the number of children in primary education. Along the lines of the CCT Program, the objective of the scholarships program was to increase the number of children who remain in school until they graduate, the incentive being the periodic money transfer.

For our analysis, we will focus our attention on one specific program in the budget of the Ministry of Education—Scholarships for Girls, or "Becas para la Niña". This initiative was promoted by the GOG for several years, but was discontinued in 2009 for no explicit reason. FUNDESA's purpose is to determine the impact that the program had in the last years of its implementation, as it could serve as a comparative reference for the implementation of the CCT Program in the country.

[11] Henry Levin (2001). ***Waiting for Godot: Cost-Effectiveness Analysis in Education,***. New Directions for Evaluation, No. 90, Summer. Jossey-Bass, A Publishing Unit of John Wiley & Sons, Inc.

This analysis aims to identify the success or failure of the initiative that once was supported by the population, but today has been discontinued by the administration. The cost-effectiveness analysis will be conducted as an ex-post analysis, obtaining results that will be the basis of comparison with the CCT Program in Guatemala.

PROGRAM: Scholarships for Girls

This program aimed to increase enrolment, retention, and promotion of girls in school. It consisted of an incentive, a monthly allowance, to help them cover the minimum expenses of primary education. The program benefited girls who faced difficulties in participating and attending school (disabled, orphans, those constrained by family burdens, living far from schools and in areas of extreme poverty). With this financial assistance, it was expected that parents could cover expenses of tuition, books, and uniforms, or it could be used to supplement everyday expenses of the family.

The project, promoted by AGES and USAID, began in 1997. Originally, the program covered between 1,500 and 3,000 girls. It was later taken up by the Sugar Foundation (FUNDAZUCAR) under the name "Educando a la Niña". The program expanded to 5,212 girls in 1,155 schools in the first stage of the program, subsequently rising to 36,000 girls over the first three primary grades in 2,000 rural schools in eight provinces. In 2001, the scholarship program was expanded to its highest level (more than 71,000 girls), dropping in 2005 to more or less 50,000 girls (last available data).

An important feature of the program was the decentralized nature of operations in the selection of beneficiaries. Ten percent of the scholarships were paid as an administration fee. The allocation of funds was the responsibility of the scholarship committees or school boards, attended by school principals, teachers, and parents. However, in the last years, the allocation process and management of funds was politicized by officials of the Ministry of Education. This is the reason why the program was cancelled in 2009.

BUDGET: Costs Associated with the Scholarships Program

The first part of the analysis consists in determining all the costs associated with the program, identifying the quantum of resources that were allocated to allow the program´s functioning. The analysis measures both direct and indirect costs linked to the program's administration (operating and administrative costs).

According to the budget information provided by the Ministry of Education, the costs related to salaries, supplies, materials, and equipment were covered by the institution. The most relevant costs of the program were essentially three:

- Fixed cost per student (average first three primary grades):US$ 12.40 per month [12]
- Cost of the scholarship per beneficiary child: US$ 3.30 per month [13]
- Administrative costs (scholarship fee):US$ 0.33 per month [14]

[12] This calculation takes into account the average from the budget assigned to the first three primary grades during 2000-2004, dividing the result by the number of students reported by the Education Ministry.

[13] The scholarship consisted of an **annual payment of GTQ 300**. With an **exchange rate of GTQ 7.58 for US$ 1.00**, the payment is equivalent to US$ 39.58 per year, or US$ 3.30 per month.

The annual costs varied over the program´s duration due to the changing number of beneficiaries each year. Nevertheless, for the purposes of our analysis, we assume that the per-beneficiary cost remains the same.

EFFECTIVENESS: Graduation and Dropout Rates

Even though the scholarships program had been in existence for nearly 10 years, information about its impact on the beneficiary girls is scant, often covering only such aspects as number of beneficiaries or amount of funds allocated over the years. For a more in-depth analysis, it was very important to disclose information related to performance, such as enrolment and completion rates.

USAID published a report (Fernando Rubio: 2004)[15] with information related to the average graduating rate and the average dropout rate between 1998 and 2003. The report, based on an analysis of a survey of a set of schools across the country, revealed very interesting conclusions. Regrettably, we only have the following information to evaluate the program, but it will be very helpful in giving us some analytical insights.

The USAID report shows the following:

		FIRST GRADE		SECOND GRADE		THIRD GRADE	
	SCHOOLS	Graduating	Dropout	Graduating	Dropout	Graduating	Dropout
Urban Area	With Program	87.7%	2.1%	87.6%	2.6%	88.4%	2.4%
	Without Program	66.8%		82.8%		81.9%	
Rural Area	With Program	76.6%	3.5%	74.2%	3.8%	85.5%	3.5%
	Without Program	55.8%		78.8%		73.5%	

This data allowed us to reproduce a simulation, establishing the level of effectiveness of the program in encouraging girls to graduate in the first three primary grades. Combining this information with the costs of the program, the next step will be to determine if the cost of producing child graduates is lower in this program. This will in turn help evaluate if the program's elimination from the Ministry´s structure was justified on the basis of effectiveness, or, if the results demonstrate that the program was a positive initiative that deserves to be reconsidered.

COST-EFFECTIVENESS RATIO: What were the costs involved in encouraging girls to graduate?

The difference that this kind of analysis introduces to the evaluation of programs oriented to improving social investment criteria is that it allows us to measure the marginal cost that is incurred to introduce additional payments to a set of beneficiaries.

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[14] The statutes of the program stated that the institutions in charge of administering the scholarships were allowed to charge a **10 percent fee on every every payment** made.

[15] Fernando Rubio (2004). ***"Análisis del Programa de Becas para la Niña"***. Ministry of Education, Guatemala.

The basic objective of this analysis was to evaluate if there is a significant difference between the costs for girls graduating in those schools where the scholarships were implemented, versus the schools which did not have the program. The main hypothesis was that, even though the total cost increased in a school where the scholarships program was implemented, the school achieved a higher graduation rate because students were more stimulated, thus compensating increased investment with reducing cost per girl graduate.

The following is a simulation of the cost-effectiveness of the program at the first three primary grades, assuming an initial number of 1,000 students for every type of school (the simulation was necessary because we do not have the exact number of students benefited by the program).

	First grade schools	Students		Total cost (annual; us$)	Cost per graduate	Difference
		Inscribed	Approved			
Urban Area	With Program	1,000	877	$192,216	$219.17	($03.40)
	Without Program	1,000	668	$148,681	$222.58	
Rural Area	With Program	1,000	766	$192,216	$250.94	($15.52)
	Without Program	1,000	558	$148,681	$266.45	
	Second grade schools	Students		Total cost (annual; us$)	Cost per graduate	Difference
		Inscribed	Inscribed			
Urban Area	With Program	859	752	$165,034	$219.43	$ 39.86
	Without Program	654	541	$97,233	$179.57	
Rural Area	With Program	739	548	$142,084	$259.05	$70.37
	Without Program	538	424	$80,060	$188.68	
	Third grade schools	Students		Total cost (annual; us$)	Cost per graduate	Difference
		Inscribed	Inscribed			
Urban Area	With Program	733	648	$140,811	$217.44	$ 39.86
	Without Program	527	432	$78,416	$181.54	
Rural Area	With Program	528	451	$101,420	$224.81	$ 70.37
	Without Program	408	300	$60,690	$202.29	

The previous tables show, the cost of number of students per school, estimating the number of graduates and the cost incurred for each one. It is possible then to compare the effectiveness in schools which have the program and those which don't (if the difference is negative, it indicates that the program is effective).

It is clear from this data that the graduation rate in schools which have implemented the program is higher. For this reason, the scholarships were cost-effective at the first primary grade. Disaggregating the analysis by urban–rural criteria, the program showed a higher level of efficiency in rural areas, reducing the cost of graduation per girl by US$ 15.52 a year (in the urban areas the savings were only US$ 3.40). The comparison shows that the monthly cost for one scholarship is US$ 3.66.

In the other two grades, the scholarship program did not appear to be cost-effective. On the contrary, because of a not-so-significant difference in graduation rates between schools with and without the program, it was more expensive to graduate girls in schools with the scholarship program. This allows us to conclude that the program should be oriented to benefit girls in the first primary grade, where it has its biggest impact. For the upper grades, other incentives also need to be included to increase graduation rates.

However, it is very important to compare these results with the implementation of the CCT Program during the last four years, a situation that will demonstrate if the scholarships program could replace or be amalgamated with “Mi Familia Progresa”.

How to increase health controls and consults in Guatemala

Here we analyze if the Extension of Coverage Program has improved the life conditions of Guatemalans because of greater provision of health services. Our objective is to determine if an alternative program oriented to subsidizing the delivery of health services is more cost-effective than the transfer made to the families through the CCT Program to motivate parents to take children to health centers and posts.

We will describe how the program has achieved its objective of contributing to the provision of services in those areas where the infrastructure and availability of personnel is limited. This initiative not only contributed to increasing health coverage across the country, but also achieved other goals such as complete vaccination campaigns, and attention to the health of mothers and their children´s diseases.

We aim to identify the success or failure of the Extension of Coverage Program, which, as already mentioned, was discontinued in the tenure of the last government, even though it was prioritized by the previous administrations. A cost-effectiveness analysis will be conducted as an ex-post analysis, obtaining results that will either support or discount the decision to favor this program as an essential part of the Ministry of Health activities, or, to consider its implementation as a substitute for the CCT Program.

PROGRAM: Extension of Coverage

The health care model until 1996 emphasized curative medical care at the first level, dealing with patients who directly visited the centers and posts. Essentially, there were no alliances with other providers of health services, and community participation was limited to vaccination campaigns.

The process of extension of coverage was framed in a series of health policies that include reorganization, decentralization, and modernization of the health sector, increased coverage and improved quality of care for basic health services, and efficiency in the management of health centers and posts. The funds were oriented to promoting development and modernization of the

institutions, creating a healthy environment for improved living conditions, increasing coverage, improving the quality of drinking water, and expanding basic rural sanitation with the participation of communities to strengthen local leadership.

The operation of the program was through medical teams of doctors and nurses. These medical teams, known as "Equipos Básicos de Salud", visited the community centers at least once a month and set up specially equipped areas to attend to women´s needs, register growth rates for boys and girls, check medicine requirements, deliver vitamins, provide nutritional supplements, and vaccinate children.

The teams were directed by the community facilitator who spent four hours every time they visited the community. Additionally, all the medicines and consultations were verified and certified by the nearest health center or post (i.e. dispensaries).

Our analysis will focus on the communities that received benefits from this initiative, measuring if the health variables described earlier presented an observable marginal impact— positive, negative, or null—as compared to their previous situation. The strategy is to evaluate how the provision of services evolved, how many people were reached, and the cost of program implementation in the last years (depending on availability of information).

BUDGET: Costs Associated with the Extension of Coverage Program

The first part of the analysis consists in determining all the costs associated with the program, identifying the resources that were allocated for the program´s functioning. The analysis will measure all costs, direct and indirect, linked to program administration (operating and administrative annual costs).

According to the budget information available at SICOIN (Integrated Accountability System), the annual cost of the program was calculated for each one of the 207 municipalities where the Extension of Coverage Program was implemented. This information was available only for the last five years of its implementation.

It is important to mention that these costs are marginal costs; every year, the government allocates supplementary funds for each municipality in the country, irrespective of whether or not the program was implemented. The objective is to increase the provision of services. Assuming that these funds increase each year at the same rate for all municipalities, this is not relevant for the analysis.
The costs of the program for the timeline are as follows:

	2006	2007	2008	2009	2010
Program´s Budget (in million)	$24.71	$24.89	$22.47	$25.19	$27.77
Annual Cost per Municipality	$119,368	$120,232	$108,541	$121,710	$134,175

The total cost of the program varies during the period of analysis due to the varying number of beneficiaries each year, using as a reference the amount of funds executed and as reported by the Ministry of Public Finances. We want to emphasize that, instead of the number of beneficiaries, the objective of the analysis is the provision of services to those people, measuring the capacity of the health system to provide more services to a particular target population. We have no record of the

beneficiaries of the program, only the number of consults and controls provided by the health teams.

EFFECTIVENESS: Marginal Increment in the Provision of Services

The main objective of the program was to increase the provision of health services in those municipalities where the coverage does not match population needs. The unit of analysis will therefore be the municipality, using as the effectiveness measure the annual marginal increment in the provision of services.
It is important to note that the marginal impact of the program will be determined by comparing the results from the benefited municipalities with those obtained from the municipalities that were not beneficiaries of the program. This comparison will allow us to isolate the effect of any additional efforts made by the program.

The results for the last five years are:

Provision of Services (increment)	2006	2007	2008	2009	2010*
Municipalities with the Program					
Total increment (207 municipalities)	49,362,465	47,073,770	55,284,776	64,536,758	63,653,088
Increment per average municipality	238,466	227,410	267,076	311,772	307,503

Municipalities without the Program					
Total increment (121 municipalities) *	25,627,020	26,754,044	27,897,388	33,951,618	34,368,438
Increment per average municipality	211,794	221,108	230,557	280,592	284,037

(*) Five municipalities are not included in the analysis for lack of information.

Clearly, the impact on the provision of services over the last five years is due to the significant allocation of funds which introduces a difference between groups. If we analyze the situation for the two groups, in both cases the tendency is an increase in the provision of services, and a greater increase in the case of municipalities where the program was implemented.

Another important aspect is that the analysis will focus on the average increment per municipality. Firstly, because it is the unit for the allocation of funds, and secondly, because the number of municipalities in the two groups are different. Therefore, the total increment in the provision of services could introduce a bias in the analysis. Finally, the impact of the program will be measured as the difference in the provision of services between the groups.

COST-EFFECTIVENESS RATIO: Has the increment in the provision of services been sufficient?

The difference that this kind of analysis makes to the evaluation of programs oriented to improving social investment criteria is that it allows us to measure the marginal cost incurred to introduce additional payments to a set of beneficiaries.

The basic objective of the analysis is to evaluate if there was a significant difference between the provision of services in those municipalities where the extension of coverage program was implemented versus those where it was not, justifying the incremental use of funds. The main hypothesis is that, with a general increase in the provision of resources, the increment in the provision of health services will be higher in those municipalities where additional funds have been allocated through the Extension of Coverage Program.

The following figures show the additional increment in the provision of health services in the set of municipalities that received the benefits of the program:

	2006	2007	2008	2009	2010
Annual cost per Municipality	$119,368	$120,232	$108,541	$121,710	$134,175
Increment in the Services	26,672	6,302	36,519	31,180	23,466
Cost of an additional service:	$4.48	$19.08	$2.97	$3.90	$5.72

The table shows the additional (marginal) annual cost of the program and the difference in the additional services that the program provides to the average beneficiary municipality, in comparison with municipalities not benefited by the program. The last row of figures represents the cost for providing one additional health service in the municipalities where the program was implemented.

It is important to mention that this cost fluctuated over the years, and it is relevant to keep in mind that it costs the government between US$ 2.97 and US$ 19.08 to increase one service. This significant variation in range is because of the conditions that prevailed in 2007. In that year, the budget increased significantly, but the services provided in the beneficiary municipalities did not increase proportionally.

This information fails to reveal one scenario: is the cost of one additional service reasonable, or is it too high when compared to national standards? To address this question, we compared the cost-effectiveness ratio among the 19 provinces where the program was implemented. This analysis aimed to identify which province was more cost-effective in the management of funds, increasing the provision of services at a lower cost. Instead of comparing the program with other alternatives, we first want to identify which province showed better performance and, consequently, could be used as a standard for comparison with CCT Program.[16]

[16] We choose to analyze the provinces instead of municipalities because the government takes this classification into account in allocating funds. After assigning funds to the capital city —municipality— of each province, funds are distributed among the rest of the municipalities based on the number of potential beneficiaries (i.e. population). There are 22 provinces in Guatemala but the Extension of Coverage Program was implemented in only 19.

With all the complications that this kind of analysis could represent, we made some assumptions that simplified the analysis. The assumptions are:

a) We estimate the number of services that were provided with the implementation of the Extension of Coverage Program (ECP) in each province, using the formula:

$$Services\ ECP_i = Province\ Services_i * \left[\frac{(Avg.Services\ ECP - Avg.Services\ without\ ECP)}{Avg.Services\ ECP}\right]$$

b) We calculated the cost-effectiveness ratio for each province where the program was implemented (Province Budget divided by Province Services ECP) and for each year of analysis (2006 to 2010).

c) We used as reference in each province the simple average of the cost-effectiveness ratio calculated for the five years of analysis.

d) After making these calculations, we obtained a list of 19 provinces, sorted by the criterion of their cost-effectiveness ratio, from the most cost-effective to the less cost-effective. The results are presented here:

	Average	2006	2007	2008	2009	2010
Petén	$0.69	$0.40	$1.97	$0.30	$0.29	$0.52
Guatemala	$1.39	$0.90	$3.87	$0.58	$0.63	$0.97
Jutiapa	$1.80	$0.62	$5.49	$0.86	$0.92	$1.09
Sacatepéquez	$2.36	$1.69	$6.69	$0.96	$0.95	$1.54
Izabal	$2.50	$1.60	$5.07	$0.72	$1.46	$3.67
Quetzaltenango	$4.15	$2.50	$10.55	$1.55	$2.66	$3.49
Santa Rosa	$4.47	$2.53	$12.32	$2.40	$2.29	$2.80
Retalhuleu	$5.08	$1.84	$12.95	$2.96	$2.68	$4.96
Suchitepéquez	$5.83	$2.35	$17.40	$2.71	$2.42	$4.28
Chimaltenango	$6.30	$3.69	$16.41	$3.24	$3.62	$4.54
Jalapa	$6.81	$4.77	$18.27	$3.23	$3.73	$4.08
Alta Verapaz	$8.62	$5.79	$21.78	$3.46	$4.55	$7.53
San Marcos	$8.79	$4.89	$22.28	$3.17	$5.91	$7.69
Baja Verapaz	$9.76	$3.44	$26.15	$5.48	$5.95	$7.78
Chiquimula	$11.60	$5.96	$34.21	$5.10	$5.60	$7.12
Quiché	$14.90	$10.25	$38.52	$6.75	$6.97	$11.99
Sololá	$15.20	$6.25	$33.12	$8.05	$12.74	$15.82
Huehuetenango	$15.70	$10.67	$43.33	$5.17	$7.72	$11.60
Totonicapán	$16.95	$16.12	$50.93	$4.12	$6.02	$7.55

Average	$7.23	$4.48	$19.08	$2.97	$3.90	$5.72

Even though the results can´t be used as concluding evidence, they show us that the Extension of Coverage Program was most cost-effective in 2008. Every year, the ratio among provinces varies, but we see that the pattern does not change and the same provinces remain the most cost-effective. This analysis allows us to make policy suggestions derived from different “successful experiences”. We have a rough standard of US$ 7.23 per additional service provided in each municipality. Therefore, if in any given alternative the cost is higher or lower, we can judge whether or not the management of funds has been efficient. In conclusion, this analysis could be used for future

modifications in implementation of the program, taking this as the criteria for performance evaluation in each municipality, or as the basis of comparison in case the government wants to implement similar initiatives in the near future, as in the CCT Program.

How does it compare with the results of the CCT Program?

In this chapter we have tried to present a couple of alternatives to the current implementation of the CCT Program in Guatemala, with the objective of seeking out programs that are similar in terms of objectives, target population, scope and budget. However, we have to recognize that the lack of available information was an obstacle to a more robust analysis of the alternatives. Further, even as we recognize the dissimilarities among programs, we believe that the insights will be very useful.

Based on the information presented in the previous sections of this chapter, we summarize the results and compare them with the results obtained from the previous analysis of the CCT Program in both the education and health sectors. With a 90 percent confidence level as reference, the following table better illustrates our main conclusions.

EDUCATION SECTOR	HEALTH SECTOR
Objective of the CCT Program: "Increase the level of attendance and school graduation at the primary education level for children between 6 and 15 years."	Objective of the CCT Program: "Improve the health status of poor families with children between 0 and 15 years and/or pregnant women."
Variable: Number of children graduating in the first three years of primary level education	Variable: Number of patients who visited (consults and controls) health centers or health posts
RESULTS:	RESULTS:
In those municipalities where the CCT Program was implemented, the number of girl graduates in the first three years of primary education was higher than in those municipalities where the program was not implemented.	In those municipalities where the CCT Program was implemented, the number of patients who visited health centers and posts was higher than in those municipalities where the program was not implemented.

These results were the main conclusion of the analysis for the education and health sectors. However, a more detailed explanation was necessary to show the costs associated with this preliminary evaluation of the effectiveness of the program. The effectiveness and the costs incurred with the implementation of the CCT Program, as compared with the two alternatives that demonstrated their cost-effectiveness in the past is shown below.

EDUCATION SECTOR	HEALTH SECTOR
Effectiveness of the CCT Program: • 44 additional graduates at 1st grade • 39 additional graduates at 2nd grade • 44 additional graduates at 3rd grade	Effectiveness of the CCT Program: • On average, each beneficiary municipality provided 22,829 additional consults and controls at health centers and health posts
Cost of every graduating girl : US$ 1,270 a year (average)	Cost of providing an additional service: US$ 11.93 a year
Comparison: Scholarships for Girls	Comparison: Extension of Coverage
This program aimed to increase enrolment, retention, and promotion of girls in school. It consists of the incentive of a monthly allowance to help them cover the minimum expenses of primary education.	This program entailed visiting community centers at least once a month to attend to women´s needs, register the growth rates for boys and girls, check medicines and nutritional supplements, and vaccinate children.
Cost of an additional child graduate US$ 245 a year (average)	Cost of proving an additional service: US$ 7.23 a year

These results show that program effectiveness and the cost of achieving its goals are not as efficient as desired. Nevertheless, it is important to focus our conclusions on two aspects from the analysis:

1. Because "Mi Familia Progresa" was implemented in conjunction with the policy of free access to social services (which was implemented in the same municipalities for both education and health), it is not possible to determine if the effects identified are the result of the CCT Program in those municipalities, due to the implementation of the policy of free access to social services, or due to a combined effect of both initiatives.

2. Although the CCT Program shows a positive impact in those municipalities were it has been implemented, the cost of achieving its goals, as compared with two other programs that are no longer financed by the government (Scholarships for Girls ended in 2008 and Extension of Coverage ended in 2010) are much higher, demonstrating the necessity to improve the program´s effectiveness.

Therefore, although the CCT Program seemed to be effective after three years of its implementation in the sense that it increased the number of child graduates in the first three levels of primary education, it was too expensive when compared with the other alternative implemented earlier by the government. If the government continues investing in scholarships for children, it will be cheaper to achieve the same effect as the CCT Program aimed to.

Again, although the CCT Program seemed to be effective in that it increased the number of services provided at health centers and posts in the beneficiary municipalities, it was too expensive in comparison with the other alternative implemented before. If the government continues investing in sustainable programs like the Extension of Coverage, we can expect to get savings that could be invested in a more efficient manner.

Finally, after presenting these concluding results, we have to leave aside for the moment the recommendation of considering other options with a more plausible cost-effectiveness ratio. We will proceed with the analysis of the government's intention to continue with CCT Program implementation, and to expand its coverage if it demonstrates that it could be used in the fight against poverty and inequality in the country.

The president of Guatemala has been consistent in saying that CCT Program implementation will continue during the term of the new administration if it demonstrates that, going beyond the cost-effectiveness analysis in comparison with more efficient alternatives, it contributes to the reduction of poverty and income inequality among citizens. This situation is very challenging for us because, even though our analysis could suggest the implementation of other alternatives, we have to analyze the effect of expanding the program to all the municipalities in the territory. Nevertheless, it is also an opportunity to identify alternatives to reduce the cost of implementing the CCT Program in Guatemala in order to make the program more cost-effective.

Our education and health analysis ends with the discussion of the main results, but we have dedicated an Appendix to analyze the potential effect on the reduction of inequality among the people of Guatemala.

6. Discussion of the main results What is the Balance for Guatemala?

Under the slogan of improving the living conditions of people living in poverty and extreme poverty, the conditional cash transfers program – CCT Program –has been supported and defended by various experts and institutions throughout Latin America during the last decade. Their main argument is that it is necessary to invest in human development to root out the intergenerational circle of poverty in which many families are caught.

We must stress that poverty includes external conditions which lead to lower life expectancy, high rates of disease, low-skilled labor, all of which generate an unproductive workforce. This condition is translated into low levels of income, lack of savings, and a low consumption level.

For its part, the ultimate goal of social investment is that people by themselves can be the engines of their own development, requiring state intervention only when this is not possible. Hence, we are faced with a scenario that requires solutions based on long-term policies rather than on occasional and situation-based remedies without planned sustainability. Poverty cannot be defined as a spontaneously occurring phenomenon; rather, it is a set of conditions that stand in the way of creating wealth.

To address the issue of poverty reduction in the country, we need to respond to how we can create conditions that will generate sufficient income for individuals and families for their self-development. The CCT Programs across the world have been seen as a very attractive option, based on evidence gathered by international and multilateral institutions that promote them. The positive aspect is attacking poverty at its roots and providing direct assistance to the more vulnerable groups in the country On the other hand, however, these programs have been dramatically affected by populist practices, clientelism, lack of transparency and efficiency, and the deterioration of life conditions among the youth.

To fight against this, the continued monitoring and evaluation of the program, based on evidence rather than perceptions, is essential to demonstrate if these programs should continue to get support. Obviously, “political will” is behind the decision to continue or discontinue such initiatives, but the provision of technical and authentic evidence will be a sign of transparency in the accountability process.

“Mi Familia Progresa” used by populist leaders

After three years of implementation, in 2011 the CCT Program became the main policy tool for supporting the presidential aspirations of who, until then, was chairing the Social Cohesion Council (a state agency created by President Alvaro Colom to coordinate the operation of "Mi Familia Progresa"): Sandra Torres de Colom, the First Lady of Guatemala.

Her main “motto” as a presidential candidate from the ruling party at that time (Unidad Nacional de la Esperanza - UNE -) was the continuity of social programs implemented during her administration, i.e. MIFAPRO, the initiative with the greater impact on the population as a result of the vast amount of resources and the number of beneficiaries. This strategy ensured commitment to such social programs only till such time as a candidate from another party was elected as president.

Different media extensively covered the issue of how officials in charge of the operation of the program used the institutional framework of "Mi Familia Progresa" to coerce the votes of the beneficiary population, with UNE party affiliation running in tandem with money transfer. Our analysis is not looking to do research on such complaints, but we encourage readers to consult two specific investigations:

1. “Informe Especial: Mi Familia Progresa a punto de colapsar”[17]. Video report done by Sylvia Gereda, a journalist who conducted field research in the communities served by the program, encountering threats, human rights violations, and other abuses by the promoters of “Mi Familia Progresa”. The report is a first-hand documentation of the handling of the program during Guatemala´s elections in 2011.

2. “Informe de Auditoría Social de Mi Familia Progresa”.[18] In a series of reports about the operation of the program, as well as the mechanism for complaints and grievances, Acción Ciudadana—Guatemala´s chapter of Transparency International—realized that MIFAPRO did not contribute to poverty reduction in Guatemala; in addition was the condition of the beneficiaries who were victims of political manipulation (50 percent of beneficiaries surveyed said this). At the time, President Alvaro Colom publicly denounced the validity of the study, saying that “it is totally contradictory [AC report] to the opinion of the International Development Bank and the World Bank, making it look more politician than it is”. [19] (statements to Prensa Libre, the newspaper with the largest circulation in the country).

What both investigations reveal is the way in which the CCT Program in Guatemala was used for the particular interests of a person with political aspirations, ironically being used as a tool to “condition” the vote of the beneficiaries. Such practices can be labeled populist, threatening the country's democratic system, and intentionally discrediting the country's institutions by misappropriating public funds and redirecting them to benefit a particular person.

We can say that this is one of the effects that “was not seen” behind MIFAPRO´s administration, and which is not taken into account when institutions support the continuity of such programs. We do not want to imply that the objective of CCT Programs is political manipulation; however, we want to

[17] ***“Informe Especial: Mi Familia Progresa a punto de colapsar”***. Available at: http://vimeo.com/27780512

[18] The report of ***“Mi Familia Progresa”*** social auditing process encouraged by Acción Ciudadana are available at: www.accionciudadana.org.gt

[19] www.prensalibre.com/noticias/politica/Colom-informe-Accion-Ciudadana-Mifapro_0_520748158.html

emphasize the high risk involved in bestowing on these programs the insignia of a political character or political party, which breeds mistrust of the results achieved and on transparency in the selection of beneficiaries. Beyond the impact on people, we must keep in mind the capacity of some political actors to use these tools to support and promote their political campaigns (both at the national and local levels), diminishing the credibility of the country´s institutions.

"Mi Familia Progresa" used for clientelism

In this regard we cite a study by Guillermo Duarte Monroy,[20] member of DMC Consultants, who did the analysis for Chiquimula, one of the 22 provinces in the country. The study shows how the implementation of the program did not respond to any technical criteria, running the risk of not having benefited people living in poverty conditions (Type I error, or α), or the risk of having benefited those who could not be categorized as meriting the conditional cash transfer (Type II error, or β).

According to the author, "the study demonstrated that there wasn´t an orderly process of inclusion of beneficiaries if one takes into account both the geographic conditions and the expansion of the program. The growth rate in the national geographical coverage was 83.33 percent at the province level and 244.89 percent at the municipal level, while the growth of beneficiaries was 316.46 percent." His conclusion in the case of Chiquimula was that there was a mistake in the selection of beneficiaries, and it is possible that the same practice has been repeated in the rest of the country. When families not included in the program were surveyed, 52.92 percent said their exclusion was unfair, despite having similar or worse economic conditions than those who were selected as beneficiaries. Moreover, 79.69 percent of those not included acknowledged that the criteria for being excluded from the program were not related to their economic status.

Further, in the perception of the participants there was no selection process to differentiate families, especially in villages and slums. According to them, the selected families were those more likely to approach the Mayor and with sufficient documentation. This is worrying; it is "adverse selection" among beneficiaries, as it favored those who lived near the center of the community and had a valid ID, which the poorest families do not have.

Our problem in this regard is the "culture" of clientelism behind MIFAPRO, seeking to benefit particular groups of people who might not be living in poverty. We do not have enough evidence of favoritism to people loyal to a political party; however, there is a high correlation between the number of beneficiaries and the number of people registered for the 2011 elections. According to the Electoral Institution—Tribunal Supremo Electoral—municipalities with a larger number of beneficiaries also registered higher number of voters in 2011.

"Mi Familia Progresa" lacked for Transparency and Efficiency

In addition to evidence garnered about the potential effect of the CCT Program on improving the life conditions of the poorest (Appendix A), the round of simulations allowed us to estimate the costs necessary to cover the entire vulnerable population. Including administrative costs, it was estimated that the program required about US$ 149 million a year to cover all the poor families in Guatemala (333 municipalities) with children under 15 years who were enrolled in primary education.

[20] Guillermo Duarte Monroy (2011*). **"Evaluación Externa y Preliminar del Programa Mi Familia Progresa".*** DMC Consultores: Guatemala. www.dmcconsultores.com/doc/EvaluacionMifapo-AC%202011.pdf

However, with a budget of US$ 142.4 million, the program covered exactly 916,852 families in 2011. Based on a population of 14.7 million with an average of 2.5 members per household and 53.7 percent poverty according to the ENCOVI 2011, the number of families that could be covered with this budget was around 1.46 million. This tells us that with a budget just short of that required to cover the entire population, as many as 545,000 families were left out of the coverage. There are two explanations for this:

a) There are deficiencies in the population estimates or the representativeness of the household survey, which gives rise to an estimation error of the costs required to cover the entire population living in poverty in Guatemala during the period the program was implemented.

b) The program reported inflated costs for the population that was actually covered, which is an indication that the funds were used inefficiently and without transparency, perhaps even a misuse of public funds.

This accusation is extremely serious since the consequences of misuse of funds involve prosecution by the institution in charge of probity in the country (i.e. General Comptroller). Besides, it points to corrupt practices of those in charge of the CCT Program. However, our study is not an exercise in condemnation, but we seek to identify those aspects that should be subject to evaluation and discussion without neglecting the technical fundamentals behind the functioning of the CCT Program.

Our emphasis is on an aspect that tends to be taken for granted, i.e. the management of public funds. It is assumed that an audit report is a sufficient indicator of transparency in implementation of the CCT Program. In addition, without going into rigorous details, we believe that such wrongful acts are easier to indulge in when there is little social audit of the programs, wasting the legal tools that give us the system and the institutions in the country. That the officials do not respect accountability does not mean that we ignore its importance as a necessary and common practice.

"Mi Familia Progresa" against the opportunities for the youth

Finally, we want to analyze a factor that has not been investigated in depth in Guatemala, and which could alert us to the unintended consequences arising from the implementation of a program of this type. With the objective of helping the poorest people in the country, the CCT Programs have emphasized some conditionalities for achieving the desired results, whether in the area of education or health. However, at the same time that the program created positive incentives for families to receive a monthly transfer, it also created perverse incentives that may contravene the original intentions of the program.

In the case of Guatemala, the conditionality of the transfer was attendance of children at schools, and regular visits to health centers and posts to check the health status of children. The logic behind "Mi Familia Progresa" was that parents, encouraged by the possibility of a payment to meet these conditionalities, would send their children to school to pass the grade at the end of the year, as also visit the health centers and posts to monitor the growth and health of their children.

However, there is one particular aspect that was overlooked during the implementation of the program, and which was related to the socio-economic characteristics of the family and the way they received the transfer. MIFAPRO statutes established that to be considered as beneficiaries, families should live in poor municipalities around the country, registering those children under 15

years of age were in primary education. Also, this transfer was paid to such families irrespective of the number of children living in the household.

And this is the point where the incentive became problematic. The household was the variable on which the program was focused, without analyzing the socio-cultural reality of Guatemalans. According to ENCOVI 2011, the average number of persons per household is 2.5, and it is possible that more than one household resides in the same house. This further complicates the situation. The CCT Program sought to benefit every family, assuming that one family is equal to one household, regardless of the number of families living in the house.

To this we must add that, according to the latest information published by the World Bank (2012), Guatemala has the highest fertility rate in Latin America, i.e. 3.84 births per woman in the reproductive age. According to these figures, the country is well above world standards (2.45 births per woman) and the regional average (2.17 births per woman). These results are indicative that women begin their reproductive lives while still quite young.

Based on the mode of operation of the program, we arrived at the following hypothesis: Because payment is made per family, regardless of the number of children living in the household, the incentive for the families is to encourage adolescents to begin their reproductive lives close to 15 years of age, when they cease to be eligible for benefits from the CCT Program. They initiate a new family, even within the same living space. This increases the amount of money they can receive as a "household".

At this point it is important to highlight the opportunity cost that girls face when having a child at such a young age. They live in a country with a very high fertility rate, with little or no chance of getting a real job when they reach adulthood (81.7 percent of the economy is informal according to the latest information from the Ministry of Economy). Add to that the deep poverty in which more than 50 percent of the population lives (51 percent in 2006 and 53.71 percent in 2011), and the option of being in a program of this type is a very rational plan.

Now, if this situation really did exist, the final result should be an increase in the rate of teenage pregnancy among the beneficiary population. This statement must be corroborated with the information available, allowing us to show whether, in fact, the incentives generated this behavior. Different sources provide useful data to support our analysis, among them the National Survey of Maternal and Child Health and the information generated by the Management Information System of Health— SIGSA—coordinated by the Ministry of Health.

Although the information we gathered does not have a sufficient level of disaggregation to compare municipalities with and without the program, some striking results were derived from our analysis:

- The teenage pregnancy rate increased significantly between 2007 (before the implementation of the CCT Program) and 2011 (the latest year for which information is available). Measured as a percentage of total pregnancies of adolescent women (women under 19 years), the results show that there was an increase, ranging from a rate of 20.1 percent to 22.9 percent, which means an increase of 2.8 percent in the teenage pregnancy rate.

- This higher incidence is spread nationally, but is higher in communities with greater levels of poverty; precisely those communities where the CCT Program was implemented. According to these same figures, between 2008 and 2011 the increase in the rate of teenage pregnancies in the poorest communities in the country (50 poorest municipalities) was 7.38

percent, representing more than 30 percent of all pregnancies attended at health centers and posts in the country.

- Finally, according to the Association for Family Welfare—APROFAM—from the total assisted pregnancies, 40 percent are unwanted pregnancies. Lack of contraceptives is one reason; second, 52 percent of Guatemalan women had their first sexual intercourse before the age of 20. Not surprising then that 31 percent of women had their first child before the age of 20.

Although not conclusive, the numbers show the possibility that, due to a number of factors— which may include implementation of "Mi Familia Progresa" —the pregnancy rate in women under 19 years increased during the period in which the CCT Program was implemented, with a 2.8 percent increase at the national level, and 7.38 percent higher in the poorest municipalities of the country, which were the initial priority of MIFAPRO.
Analyzing the last available information published by the Ministry of Education, there was a notable reduction in the enrolment rate for primary education in 2011, the last year of MIFAPRO. As we noted before, 2011 was an electoral year in Guatemala, and the implementation of the CCT Program was condemned by citizens as politically manipulated.

Without the guarantee of the transfer, families lost the incentive to send children to school. Numbers reveal a national reduction of 3.21 percent in enrolment in primary education, with a higher reduction of 4.7 percent in the poorest 50 municipalities in the country. It is important to note that by the end of 2011, 307 out of 333 municipalities were benefited by the program, reason why we do not have enough data to make a comparison among beneficiated and non-beneficiated groups, as it was conducted before.

Our final conclusion is that there are some worrying results that were not foreseen in the implementation of the CCT Program in Guatemala, such as an increase in the teenage pregnancy rate and a reduction in the enrolment rate in primary education. This has resulted in a rather unsatisfactory evaluation of the program. Those who saw the possibility of this monthly payment bringing them out of poverty were instead guided to a less desirable reality. As mentioned at the beginning of this section, the goal of social investment is to encourage people to be masters of their own development. But what the evidence for Guatemala shows is that the only thing that has been generated is a greater dependence on welfare programs. Maybe these results are not only attributable to the implementation of the CCT Program, but what we can see is that the conditional cash transfers did not contribute to offsetting these negative consequences.

7. Final Thoughts How to work for a better future

Through a comprehensive analysis of the CCT Program in Guatemala, it is evident that the country is at an impasse, where timely solutions should be found to address the problems that the program has suffered in the past. We realize that even though the evidence provides some arguments against the efficiency and the costs entailed in the program for achieving its original objectives, the tendency in Latin America and the intentions of the current government is to continue with the program, going beyond the results of our analysis.

This is the reason why we have to consider alternatives and possible improvements in the current scheme under which the program operates, looking for those areas where, with few modifications, we can expand coverage, improve the incentives structure of the program, and reduce costs for the

State. There is always a way to do things better, and this is the message we want to communicate to the decision-makers.

It is necessary to emphasize those institutions capable of speeding up the process of generating opportunities is the need of the day, rather than re-inventing social programs in each new government administration. That is why we speak about a process: when considering the design of a strategy to combat poverty, it is important to have a sequence of actions that will be maintained over time, aiming for economic growth and continuing improvement in the provision of basic services.

In this sense, the cooperation between the public and the private sector is crucial, especially to identify areas for action to support and assist vulnerable groups which require very long periods of adaptation to fit into the economic activity. We are talking about how to coordinate efforts to achieve Guatemala´s goals.

Poverty is a vicious cycle that not only has serious consequences for the quality of life and the standard of living of the poorest, but it also undermines opportunities for economic growth, and social and political stability in the country. The adverse fallout for poor families is in nutrition, health, and education. These conditions, in many cases, cannot be overcome by themselves, despite an increase in allocation of revenues.

Our work aims to contribute in this effort to make Guatemala a better country for boys and girls. Our line of investigation has been led by a commitment to the highest quality standards, and we are open to further discussions derived from our analysis and conclusions. At this point, we have said a lot about the amount of funds allocated for the implementation of this initiative, and about the efficiency of the CCT Program in the search for better education and health outcomes, as well as about the effect that this initiative could have in reducing income inequalities. However, our intention is to contribute to the improvement of the program, influencing the implementation of better practices to guarantee transparency and public expenditure accountability.

In conclusion, we want to close the discussion with special consideration of all the issues that we outlined in our analysis of the CCT Program in Guatemala. If we pay attention to the variables that were considered at the outset of the program, we need to focus on primary education of children, health of children and pregnant mothers, and family income.

According to the United Nations Program for Development – UNDP –which is responsible for developing the methodology behind the construction of the Human Development Index, a country's development rests on improvements in education, health, and income of the poorest families. Therefore, if we analyze the achievements of "Mi Familia Progresa" in these three areas, we can see the contribution that the transfers program made in promoting human development in Guatemala.

- With regard to education outcomes, the study reveals that the program effectively increased the number of children graduating in the first three grades of primary education in the municipalities where it was implemented. However, when we look at the cost incurred in achieving this goal, we see that MIFAPRO was relatively inefficient because there are other options, one of which was previously implemented successfully by the government and the private sector (i.e. Scholarships for Girls), and cost less to achieve the same goal. In other words, the CCT Program was not a cost-effective option to improve education among the poor in Guatemala.

- On health outcomes, the study showed that even though the program encouraged families to increase visits to health centers and posts (reflected in the increase of health services provided in the beneficiary municipalities), the cost of achieving this objective was too high when compared with the alternative of allocating these resources to improve the supply of health services (i.e. Extension of Coverage Program). Further information led us to believe that during the four years of its implementation, the CCT Program contributed to a significant increase in the rate of teenage pregnancy in the poorest areas of Guatemala, precisely where the transfer program had a greater presence.

- Finally, when analyzing the component related to household income, we see that there was a partial improvement in relation to disposable income in the household, reducing to some extent income inequality at the national and sub-national. However, two comments should be made about the reality on the ground :

1. Although the potential reduction in inequality is obvious, the intentions of the government of Guatemala to modify the program´s implementation, together with proposals made by international organizations that support such programs, are oriented to supporting more costly and less effective options, which will result in an inefficient use of public resources.

2. Although we have an estimate of the possible effect that the program would have on reducing extreme poverty, what is not clear is the effect that the CCT Program could have on improving total household income. If household incomes did improve, we would see a reduction in the overall poverty rate in the country between the last two household surveys conducted by the National Statistics Institute (ENCOVI in 2006 and 2011). However, the results showed a different situation: the overall poverty rate increased by 2.71 percent, from 51.0 to 53.71 percent.

Sadly, the data for Guatemala reflect that today, after four years of implementation of the CCT Program, the overall poverty rate is higher, accompanied by a higher population growth rate. We cannot associate this increase in poverty to the execution of MIFAPRO alone, but it can be said that the flagship program of the government between 2008 and 2011 was not effective in improving the living conditions of Guatemalans and promoting human development.

Adequate information on the results of these programs is not available; however, to the extent that it was possible to monitor the partial results, it will be easier to make adjustments in time. Our objective is to draw the attention of the authorities to the necessity to improve the way these programs are executed, replacing them with more efficient options, or even discontinuing them and releasing resources to better use on other priorities for the entire country.

It only remains for us to conclude by emphasizing the original intent of this study. Given the reality that Guatemala's new government has decided to continue and reform the CCT Program (“Mi Bono Seguro”), we cannot lose the opportunity to highlight any shortcomings related to the implementation of the program, publishing both the negative and the positive effects on education and health. The results of our analysis show the consequences of ineffective utilization of public resources, while identifying the “moral hazards” of continuing this type of program.

Government officials, groups promoting governmental interventions in poor areas, multilateral agencies, and even a large part of the population, commend the rationale behind such programs as a tool to reduce poverty, with special interest in making public the positive results derived from the implementation of conditional transfers. However, what no one sees, or only just a few do, is the lack of transparency and the inefficiency in improving the life conditions of the poorest people in the

country. This is why we are committed to continue working to identify alternatives for better results in the future.

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A. Policy Simulation: The CCT Program: What would be the effect on inequality?

The CCT Program in Guatemala was geared to be "the main tool of social protection to help reduce poverty in vulnerable families and to foster human capital accumulation in the short and long term, increasing their levels of consumption and investment in assets for poor communities". [21]

With this agenda, the evaluation of a program with such high aspirations becomes the continuous task of leading research centers in the country, especially those with a firm commitment to the improving life conditions for all Guatemalans. For this reason, FUNDESA has accepted the commitment to follow up on this program which, after three years of implementation, has produced a lot of information about its potential impact on Guatemalan families. Hence, even though the government has declared an impasse in the implementation of the CCT Program, it will be appropriate to analyze the suggestion of international experts of expanding the coverage of the program in the future. [22]

Following this line of thinking, and with the intention of evaluating the validity of the declaration made by the former president of Guatemala about the viability of the program in the fight against poverty and inequality, our analysis intends to evaluate what could happen to these variables if the CCT Program is extended to all the municipalities in the country.

To share information that will allow others to replicate the analysis made by FUNDESA, we describe the sources of information used in this simulation, as well as the criteria defined to set values for variables.

How did we structure the simulation for the CCT Program?

The analysis developed by FUNDESA sought to assess the potential impact that the program could have in reducing poverty in beneficiary families, as well as evaluate the reduction of income inequalities in those provinces where monetary transfers could be implemented. In order to resolve how variations in key variables could affect the implementation of the CCT Program, we performed a simulation based on the number of potential beneficiaries across the country, with education and health transfers for all families with a monthly income below US$ 300 (daily income below US$ 2.00 per person for a family of 5.02 members, equal to US$ 60 per capita).

Now, to identify how these changes affect the outcomes of the analysis, it was necessary to get information on the distribution of incomes in the families. Using consumption as a proxy variable for disposable income for each individual, our objective was to determine how the additional income – conditional cash transfers – increased the total income of poorest families and consequently reduced income inequalities.

To obtain this data, we used as reference the National Life Conditions Survey—ENCOVI— developed by the National Institute of Statistics (INE) every five years, covering different aspects of household consumption and the services they enjoy. Although a recent household survey was launched on 2011, the data won´t be available until the INE publishes the final results and provides access to the databases. Therefore, the 2006 household survey is the last available data.

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[21] *Mi Familia Progresa*. "**Rendición de Cuentas 2010-2011**". Available at: http://mifamiliaprogresa.gob.gt

[22] María Helena Lavinas & Miguel Székely (2011). ***"Mi Familia Progresa: Ejercicio de Apreciación Sustantiva".*** Programa de las Naciones Unidas para el Desarrollo – PNUD –: Guatemala.

The ENCOVI 2006 integrates information from 13,693 households, with a dataset for 68,739 individuals. This sample represents 0.53 percent of Guatemala´s population, fulfilling statistical survey requirements established by the INE. However, due to data rearrangement, the information used for our analysis only covers 13,027 households with a sample of 65,528 individuals, having a 95% percent confidence level and a 2.01 percent non-response rate.

Variables used in the simulation:

Some data are essential for the success of the analysis, especially with regard to project requirements, to assess the use of the services by the families and their eligibility for the CCT Program. Although the information in the survey is arranged by household, detailed and specific analysis allows us to obtain data at the individual level as well, describing personal consumption patterns of each person and their potential as beneficiaries of the program in primary education and health.

Variables selected for the analysis are:

- Consumption Information: In the survey, consumption is based on household information, and does not show individual break-up. For the data for individual consumption, household consumption was divided by the number of individuals in the family (per capita consumption).
- Individual Information: Because of the parameters used by the CCT Program to identify potential beneficiaries for the transfer, it is necessary to include information such as age of the family member to determine if there are children in the family as a criterion for being selected for the program. Additionally, other kinds of information will complete the analysis: sex, if he/she attends a public education institution, the child's present level of education, and usage of health centers and posts.

- Health Information: Variables in this section assess if the individual used the health services during a specific time period (12 months prior to the interview), and the type of institution that provided the service (e. g. hospital, private clinic, health center, dispensary, social security, etc.)

➔ Chapter No. 05 / Section D: Question No. 02
➔ Chapter No. 05 / Section D: Question No. 08

- Education Information: To guarantee the highest degree of specificity, information about education includes two variables: (1) the educational level at which the individual was enrolled, and (2) the kind of institution that provides the service (public or private). This information allowed the researchers to determine the exact number of beneficiaries of public funds.

➔ Chapter No. 06 / Section A: Question No. 01
➔ Chapter No. 06 / Section A: Question No. 02
➔ Chapter No. 06 / Section B: Question No. 06
➔ Chapter No. 06 / Section B: Question No. 09

Finally, to assess whether or not the individual will be considered a beneficiary of the CCT Program, it was assumed that all the household members are beneficiaries if the household is eligible for the conditional transfer.

What were the results after the first round of simulations?

After gathering all the information and sorting households according to their level of per capita consumption, the first analysis consisted in identifying the former condition of the households, with particular attention to the levels of income inequality at the national and sub-national level. It is important to mention that, due to restrictions of representation in the survey, the sub-national level for the analysis was the province (22 provinces in the territory).

With this information, we identified the amount of funds that each family in every province will receive every month (average), the monthly average income of these families before receiving the transfer, and the inequality index for every province before and after the implementation of the CCT Program.

	Monthly Transfer	Previous Income	GINI before	GINI after (1)
National level	US$ 31.05	US$ 115.89	0.5903	0.5309
Alta Verapaz	US$ 30.48	US$ 110.52	0.4044	0.3167
Baja Verapaz	US$ 31.15	US$ 115.69	0.4379	0.3672
Chimaltenango	US$ 30.62	US$ 111.67	0.4739	0.3943
Chiquimula	US$ 31.15	US$ 098.53	0.6645	0.6004
El Progreso	US$ 30.30	US$ 094.47	0.6237	0.5535
Escuintla	US$ 31.01	US$ 086.62	0.5551	0.4667
Guatemala	US$ 30.26	US$ 127.83	0.7741	0.7514
Huehuetenango	US$ 31.50	US$ 128.09	0.6270	0.5639
Izabal	US$ 31.20	US$ 119.10	0.6602	0.6041
Jalapa	US$ 30.40	US$ 109.40	0.6165	0.5522
Jutiapa	US$ 31.57	US$ 115.24	0.6887	0.6351
Petén	US$ 31.25	US$ 139.88	0.7428	0.7075
Quetzaltenango	US$ 31.75	US$ 129.84	0.7192	0.6794
Quiché	US$ 31.95	US$ 119.44	0.3334	0.2367
Retalhuleu	US$ 31.27	US$ 126.14	0.5739	0.5098
Sacatepéquez	US$ 29.76	US$ 126.95	0.6383	0.5919
San Marcos	US$ 32.32	US$ 147.48	0.5415	0.4827
Santa Rosa	US$ 30.90	US$ 091.68	0.5713	0.4775
Sololá	US$ 32.50	US$ 106.37	0.4694	0.3820
Suchitepéquez	US$ 30.07	US$ 117.65	0.6396	0.5847
Totonicapán	US$ 32.22	US$ 129.50	0.4231	0.3384
Zacapa	US$ 30.84	US$ 104.56	0.6760	0.6159

The table above illustrates the potential impact of the implementation of “Mi Familia Progresa” in the 22 provinces in the country, benefiting all those families living in conditions of poverty and with children under 15 years of age who are attending primary school. However, it is important to note that due to differing socio-economic and demographic characteristics, the effects are different in each of the provinces:

- With respect to the percentage of families that will be considered as beneficiaries, the study showed that approximately 41.6 percent of the households would benefit from the education transfer, with provinces like Quiché, where 55.2 percent of the households would receive the transfer, and Guatemala, where it would benefit only 27.2 percent of the families. With reference to the health transfer, about 63.3 percent of households would benefit from the CCT

Program. The provinces where a greater number of households would benefit are Quiché (78.4 percent), Alta Verapaz (76.2 percent), and Totonicapán (74.3 percent). Meanwhile, the provinces where fewer households will receive the benefits are Quetzaltenango (57.4 percent) and Guatemala (44.3 percent).

- Analyzing the amount of funds received by the families, it would, on average, be Q 248.35 per month per household (approximately US$ 31.05), ranging from Q 259.55 per family in Sololá (US$ 32.50) to Q 238.22 per family in Sacatepéquez (US$ 29.76). This transfer would have a major impact on the consumption patterns of the beneficiary families, with an additional 26.8 percent raise in income for regular use (35.80 percent in Escuintla, and 21.92 percent in San Marcos).

In terms of income inequality among provinces: the GINI coefficient was reduced by 0.0594 at the national level due to the implementation of the CCT Program, ranging from a maximum reduction of 0.0967 in the province of Quiché to a minimum reduction of 0.0227 in the province of Guatemala. It is important to mention here that the GINI Coefficient was estimated through Brown´s formula, which is as follows:

$$GINI = \left| 1 - \sum_{k=1}^{n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k) \right|$$

After three years of implementation, the CCT Program has had an impact on the beneficiary families. However, this is still very difficult to quantify, despite having introduced dynamism in the domestic consumption, increased savings rates at around 10 percent of the amount of transfers received every month, and a greater degree of empowerment of women, who are the recipients of the transfers.[23]

To cover the entire population estimated at over 14.7 million in 2011 by the CCT Program would cost the government approximately Q 1,072.45 million (US$ 134.1 million), taking into account only the costs related to the money transferred to the families, registered under Line 419 of the nation´s general budget. But, if we analyze the additional amount of administrative costs related to the leasing of property and other services, we are talking about a budget of Q 1,196.85 million a year (US$ 149.6 million).

It is very important to note that the analysis corresponds only to a policy simulation, because the real functioning of the program implies a level of detail that is beyond the capacity of this analysis, and limited by the availability of information. Nevertheless, this first simulation helps us to estimate the cost associated with the option of extending the coverage of the CCT Program to the entire territory, covering all those households that currently live in poverty or extreme poverty. And, as a direct benefit of the program, we also estimate the reduction in the GINI Coefficient at the national level, which demonstrates the potential of the program to reduce income inequality among people and provinces.

However, this analysis will remain lacking if we do not present an option that could improve the functioning of the program. This is the subject of the next section.

[23] María Helena Lavinas & Miguel Székely (2011). ***"Mi Familia Progresa: Ejercicio de Apreciación Sustantiva".*** Programa de las Naciones Unidas para el Desarrollo – PNUD –: Guatemala.

How to increase the cost-benefit ratio of the CCTs Program?

After analyzing new ways to improve the functioning of the CCT Program, introducing additional criteria such as efficiency in the allocation of funds and prioritizing the accumulation of human capital in poor municipalities, we propose to include variations in the way the initiative could be conducted in order to increase its coverage across the country, using as the foundation some of the recommendations made by the Inter-American Development Bank – IADB.[24] This initiative is based on two important changes in the functioning of the program:

A. Education: define a fixed amount per beneficiary family with at least one child between 6 and 15 years of age, studying at any primary level. Additionally, we suggest an incentive depending on the number of children, rather than per family, based on an increased amount of funds as the child reaches a higher education level. The maximum transfer that a beneficiary family would receive is US$ 37.00 a month.

	Increment	Payment for achievement						
Fixed payment:	US$ 08.80							
1st Grade:	US$ 03.75							
2nd Grade:	US$ 02.55							
3rd Grade:	US$ 02.50							
4th Grade:	US$ 03.80							
5th Grade:	US$ 02.50							
6th Grade:	US$ 02.50							

The previous amount illustrates the scheme of "per-child incentives" suggested by the IADB according to the level of education. The graph shows how the incentive increases with higher levels of education, a situation that motivates children to stay in school and graduate.

According to the statement made by the IADB, the emphasis is on improving the compensatory scheme at the primary education level because it is at this stage that higher returns on human capital formation are seen. This increases the amount of resources transferred, but also introduces savings with the reforms for the health criteria. Increasing the transfer during the first three years of schooling is an incentive to complete these early years of learning, but there is evidence of a substantial increase in the probability of dropouts once they graduate at the third grade. Therefore, the proposed marginal increase for the fourth grade is higher, i.e. Q 100, with a symbolic perception of "gaining" triple digits.

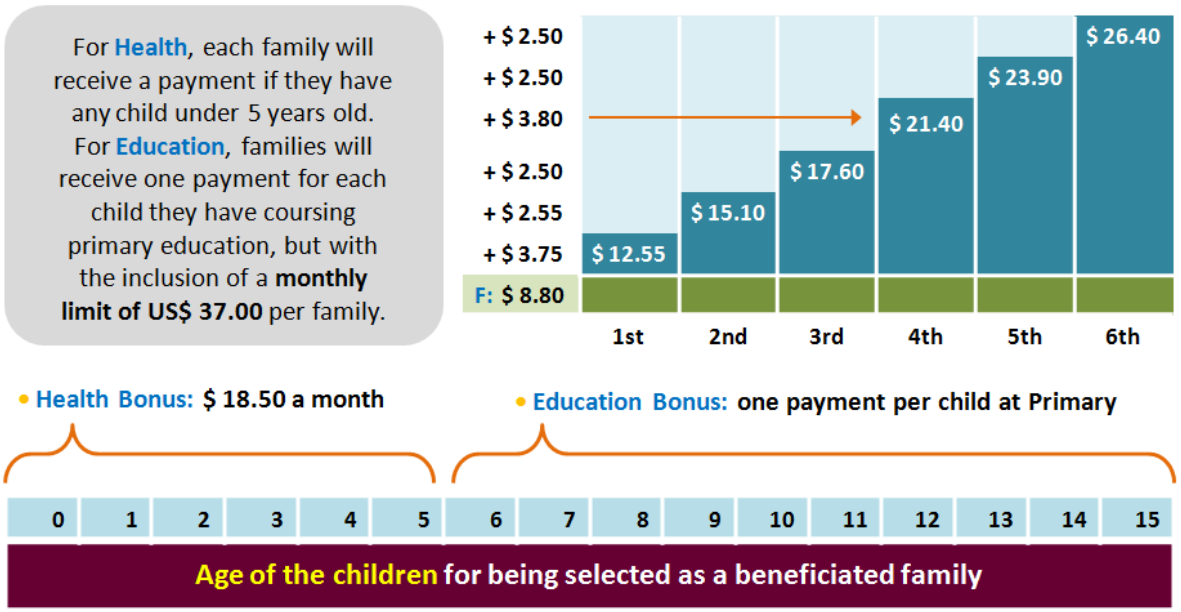
The empirical evidence is clear that the opportunity cost of attending school increases with age and with the achievement of higher education levels. This is the reason why we want to reinforce that a scheme that does not reward the effort of achieving higher levels of primary education will, consequently, miss an opportunity to create incentives for improving school performance.

[24] These recommendations are not included in a formal document, but they were shared by the **IADB** with FUNDESA in a series of workshops and personal meetings during 2010 and 2011. We acknowledge IADB's authorship of the idea, but the implications of the analysis are the responsibility of FUNDESA.

B. Health: rather than considering as beneficiaries all those families with pregnant women and children under 15 years, the IADB proposes to include as beneficiaries only those families with women in their reproductive age and with children under 5 years of age.

This modification is not arbitrary, but instead is based on sound evidence of the importance of focusing on this target group. The highest incidence of infant mortality and morbidity from preventable diseases occurs in the first 5 years of life. For this reason, the proposal aims to concentrate efforts on this segment of people. The IADB proposal seeks to "focus" the program for families with children under 5 years old rather than other age groups.

Summarizing this criterion, the next figure represents how the new scheme of payments for the implementation of the CCT Program in Guatemala can be structured, and its further expansion to the whole country.



It is important to mention that the possibility of making the health transfer payment per child instead of per family has been considered by the same experts of the IADB, but with no evidence to support the eligibility of this criterion. However, we can speculate that this kind of incentive could introduce significant variations in the cost of implementing the CCT Program and in the inequality coefficient. This consideration will be taken into account in the next sections of our analysis.

Finally, after highlighting the changes we suggest in the existing structure of the CCT Program in Guatemala, proceed to explain the assumptions behind the simulation, delineating how we could improve the program´s performance in the payments structure and the age of the beneficiaries, comparing our analysis with the status quo alternative.

What are the scenarios to consider?

After analyzing the suggested changes to improve the functioning of the CCT Program in Guatemala, and the alternatives that the government of Guatemala has in order to expand the program to cover all the municipalities in the country, we now elaborate a little more about the assumptions of the policy simulation, trying to identify the different scenarios that could improve the final results of the program´s implementation.

In this section we will continue analyzing the results derived from the previous policy simulation, but changing the assumptions in the variables that led the simulation: the age of the beneficiaries and the criteria used to transfer the money to beneficiaries with payment per family or per child for both education and health. Our objective is to reflect the variations in the cost and in the reduction of GINI Coefficient, depending on the values set to the variables.

It is important to note that the national discussion about the CCT Program has included different points of view in terms of redefining the amount of money that the families would receive and the duration of the benefits to the families. Nevertheless, we want to demonstrate that, apart from the amount of money that each beneficiary could receive, we can obtain better results by introducing changes only in the two variables mentioned before.

Related to the general discussion presented in this document, we can divide our analysis into essentially two scenarios that will treat differently the way the Government of Guatemala align the age of the beneficiaries. In a previous chapter we presented the CCTs Program's early definition of beneficiary families for both education and health purposes with "overlapping" the benefits in the sense that a family could receive a double transfer if they have children under 15 years of age: one, only because of the age of the child (health), and the other, if the child was attending any level of primary education.

However, we introduced the idea proposed by the IADB where, going beyond the specific modifications in the payment made to the family, the transfer for health will be made at a different stage from the transfer for education. This proposal suggests that the transfer for health will cover the first 5 years of a child's life, and then the transfer for education to cover the next 10 years when the child is in primary education.

Now, instead of one of the two alternatives, we want to consider both, selecting the one with the lower cost for reducing income inequalities among families at national and sub-national levels. Our analysis will evaluate variations in the key variables for the two scenarios, estimating the cost-benefit ratio for selecting the option with a lower cost in reducing income inequalities among families.

- First scenario: families will receive the health transfer if they have children under 15 years of age, and they will also receive the education transfer if any of these children is in primary education. Families will be selected as beneficiaries if they have a daily income below US$ 2.00 per capita (more or less US$ 300 a month, for an average family of 5.02 members; however, it will depend on the size of the family).

- Second scenario: families will receive the health transfer if they have children under 5 years old, and they will receive the education transfer if they report any children in primary education. Families will be selected as beneficiaries if they have a daily income below US$ 2.00 per capita (more or less US$ 300 a month, for an average family of 5.02 members; but, it will depend on the size of the family).

Additionally, in each scenario we will also consider a second variable: whether the transfer to the beneficiaries will be defined per-child or per-family (independent of how many children they have). This consideration will allow us to compare four different alternatives, alternating if the health and/or the education transfer will be defined per family or per child.

Graphically, our analysis will be structured as follows:

Scenario 1: overlapped benefits Health transfer for children under 15 years old				Scenario 2: aligned benefits Health transfer for children under 5 years old			
		Education	Health			Education	Health
Transfer:	(1)	Per-family	Per-family	Transfer:	(5)	Per-family	Per-family
	(2)	Per-family	Per-child		(6)	Per-family	Per-child
	(3)	Per-child	Per-family		(7)	Per-child	Per-family
	(4)	Per-child	Per-child		(8)	Per-child	Per-child

This table demonstrates eight possible alternatives that we are going to compare based on their cost-benefit ratio. This will show us the amount of money necessary to reduce income inequalities (reduction in GINI Coefficient) among households.

What are the results from the sensitivity analysis?

Not always does an increase in the amount of funds allocated for a specific program produce better results. When we are analyzing different ways to implement a program, we have to consider different scenarios and their respective outcomes, instead of only presuming that the best option it the one that is supported by the people or decision-makers.

In this stage of our analysis, we want to focus our attention on those aspects that could contribute to increasing the effectiveness of the program in terms of reducing the cost to bridge income inequalities among people in Guatemala. It is a responsibility to respond to the government's intention to continue with the implementation of the CCT Program after revising its main assumptions and criteria for the selection of beneficiaries.

We next present the results derived from the eight possible alternatives for implementing the CCT Program in the next years, considering different combinations for both the age of the beneficiaries from the health transfer and the criteria for allocating the transfer to the beneficiaries – per child or per family.

1. Education Transfer per Family and Health Transfer per Family:

This alternative is the current scheme implemented by MIFAPRO since the last four years, simulating the effect of expanding the program to the whole country, and using as reference the Guatemalan population as recorded in 2011 (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criterion is that the benefit will be granted per family, "overlapping" the benefits.

After processing the data, the table below shows the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8%	6.5%	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 1:	1.2%	3.4%	6.2%	9.7%	13.8%	18.9%	25.3%	34.2%	46.9%	100%

As result, the GINI Coefficient is reduced from 0.5903 to 0.5309 (total reduction of 0.0594), with a total annual cost for implementing the program of US$ 134.06 million.

2. Education Transfer per Family and Health Transfer per Child:

This alternative simulates the effect of expanding the CCT Program to the whole country, using as reference the Guatemalan population recorded in 2011 (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per family, and the health transfer will be granted per child (US$ 18.50), "overlapping" the benefits because of the age of the beneficiaries.

After processing the data, we present below information about the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4 %	1.8 %	3.8 %	6.5 %	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 2:	1.9 %	4.7 %	8.1 %	12.1%	16.8%	22.3%	29.1%	38.2%	50.2%	100%

As we see the GINI Coefficient is reduced from 0.5903 to 0.4833 (total reduction of 0.1069), with a total annual cost for implementing the program of US$ 257.66 million.

3. Education Transfer per Child and Health Transfer per Family:

This alternative simulates the effect of expanding the CCT Program to the whole country, again using as reference the Guatemalan population as recorded in 2011 (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per child, using as reference the scheme of payments proposed by the IADB (which includes a maximum payment of US$ 37.00 per family, including an incremental benefit according to the grade achieved), and the health transfer will be granted per family, "overlapping" the benefits because of the age of the beneficiaries.

The table below shows the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8 %	6.5 %	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 3:	1.3%	3.5%	6.3 %	9.9 %	14.1%	19.2%	25.7%	34.6%	47.3%	100%

As a result, the GINI Coefficient is reduced from 0.5903 to 0.5261 (total reduction of 0.0641), with a total annual cost for implementing the program of US$ 147.04 million.

4. Education Transfer per Child and Health Transfer per Child:

This alternative simulates the effect of expanding the CCT Program to the whole country, using 2011 data as reference for the Guatemalan population (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per child, using as reference the scheme of payments proposed by the IADB (which includes a maximum payment of US$ 37.00 per family, including an incremental benefit according to the grade achieved), and the health transfer will be granted per child (US$ 18.50), "overlapping" the benefits because of the age of the beneficiaries.

After processing the data, the table below shows the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8%	6.5%	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 4:	1.9%	4.8%	8.2%	12.3%	17.0%	22.6%	29.4%	38.6%	50.5%	100%

As result, the GINI Coefficient is reduced from 0.5903 to 0.4792 (total reduction of 0.1111), with a total annual cost for implementing the program of US$ 270.63 million.

These first four scenarios consider the implementation of the CCT Program for children under the age of 15 years, for both the education and the health transfers. We now analyze the second scenario, with the health transfer focused only on those children under 5 years, replicating the analysis for all the possibilities in terms of who will be the beneficiary of the transfer—the child or the family.

5. Education Transfer per Family and Health Transfer per Family:

This alternative simulates the effect of expanding the program to the whole country, using as reference the Guatemalan population as in 2011 (14.7 million people), distributed over 22 provinces and 333 municipalities. The main criterion is that the benefit will be granted per family, aligning the benefits during the life of each child, i.e. the health transfer will be for children under 5 years of age, and the education transfer will cover children between 6 and 15 years of age studying in any grade of primary education.

After processing the data, the table below provides information about the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8%	6.5%	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 5:	1.0%	3.0%	6.7%	9.0%	13.0%	18.0%	24.2%	33.1%	46.0%	100%

The GINI Coefficient is reduced from 0.5903 to 0.5439 (total reduction of 0.0464), with a total annual cost for implementing the program of US$ 102.98 million.

6. Education Transfer per Family and Health Transfer per Child:

This alternative simulates the effect of expanding the CCT Program to the whole country, using as reference the Guatemalan population as recorded in 2011 (14.7 million people), distributed over 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per family, and the health transfer will be granted per child (US$ 18.50), aligning the benefits during the life of each child, i.e. the health transfer will be for children under 5 years, and the education transfer will cover children between 6 and 15 years studying in any grade of primary education.

The data shown in the table below shows the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8%	6.5%	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 6:	1.2%	3.4%	6.2%	9.6%	13.7%	18.8%	25.1%	34.2%	46.8%	100%

As a result, the GINI Coefficient is reduced from 0.5903 to 0.5321 (total reduction of 0.0581), with a total annual cost for implementing the program of US$ 129.60 million.

7. Education Transfer per Child and Health Transfer per Family:

Basically, this alternative is the proposal presented by the IADB, simulating the effect of expanding the CCT Program to the whole country, using as reference the Guatemalan population in 2011 (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per child (the IADB scheme suggests a maximum payment of US$ 37.00 per family, including an incremental benefit according to the grade achieved), and the health transfer will be granted per family, aligning the benefits during the life of each child—the health transfer will be for children under 5 years of age, and the education transfer will cover children between 6 and 15 years old in any grade of primary education.

The table below presents information on the accumulated consumption registered by each income decile at the national level, showing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4%	1.8%	3.8%	6.5%	10.0%	14.6%	20.5%	29.3%	42.9%	100%
Option 7:	1.1%	3.2%	5.8%	9.2%	13.3%	18.3%	24.6%	33.6%	46.4%	100%

The GINI Coefficient is reduced from 0.5903 to 0.5389 (total reduction of 0.0513), with a total annual cost for implementing the program of US$ 115.96 million.

8. Education Transfer per Child and Health Transfer per Child:

This alternative simulates the effect of expanding the CCT Program to the whole country, using as reference the population of Guatemala in 2011 (14.7 million people), distributed among 22 provinces and 333 municipalities. The main criteria are that the transfer for education will be granted per child, using as reference the scheme of payments proposed by the IADB (which includes

a maximum payment of US$ 37.00 per family, including an incremental benefit according to the grade achieved), and the health transfer will be granted per child (US$ 18.50), aligning the benefits during the life of each child. This means that the health transfer will be for children under 5 years, and the education transfer will cover children between 6 and 15 years studying in any grade of primary education.

After processing the data, the table below shows the accumulated consumption registered by each income decile at the national level, detailing how the implementation of the CCT Program reduces the inequality coefficient.

	1	2	3	4	5	6	7	8	9	10
Status quo:	0.4 %	1.8 %	3.8 %	6.5 %	10.0 %	14.6%	20.5%	29.3%	42.9%	100%
Option 8:	1.3 %	3.5 %	6.3 %	9.9 %	14.0 %	19.2%	25.5%	34.5%	47.2%	100%

As a result, the GINI Coefficient is reduced from 0.5903 to 0.5273 (total reduction of 0.0629), with a total annual cost for implementing the program of US$ 142.58 million.
Therefore, we arrive at eight options that contemplate the two scenarios that we described before. With this group of results, we can now analyze which option can be considered the most efficient for implementing the CCT Program in Guatemala if the government decides that this initiative should be used to reduce poverty in the country.

Our analysis will evaluate the relation between the reduction in the GINI Coefficient and the total annual cost of implementing each one of the alternatives, estimating a ratio that will show the cost of reducing one unit (i.e. 0.01 point) in the GINI Coefficient.

Which alternative should we support?

To recommend a specific course of action, we do not have to focus only on the partial results; instead, we have to consider the relation between the results and the costs. It is not only about which alternative is cheaper or more expensive; we have also to consider the effect on the reduction of the GINI Coefficient as a direct benefit of the CCT Program.

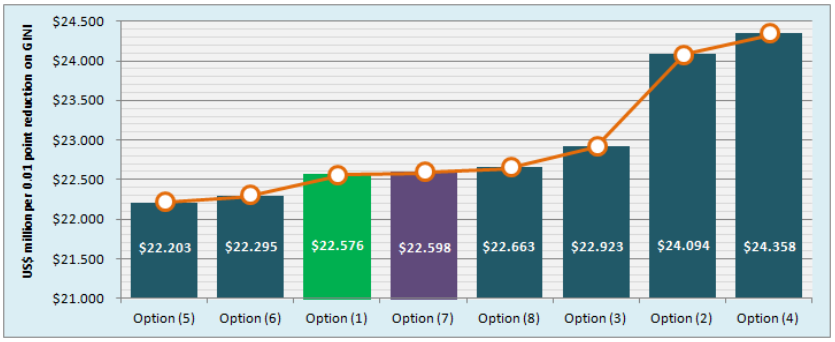
With the results presented in the previous section of this chapter, we compare which alternative we should support in order to recommend how best to implement the CCT Program in Guatemala in order to use the resources as efficiently as possible.

The table below compares the eight options and their respective cost-benefit ratio, indicating the cost (in millions of US dollars) to reduce the GINI Coefficient by 0.01 points.

Scenario 1: overlapped benefits Health transfer for children under 15 years old				Scenario 2: aligned benefits Health transfer for children under 5 years old			
	Reduction on GINI	Cost (millions) US $	Ratio US $		Reduction on GINI	Cost (millions) US$	Ratio US$
(1)	0.0594	134.06	22.576	(5)	0.0464	102.98	22.203
(2)	0.1069	257.65	24.094	(6)	0.0581	129.60	22.295
(3)	0.0641	147.04	22.923	(7)	0.0513	115.96	22.598
(4)	0.1111	270.63	24.358	(8)	0.0629	142.58	22.663

From a more graphic perspective, the figure below illustrates a comparison of the eight options that we have identified, sorting the data from the alternative with the lower cost for reducing 0.01 on the GINI Coefficient, to the higher cost for the same purpose.

Additionally, the graph highlights the MIFAPRO option (green bar) and the IADB proposal (purple bar), which will give us a better idea of the efficiency of these two options as compared with the others.



This graph demonstrates that the most efficient alternative is Option (5), which establishes both the education and the health transfers per family, aligning the benefits during the life of each child. This is the most efficient alternative not because it is the cheaper one, but because this is the option that guarantees a lower cost for every 0.01 point reduction in the GINI Coefficient (US$ 22.203 million).

It is important to emphasize that we have identified other options with a higher reduction on the GINI Coefficient; nevertheless, the higher cost that needs to be incurred in order to achieve this goal makes the options less attractive. It is preferable and more efficient to allocate more founds to Option 5, which will give a higher reduction on the GINI Coefficient with the same amount of money.

Finally, we have to compare the alternatives with MIFAPRO´s current scheme and the proposal made by the IADB. In Chapter 6 of this document we analyzed the results of these two options, leaving the discussion aside. However, we can now see that, even though the IADB proposal seemed cheaper because it introduced the consideration of monetary incentives for the education transfer and the reduction in the age of the beneficiaries for the health transfer, it wasn´t enough when we adjust this number by the potential in the reduction of the GINI Coefficient. Therefore, MIFAPRO's current scheme, in comparison with the IADB proposal, represents a lower cost for every 0.01 point reduction in the GINI Coefficient.

In conclusion, we want to emphasize one more finding. The more efficient alternatives consider transfer per family, both for education and health (Option 5 and Option 1), or for one of the transfers (Option 6 and Option 7). Even so, there is no significant difference in cost with Option (8), which considers the incentives of providing both transfers per child, delineating a maximum for the amount of money the family can receive and the age of the beneficiaries. It is very common that experts do not take into account this alternative because of the pervasive incentives related to the number of children that the families will raise in future; however, the results demonstrate that this option is in fact not that inefficient, although it is not the option we want to support.

Evidence shows that the implementation of the CCT Program in Guatemala has not responded to a technical approach that seeks an optimal cost-benefit ratio for the country. So, even where the CCT Program has had a positive impact, we realize that success cannot be attributed only to the implementation of the program. There are other alternatives that, with a few modifications, could expand coverage, improve the incentives´ structure, and reduce the costs for the country.

Our main conclusion is that the government should introduce modifications in the CCT Program's implementation. The first modification is that the transfers be made during the life of the child, focusing the health transfer on the first 5 years of life, and the education transfer when the child goes to school. The second modification should consider the transfers of payments to the families independent of the number of children they might have.

After a very robust analysis, we can conclude that the CCT Program in Guatemala could achieve better results at a lower cost and with minor modifications in the way it has been implemented over the last four years. But, we must remember that we have identified other, more cost-effective alternatives, which have achieved better results in terms of the number of graduates and in the number of services provided to the municipalities. As a last remark, we invite the government to reconsider the objective of the CCT Program in the country, clearly defining if it will be implemented with the intention of fostering human capital, or with the intention of reducing poverty conditions and income inequalities among the Guatemalan people.

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