

**CASH TRANSFERS, RISK MANAGEMENT, AND ASSET ACCUMULATION:
POLICY EVALUATION FOR RURAL POVERTY REDUCTION IN NICARAGUA**

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ABSTRACT

This project will contribute with rigorous empirical evidence, and extensive capacity building, to the search for development interventions that help protect rural household's asset base, enhance their risk management capacities, and provide them with opportunities to embark on a sustainable pathway out of poverty. It builds on the randomized design of a multi-dimensional pilot program in Nicaragua that randomly assigned three different interventions targeting short-term risk coping and long-term asset accumulation and risk management. It proposes to evaluate the long-term impacts of these original interventions, as well as the impacts of complementary interventions, that will be designed and piloted as part of the proposed project. In parallel with these research activities, the project will contribute to local capacity building through short-term training courses, long-term degree training, and close collaboration between the US and Nicaraguan researchers at different stages of the project. The short-term training courses will be targeted to development practitioners in Nicaragua and focus on operational aspects of program design and implementation, and on qualitative and quantitative tools for impact evaluation. These courses will be instrumental for the dissemination of operational and analytical lessons learned from the evaluation, and for their incorporation in policy design.

NARRATIVE DESCRIPTION

A. MOTIVATION, OBJECTIVES AND MAIN FEATURES OF PROPOSED ACTIVITY

Motivation

Rural households' asset endowments have long been recognized as key factors in conditioning their income strategies, welfare, and quality of life. Households' asset endowments are also increasingly seen as determining households' possible pathways out of poverty. Vice versa, lack of a minimum endowment of assets can cause households to be stuck in long-term poverty traps. Negative shocks can cause households to fall below the minimum asset threshold necessarily to pull themselves out of poverty. As a consequence, escaping from such poverty traps then implies the need of positive asset shocks to facilitate further asset accumulation. In this light, interventions that help lift households above these asset thresholds are key to launch them on a dynamic pathway out of poverty. Yet, relatively little evidence exists on actual interventions that manage to produce such dynamic gains.

Among the interventions aimed at increasing household asset endowments, rigorous impact evaluations are most abundant for conditional cash transfer programs, which typically aim at increasing households' investment in education, health and nutrition. While continued CCT interventions are well placed to provide long-term investments in human capital, it remains unclear whether sustainable human capital gains can be obtained from short-term CCT interventions. Furthermore, CCT programs are not typically designed to address short to medium-term constraints for enhancing the income portfolio options of the poor. Nevertheless, with the size of CCT transfers typically often 10-30 percent of household income, they carry the potential of improving household's physical asset base and short-term income generating potential via relaxing household's liquidity constraints. Moreover, given that CCT programs are typically targeted to women, they might in particular facilitate asset accumulation by those household members that otherwise have the least control over household assets. Finally, by providing communities with new

resources and encouraging group formation to facilitate the dissemination and monitoring of program objectives, they can potentially contribute to social capital formation. Yet, little evidence exists on the impact of CCT programs on physical and social capital accumulation of beneficiary households and of women within those households.

A recently completed pilot program by the Ministerio de la Familia (MIFAMILIA) in Nicaragua offers a unique opportunity to analyze these issues. The Ministry piloted an innovative program that combines a traditional CCT (aimed at improving health, education, and nutrition) with additional interventions aimed at increasing the asset base and risk management capacity of rural poor households exposed to weather risk (droughts). Drought is a recurring phenomenon in Nicaragua, affecting many poor communities in the North and Pacific regions whose livelihoods mainly depend on rain-fed agriculture, in particular cultivation of subsistence crops (corn, and beans). The pilot program consisted of a relatively short-term intervention (one year) targeted at around 3000 households that had experienced a severe drought shock in the preceding year, and ended in December 2006. The program was targeted at the women in the household, who are the recipients of the cash transfers, and who were also the main participants in the different components of the program. The pilot objectives and components are described in box 1.

In order to allow for a rigorous impact evaluation, a two-stage randomized design was used. First, a group of random treatment and control communities was selected from all the communities in the 6 intervention municipalities. Then, within the treatment communities, eligible households were randomly allocated to one of three treatment groups through a lottery that was organized in each community and in the presence of women from all the eligible households.¹

Initial findings of an ongoing short-term evaluation of the pilot, based on qualitative and quantitative data collected during the pilot's implementation, confirm the immediate impacts of the program in protecting

¹ The randomization and impact evaluation design is described in detail in Macours and Vakis (2005).

household's investment in human capital, and in initiating new income generating activities. In addition, the evaluation activities also explore impacts on early childhood development (ECD) outcomes, a research area that is key to understand long-term asset accumulation and poverty dynamics and that has not yet received much attention in the evaluation of other CCT programs. Finally, the initial results indicate evidence of short-term increases in physical and social capital (e.g. increases in beneficiary households' investments in livestock and non-agricultural productive assets, and improved social relationships in the beneficiary communities).²

Box 1: Original pilot objectives and components

Objectives

Short-run safety net objective: reduce the impact of aggregate shocks on human and physical capital investments by decreasing the need for ex-post, adverse coping mechanisms (such as asset sale, children dropping out of school, temporary nutrition deficiencies in early childhood/pregnancies) through cash transfers; and

Long run upward mobility and poverty reduction objective: enhance households' asset base and income diversification capacity and reduce poverty by strengthening households' ex-ante risk management strategies that aim at improving human and physical capital accumulation, thus reducing short and long-run vulnerabilities to shocks (e.g. exposure to drought).

Pilot components

A unique strength of the pilot is its experimental design, which allows a rigorous impact evaluation of the various components of the program (also see Appendix 1). Specifically, the pilot uses 3 different "packages" in order to evaluate and compare the effectiveness of each to reach the stated objectives above. Specifically, the beneficiaries were randomly divided in 3 groups:

(i) Traditional CCT. All selected beneficiaries received the benefits of the traditional CCT, conditional on children's school and health service attendance during a one year time period. This provides the possibility to evaluate impact of the CCT in a region which, in addition to high prevalence of poverty also is prone to high weather risks (droughts). It also serves as an anchor in order to evaluate the additional benefit on various outcomes of the other two interventions discussed below.

(ii) Training. In addition to the traditional CCT, one third of the beneficiary households received a "scholarship" that allowed one of the household members (preferably a member between 15-25) to choose among a number of technical training courses aimed at providing them with new skills for income diversification. In addition to covering the costs of the training, the program also compensates the participants for lost wages while in training (up to 6 months).

(iii) Business grant. Another third of the beneficiaries received, in addition to the traditional CCT, a business grant aimed at productive investments in livestock or non-agricultural activities with the goal of income diversification. This grant was conditional on the household developing a household development plan that outlined the objectives and proposed action that would allow the household to expand their income generation options.

² Aguilera et al., (2006).

Objectives of proposed activity

Based on the above, the objectives of the proposal are:

- 1) **Evaluate** whether **the long-term impact** objectives of the pilot program to increase the asset base and facilitate income diversification of beneficiary households were met. In particular, the research will evaluate to what extent the program was successful at increasing households' human, physical and social capital in a sustainable fashion. In order to shed light on the underlying mechanisms and processes of asset accumulation, emphasis will be placed on: (a) households' investments in human capital after the end of the program (in particular, education, health, nutrition, and early childhood development); (b) changes in households' physical and social assets; and (c) changes in household income diversification, and in particular participation in livestock and non-agricultural activities;
- 2) **Analyze changes in households' returns to such activities** and investigate to what extent these returns depend on households' interaction and participation with regional input and output markets (including access to complementary capital), and on local-level collaboration (or competition) between community members to increase access to regional markets;
- 3) **Identify**, based on the above, **weaknesses in the pilot's design and/or implementation, pilot new complementary interventions** to address them, and **evaluate** these complementary interventions. Special attention will be given to interventions that enhance the operation of, and/or access to, relevant input and output markets.
- 4) **Enhance local analytical and operational capacity** through short-term training courses on program design, pilot implementation, and impact evaluation, and long term degree training and research collaboration to augment analytical and impact evaluation skills.

Main features of proposed activity – Research components

A unique strength of the original pilot is its experimental design, which allows a rigorous impact evaluation of the various components of the program as well as any new components that will be piloted as part of this proposal. Building on the original design, the proposed research consists of the following components:

1. **Q-squared evaluation to identify and design complementary pilot interventions.** The objective of this component is to use the results of the initial impact evaluation, complemented with a qualitative assessment of medium-term impacts, to identify various types of complementary activities that might be useful in order to further enhance households' long-term risk management capacity and asset accumulation. This component would then design a complementary pilot project that corresponds to these findings. Possible avenues for such complementary interventions (based on initial findings) are:
 - a. Micro-credit schemes that would increase access to capital facilitating further investments in lumpy assets, and sustainable asset accumulation;
 - b. Programs with additional and more targeted training in skills for small-scale business development. Such programs could be targeted at improving information about, and access to, opportunities in input and output markets that go beyond the borders of the communities and municipalities, allowing households to increase the return to their assets;
 - c. Programs targeted at rural empirical middle school education, such as the program being piloted by USAID and Padre Favretto (a rural development NGO) in the region of study;
 - d. Programs targeted at improving early childhood development through improvements of parent's knowledge of, and investment in, preventive health care, nutritional needs or child stimulus.

2. **Implementation and evaluation of the complementary pilot intervention.** This component includes the implementation of the pilot program (above), which will be randomly allocated

among all the baseline households of the initial MIFAMILIA pilot (including households in the three original treatment groups and households in the comparison group). This will allow a rigorous evaluation of the complementary impacts for different types of beneficiaries, and also capitalizes on the baseline data, allowing for a difference-in-difference and/or fixed effects estimation.

3. **Long-term evaluation.** The objective of this component is to conduct a quantitative evaluation after 1.5 year after the end of the original pilot program to learn about its medium to long run impacts as well as the impact related to the new complementary pilot interventions discussed above.
 - a. **General impacts.** Have the initial impacts on household's investments in human capital remained even without the program? Are household asset and income portfolios more diverse now than before the implementation of the program? Are households better protected from weather risks as intended in the objectives of the MIFAMILIA pilot?
 - b. **Compare between program components.** What intervention is the most effective to reduce the long-term vulnerability to shocks on households' consumption and human capital outcomes (health, education, and early childhood cognitive development) and households' asset accumulation? Can temporary conditional transfer programs strengthen poor households' ex-ante risk management capacity?
 - c. **Comparisons with existing programs.** An attempt will be made to compare outcomes with those from the traditional CCT currently in place in Nicaragua and generalize with similar programs elsewhere.
 - d. **Evaluation of new pilot components.** What are the impacts of complementary interventions for different types of beneficiary and non-beneficiary households? To what extent are the impacts of these new components indeed complementary to the previous interventions?

Main features of proposed activity - Training and capacity building components

In parallel, and building on these different research activities, the project aims at enhancing training and capacity building through:

- 1. Collaboration in all the different phases with Nicaraguan researchers.** US and Nicaragua researchers will collaborate in all the different aspects of the design, implementation management, analysis and outreach of the findings. The US researchers are planning to travel to Nicaragua on a regular basis and spend significant amounts of time in the country to facilitate joint research with researchers of CIERUNIC, CIASES and Nitlapan.³ A specific objective of this joint work will be to contribute to capacity building in quantitative analysis and impact evaluation, particularly for the junior researchers. As such the collaboration aims at further enhancing the existing research potential, and is expected to culminate in a number of joint dissemination products and research publications.
- 2. Active involvement of Nicaraguan and US students**
 - a. At the beginning of the project, 3 Nicaraguan students will be identified by the Nicaraguan researchers from CIASES and Nitlapan based on their thematic interest as well as their analytical and quantitative skills. Nitlapan has established a 3-year mentoring program that students participate in between their BA and MA that incorporates those students in the different analytical and operational activities of Nitlapan. Following the model of this existing mentoring program, students will be engaged for 3 years in the different stages of the project, before completing a master thesis in the 4th year that will focus on one of the themes of the proposed project.

³ These efforts will build on a history of collaboration between the US researchers and CIERUNIC, including intensive day-to-day collaboration for the different stages of the qualitative and quantitative evaluation of the MIFAMILIA pilot during three months of field work in 2006, as well as for shorter periods and more long-distance collaboration since the inception of the pilot in the fall of 2004; it also builds on collaboration between US researchers and CIASES for Q-squared analytical work on poverty dynamics in Nicaragua (see further info on researchers' qualification and past collaboration).

- b. On the US side, 2 Master students from Johns Hopkins University-SAIS will contribute to the analytical work for both the qualitative and the quantitative evaluations. These students will be selected from the pool of incoming master students based on their interest in impact evaluations, and preference will be given to developing country nationals.⁴ They will spend the summer between their first and second year in Nicaragua, to contribute to the different aspects of the proposed project, and to facilitate mutual learning. It is expected that they will rely on their involvement in the project for the satisfaction of the different degree requirements.
 - c. The proposed project will also contribute to the completion of the PhD requirements of Ximena del Carpio, PhD student at University of Southern California, who is part of this proposal, and has been involved in the evaluation of the original MIFAMILIA pilot since Fall 2005.
 - d. Finally, the project will look for synergies with the research of Patrick Premand (PhD candidate at University of Oxford) on risk and vulnerability in Nicaragua (joint work with Renos Vakis), who will also contribute to the short-term training courses.
3. **Short-term training courses.** A series of training activities will be organized in order to enhance the analytical capacity of Nicaraguan technical staff of government and academic organizations and civil society. The two themes are:
 - a. **Impact evaluation** for staff and students of Nicaraguan research institutions, ministries and civil society. The objective of these training courses would be to familiarize participants with the different methods for conducting qualitative and quantitative impact evaluations. The training course would build on the experience of the pilot to demonstrate the advantages of randomized designs and share lessons learned from the evaluation of the MIFAMILIA programs. The courses would be co-taught by the Nicaraguan and US

⁴ 30% of the student body at SAIS are international students, many of them from Latin America.

researchers. All courses will be open for collaborating students and junior researchers, who will be strongly encouraged to participate.

- b. **Program design and implementation**, where operational lessons derived from qualitative and quantitative assessments of the pilot interventions will be discussed with staff of government ministries, NGOs, and other development organizations. Potential topics to be addressed in such a course are⁵: (a) targeting; (b) monitoring (with emphasis on systems that provide systematic and effective information dissemination to beneficiaries and stakeholders at different stages of program implementation); (c) training-of-trainers (e.g. for programs that include interventions aimed at increasing business skills and market linkages of small rural entrepreneurs in a sustainable way).⁶

The curriculum of these courses will be developed by the Nicaraguan and US researchers jointly.

The training and capacity building activities proposed are expected to contribute to the strengthening of local analytical and operational capacity. Moreover, we expect them to improve the quality and interest of impact evaluation practices in the country.

B. PROPOSED RESEARCH METHODOLOGY AND INTELLECTUAL CONTEXT

The methodology of the current proposal builds on the two-staged randomized design of the MIFAMILIA pilot, and the panel dataset that was collected for the short-term evaluation of that pilot. The existing panel data contains rich information on human, business and social capital assets, on income generating activities and consumption patterns. It also includes a separate extensive module on early childhood development with indicators of a large set of cognitive skills (fine and gross motor skills, socio-emotional

⁵ These topics were selected based on the available evidence to date (Aguilera et al., 2006). Topics will be re-evaluated as more qualitative and quantitative evidence becomes available throughout the stages of this project.

⁶ The close linkages of the project with the MIFAMILIA pilot provide a natural entry point for local capacity building

and verbal development, memory, etc) as well as information about parent's care, nutrition, and participation in early childhood development programs and preschool. The panel dataset further contains a gender empowerment module as well as information about women's socio-emotional state. A community module was collected in the second round and provides additional information about the local context.

Design of complementary pilot interventions

The first research activity is the identification and design of complementary interventions to pilot in the program area. The specific choice of these will rely on the findings of both the ongoing short-term quantitative evaluation and a qualitative evaluation and diagnostic work, which is planned to be the first step in this proposal. It will hence draw on the interplay between qualitative and quantitative methods (Q squared), building on the experience of several of the team members with such methods in Nicaragua.

First, in terms of quantitative analysis, the first two rounds of the panel will be used to analyze the choice of activities and asset acquisition by different types of households. This will shed light on the extent to which household outcomes might be conditioned by exogenous factors or constraints such as distance to markets, distance to schools and health centers, availability of credit or information about market opportunities. In addition, given that the program targets weather shocks, an effort is being made to incorporate weather information in the analysis. Second, a qualitative evaluation will build on this evidence to analyze changes in households returns to such activities and investigate to what extent these returns depend on: a) beneficiary's level of education, experience, and business skills; b) household's information about, and participation in, broader input and output markets (i.e. beyond the borders of the communities or municipalities); and c) local-level collaboration (or competition) between community members to increase access to, and information about, such broader markets. The qualitative evaluation will also build on the quantitative evaluation of the short-term impacts on human capital investment, and in particular on the relationship between early childhood development impacts and various aspects of

household behavior and intra-household dynamics.⁷ All of these insights will inform and guide the specific attributes and final design of additional, complementary pilot components.

Impact evaluation methodology

Given the randomized allocation of the interventions, long-term impacts can be measured by collecting a third round of the panel and comparing the means of the 3 different intervention groups with the control group. Moreover, the extensive baseline data allow for a difference-in-difference estimator for outcomes related to human capital (including education, health, anthropometrics and cognitive development), physical capital (including livestock) as well as income diversification and overall poverty outcomes.⁸ These outcomes were also measured during the second round of the panel, which allows analyzing how the three interventions have affected the dynamic changes in asset accumulation and income generating activities. To further understand the different long-term impacts of one-year intervention versus a longer-term CCT, we will compare our findings with the evaluation of the original Nicaraguan CCT, on which the pilot was build (Maluccio and Flores, 2005). Moreover, the impacts of the pilot program on early childhood development will be compared with (non-experimental) impacts of an early childhood stimulus program, PAININ, operated by the same ministry in the regions studied.

In order to allow an equally rigorous evaluation of the complementary interventions that will be piloted as part of this proposal, we will follow the approach taken by Kremer and Miguel (2006) and Duflo, Kremer and Robinson (2006). In their evaluations of interventions to promote de-worming drugs and fertilizer adoption in Kenya, they piloted different interventions in subsequent years, each time randomizing new

⁷ Evidence presented in Macours and Vakis (2007) suggests strong effects of mother's control over cash flows on early childhood cognitive development outcomes, and strong complementary effects between nutrition and stimulus, once a minimum nutritional threshold has been reached.

⁸ These comparisons will benefit from the large sample size of the panel dataset (around 4300 households), which was determined using power calculations that allowed for detecting relatively small differences between the different groups.

interventions among the original treatment and control groups. For our evaluation, the new pilot interventions will be allocated by organizing a participatory lottery within the original treatment and control communities.⁹ As a result, the new intervention(s) will be randomly allocated to a subset of beneficiaries of each of the three types of original interventions (CCT, CCT with training, and CCT with business grant) and original control households.¹⁰ Comparing impacts between the different types of original beneficiaries and non-beneficiaries, will allow analyzing to what extent the impacts of the new pilot program are indeed complementary to the previous interventions. Our proposed approach is unique in the fact that we already piloted three different interventions (randomly allocated) in the first phase, which allows for a richer analysis of possible complementarities and trade-offs, and as such allows for more nuanced recommendations on future program design.

Intellectual context

The long-term evaluation of the original MIFAMILIA pilot, as well as the evaluation of the complementary intervention(s), aims at shedding light on a number of key questions and hypotheses related to households' asset accumulation, risk management, income diversification strategies and gender empowerment:

1. **Can short-term CCT programs lead to sustainable changes in household's human capital investments?** Answering this question is key to understand whether this type of intervention can push households back over the minimum asset threshold needed for dynamic asset accumulation

⁹ Our qualitative evaluation has documented the general level of acceptance and enthusiasm among beneficiaries and local stakeholders for the use of participatory lotteries (in which all the potential beneficiaries from each community were gathered and a lottery with colored balls determined who received which intervention) to determine program selection. Virtually all local stakeholders considered this selection method to be superior to non-transparent beneficiary selection procedures of most other development programs that operated in the region, which helps explain the high level of acceptance.

¹⁰ The number of beneficiaries of the complementary pilot will be determined considering budget considerations, as well as power calculations.

after the occurrence of a shock. As such this question ties in with the growing literature on the effects of adverse shocks on household's investment in human capital.¹¹ Based on the available evidence, it has been argued that coping through reduction of human capital leads to intergenerational transmission of poverty. Therefore social safety nets, including CCTs, that insure households could contribute to long-term poverty alleviation.¹² This could have important implications for new CCT designs, such as, for example, incorporation of insurance elements to protect human capital assets from uninsured risk exposure.¹³ Yet, to our knowledge, there is no evidence of sustainable gains of short-term interventions that directly address these issues, which is what this research aims to contribute.

2. **Can short-term CCT programs lead in particular to permanent improvements of early childhood cognitive development (ECD) outcomes?** While the impact of CCT programs on education of school age children has been widely analyzed in many contexts and settings, little is known about the impact of CCT programs on the cognitive development of pre-school children.¹⁴ Yet understanding such a potential impact seems key as both theory and evidence from developed countries indicate that investments in early childhood development are likely to translate in major gains for individual's long-term welfare.¹⁵ In developing country settings where household's decisions regarding human capital investments are arguably more severely constrained, gains in early childhood development might be an even more important factor in breaking the intergenerational transmission of poverty. Evidence from both developed and developing countries suggests that early-childhood cognitive development is linked to income and nutritional

¹¹ Hoddinot and Kinsey (2001); Handa and King (2003); Carter and Maluccio (2003); Jensen (2000); (Jacoby and Skoufias, 1997); (Thomas et al., 2003) ; (Vakis et al., 2005)

¹² Skoufias (2003); Duryea and Arends-Kuening (2003). Empirical evidence in support of such an intervention can be found in de Janvry et al. (2005) who show that Progresa, a CCT in Mexico, was successful in keeping children in school when their families were affected by both idiosyncratic and covariate shocks.

¹³ de Janvry et al. (2006)

¹⁴ Limited evidence exist from a non-experimental evaluation of Progresa/Oportunidades (Gertler and Fernald, 2004). Paxson and Schady (2007) provide evidence on an un-conditional cash transfer in Ecuador.

¹⁵ Connolly, et al, (1992); Currie and Thomas, (1999); Feinstein, (2003); Robertson and Symons, (2003).

expenditures.¹⁶ Given that CCT programs are an increasingly popular mechanism to improve nutritional and health status of pre-school children in Latin America, it is important to understand to what extent they might help prevent adverse long-term effects of shocks on cognitive development. Moreover it is key to understand whether targeted short-term interventions can contribute to permanent improvements in the early childhood development outcomes, as theory would predict.¹⁷ This project provides an exceptional opportunity to fill these existing knowledge gaps.

3. **Can short-term CCT programs combined with interventions specifically targeting business asset accumulation enhance risk management capacity of households and lead to positive income dynamics?** Lack of a minimum endowment of assets can cause households to be stuck in long-term poverty traps, and negative shocks can cause households to fall below the minimum asset threshold necessarily to pull themselves out of poverty.¹⁸ Indeed, many recent contributions provide empirical evidence on the existence of poverty traps and the possible long-term negative consequences of shocks on households' asset accumulation patterns.¹⁹ This suggests a role for policies designed to lift households above the minimum asset threshold, and to enhance household risk management that can prevent them from falling below. Yet many questions remain about the effectiveness of different types of interventions to achieve such goals. The evaluation of the different interventions of the MIFAMILIA pilot combined with the complementary pilots that are part of this proposal, will help to address these questions in a rigorous and innovative way. In particular it will allow distinguishing between the various

¹⁶ See overview papers by Schady (2006), Barnett (1992) and Currie (2001). In general the literature has emphasized a number of factors affecting ECD outcome including home inputs (Todd and Wolpin, 2003), parent's socio-economic status (Blau (1999) and Taylor et al, 2004), parenting (Paxson and Schady, 2006), income (Halpern et al., 1996) and nutrition (Grantham-McGregor, et al., (1991), (1997), Grantham-McGregor and Ani, (2001), Powell et al. 2004).

¹⁷ Cunha et al. (2005) provide a theoretical framework to show that investment at an early age produces a high return through self-productivity and direct complementarity. Early investment in cognitive and non-cognitive skills lowers the cost of later investment by making learning at later ages more efficient.

¹⁸ Dercon (2004), Carter and Barrett, 2006; Carter, 2006;

¹⁹ Lybbert et al. (2004); Carter et al., (2005); Hoddinott (2006); Barrett et al (2006), among others.

constraints to asset accumulation and income diversification.²⁰ While there exist some evidence suggesting that cash transfer programs can enhance income diversification by relaxing liquidity constraints,²¹ the multi-dimensional design described in his proposal is uniquely suited to shed light on the potential of various types of interventions to help households overcome poverty traps and launch them on pathways out of poverty. While arguably a panel dataset over a much longer time frame would be needed to gauge the ultimate gains of such interventions, this research will focus on the changes in household strategies and asset accumulation in the medium run to help shed light on the underlying mechanisms. Given the high frequency of both covariate and idiosyncratic shocks in the region studied, it will also allow to test whether these interventions were successful in enhancing household's capacity to protect their asset base.

4. **Can interventions targeted at asset accumulation by women contribute to sustainable empowerment and increased gender equity in the household?** Intra-household bargaining models, as well as related empirical evidence, indicate that mother's increased control over cash flows can have important effects on household's investments in human capital, consumption patterns, and income strategies.²² Vice versa, negative shocks can have differential effects along gender lines, and women (or girls) in poor households often bear the largest burden.²³ The available evidence hence would suggest that, in risk-prone environments, interventions targeted at improving the risk-management capacities of women might have a proportionally higher effect on women's welfare. This can be further enhanced by the empowerment effect of such interventions, and shifts in the intra-household bargaining power. Such empowerment gains might be more

²⁰ Theory and empirical (mostly non-experimental) evidence point to various types of constraints such as low capital entry barriers, transaction costs, economies of scale, and risk associated to alternative income strategies with higher average pay-offs (Eswaran and Kotwal, 1986; Banerjee and Newman, 1993; Rosenzweig and Wolpin, 1993; Aghion and Bolton, 1997; Dercon, 1998; Fafchamps, 2003; Rogg 2005).

²¹ Martinez (2004); Gertler, Martinez and Rubio (2005), Ravallion et al. (2001).

²² E.g. Duflo (2003); Quisumbing (2003), Udry and Duflo (2004). Bobonis (2006). Evidence based on baseline data from the MIFAMILIA pilot suggests that mothers' migration income can have strong positive effects on early childhood development outcomes (Macours and Vakis, 2007).

²³ Behrman and Deolalikar, (1990), Rose (1999), Foster (1995); Dercon and Krishnan (2000)

likely for interventions that directly enhance the long-term income generating potential of the women in the households (e.g. vocational training or business grants), compared to cash transfers. Yet, in certain contexts, by shifting household bargaining power they might also lead to increased conflict between spouses. The variation between the different interventions discussed in this proposal offers a unique opportunity to investigate these research questions.

- 5. Can interventions targeted at physical and human asset accumulation by the majority of women in a community also increase social capital?** The literature on crowding out effects of public transfers has emphasized that transfer programs might crowd out private transfers and existing mutual insurance mechanisms.²⁴ Such effects might then appear as deterioration of existing social capital. On the other hand, interventions that are targeted to a large of beneficiaries in a community, might positively affect social capital, in particular when they encourage group formation among beneficiaries to facilitate social learning and to monitor conditionalities. Such effects have not received much attention, but were found to be important in the short-term qualitative assessment of the MIFAMILIA pilot. This raises an important question about the sustainability of, and the returns to, such social capital gains, and on whether they differ across different types of interventions.

C. RELEVANCE FOR THE NATIONAL POLICY DEBATE AND BROADER APPLICABILITY

The research and capacity building activities proposed for this project are highly relevant for the ongoing policy debate in Nicaragua. By providing direct evidence about the effectiveness of different types of interventions, this project will inform the recently inaugurated government team in charge of social policy and rural development and inform the debate among stakeholders tasked with the effort to restructure and

²⁴ Albarran and Attanasio (2003, 2004); Dercon and Krishnan (2003)

redesign existing initiatives. Ministries such as the Family Ministry, Health, Education, Agriculture and Rural Development will benefit from this research almost immediately after its commencement through the planned capacity training activities. The capacity training activities will also provide a natural entry point for engaging in the broader policy debate as well as providing operational knowledge and technical assistance to several of these ministries.

Similarly, the research activities address a number of the policy priorities that have been identified by the new Nicaraguan government (such as reduction of hunger and extreme poverty, malnutrition, gender empowerment, micro-finance) and will shed light on some of the key discussions between the government and the donors (e.g. regarding the effectiveness of CCTs versus direct food aid). As such the proposed research can contribute to both the debate on the policy agenda, and the design of specific interventions. The research proposed will further be particularly valuable for different programs in the Family Ministry such as: (a) the new phase and expansion of the existing CCT program (Red de Proteccion Social), for which changes in the original design are being considered; (b) the new phase of PAININ, an early childhood development pre-school program. The continued relationship and collaboration between the US researchers and MIFAMILIA, since 2004, offers a strong base for a fruitful dialogue on the design of these different programs.

The lessons derived from the research are also expected to have broader implications for policies and programs in other Latin American countries and elsewhere. In particular, the lessons regarding the complementarity of different types of interventions with CCT programs are expected to be of interest in many Latin American countries that have adopted CCT programs (e.g. Mexico, Brazil, Colombia, Honduras) or are considering doing so. Furthermore, given that many countries in the region are regularly affected by natural disasters (droughts, hurricanes, earthquakes, etc), the evidence regarding long-term impacts of short-term CCT interventions will carry particular relevance. For the same reason, evidence on effective mechanisms that can facilitate household's risk management and asset accumulation, can

crucially contribute to the design of appropriate policy responses to pre-empt negative consequences of shocks in Latin America, and elsewhere.

D. STRATEGIC FIT

The research and capacity building activities proposed for this project are strongly complementary of the initiatives and development objectives of USAID, the Millennium Challenge Corporation, as well as the World Bank and other multilateral donors.

Support of USAID objectives and initiatives

The current proposal contributes to the objectives of investing in people and economic growth from the *Foreign Assistance Framework*. In particular, it aims at evaluating various interventions that aim at sustainable investment in human, business and social capital of poor rural households, with the objective of facilitating a pathway out of poverty and contributing to economic growth. As such it also crucially contributes to 2 out of 3 of the *strategic objectives of the USAID's Nicaragua mission*, i.e. investing in people and economic freedom. Specifically our proposal aims at directly contributing to the objective of investing in people, by:

- 1) strengthening social sector government ministries through operational and analytical capacity building, complementing the mission's efforts on better governance;
- 2) evaluating interventions aimed at sustainable increasing participation in, and returns to, basic education; as well as improving health, and in particular, nutrition outcomes; and
- 3) shedding light on the potential impact of related programs that are directly funded by USAID (e.g. Excelencia, a program targeted at increasing quality of education through parents participation; as well as an initiative aimed at nutrition of pre-school children), possibly by considering how they could be included as part of the complementary programs to be evaluated

(e.g. the new pilot middle school program of Padre Favretto). Initial contacts have been made with the USAID mission, to explore such options.

With regard to the objective of economic freedom, our proposal complements USAID efforts to improve food security among the rural poor by diversifying their crops and linking them to markets, by also exploring options for income diversification through livestock and non-agricultural activities and possibly piloting interventions directly targeted at improving market linkages for those activities.

This proposal also reflects several of the *BASIS research priorities*, as it's focus is the evaluation of pilot interventions related to: 1) Asset building for growth and poverty reduction, including human capital accumulation through transfers specifically targeted at women; 2) Leveling the playing field for broadly based agricultural growth through better access to input and output markets; and 3) Understanding the relationships between asset protection and accumulation and risk management.

Relation to MCA

One of the main focuses of the recently approved compact between the Millennium Challenge Corporation and the Government of Nicaragua focuses on increasing rural business productivity, by extending rural business development services that facilitate higher-profit agriculture and related activities to poor farmers. As such, it shows important potential parallels with the business grant intervention of the MIFAMILIA pilot, as well as with the potential complementary interventions. Therefore, lessons learned from the proposed research, are likely to be of particular value for the MCA program that is being developed, and special care will be given to early exchanges of ideas related to program design, and potential for mutual learning.

Relation to World Bank

The World Bank provided both the funding for the MIFMAMILIA pilot, technical assistance to help design the various components, and developed the impact evaluation methodology jointly with

MIFAMILIA and Johns Hopkins University. In addition, the World Bank has managed to secure some funding for the dissemination and data collection activities for the third round. In this sense, this proposal and proposed collaboration with the World Bank will directly benefit existing and future operational, evaluation and dissemination activities. In addition, the project is also in line with 3 of the 4 pillars of Nicaragua's *PRSP strategy*, namely "productive employment generation and rural development", "better protection for vulnerable populations" and "greater and better investment in the human capital of the poor." The research is also highly complementary to the upcoming Nicaragua Poverty Assessment, which is currently being prepared. It will provide direct inputs in the World Bank's new Country Assistance Strategy, which focuses on the relationship between inequality of opportunity and household's social and economic outcomes, creating effective Social Protection systems and improving market access for the poor.

Relation to other donor activity

The proposed research will be highly relevant for IFAD's Program for Economic Development of the Dry Region in Nicaragua, which regional coverage includes the municipalities of the MIFAMILIA pilot program. The IFAD program aims at enabling poor farmers and rural micro-entrepreneurs to participate in the planning and implementation of business and employment plans. It promotes improved access to income-generating activities by: strengthening the capacity of members of the target groups, particularly women and youth, to access labor markets; and increasing the supply of rural financial and non-financial services. As such it shows important parallels with some of the interventions piloted, and might also provide important lessons and synergies for the design of complementary programs. Vice versa, the lessons learned from the proposed research, are likely to be of particular value for the IFAD program.

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ANTICIPATED OUTPUTS

The objective of the proposed research is to contribute with empirical evidence to the rural poverty policy debate in Nicaragua, and by linking to theory and literature, to the broader development policy debates. By piloting and evaluating different pilot interventions, the proposed research is also expected to have a direct development impact on the poor rural households in the region of study.

Dissemination and outreach

The planned research and training will provide insights and build capacity for local Ministries and other development organizations to help reshape their existing programs. It will also improve their operational capacity to include M&E components in future programs, and as such have a long-term pay-off in providing the sustainable foundations for better project and policy design.

Research findings will be disseminated within the community of development professionals in Nicaragua, through workshops, stakeholder meetings and publications. Special efforts will be made for dissemination of the findings in the region studied, in order to facilitate learning by community leaders, local governments, civil society organizations, other programs and donors active in the region. The dissemination will take advantage of a graphical method to represent descriptive statistics, which was explored by Carold Herrera (from CIERUNIC) for the 1998 national household survey.

The dissemination activities will build on existing contacts of both the Nicaraguan and US researchers with several ministries and donor agencies, as well as on the contacts that will be generated through the capacity training component of this pilot, to promote the adoption of recommendations that emerge from the research. Indeed, the short-term training courses included in this proposal provide a powerful

mechanism through which the recommendations from the research can be internalized and adopted by the constituencies.

Academic publications

The proposed research aims at contributing to various literatures as reviewed in the description of the intellectual context of this proposal, with rigorous empirical analysis. We aim to generate a series of academic publications focusing on the medium-long term impact of the MIFAMILIA pilot and on the complementarity between different interventions. The multi-dimensional nature of the policy interventions and of the randomizations, will allow us to shed new light on a number of key questions that we believe will be of wide interest to the profession, and should lead to publications on top-ranked journals. We will also do special efforts to make the results of our analysis accessible to the community of scholars and practitioners working on social policies in Latin America and elsewhere, by presenting at academic conferences and pursuing a Spanish language publication.

Intended audience

The intended audience of the activities are: (i) Nicaraguan ministries and civil society institutions, such as Ministries of Agriculture, MIFAMILIA, Rural Development, Health, Education; civil society organizations working in the rural development, social policy, early childhood development, etc.; (ii) community leaders, local governments, and development practitioners in civil society organizations, and other programs in Nicaraguan's Dry Region; (iii) USAID; (iv) World Bank; (v) Other donors (including MCC - Nicaragua); and (vi) Development and academic institutions in Nicaragua and other Latin American countries; (vii) The wider community of development scholars and practitioners.

BENCHMARKS

Overall goals in the areas of training, policy integration, achievement of USAID objectives and development impact

- 120 practitioners trained in program design and implementation, and policy integration of lessons learned by these practitioners.
- 60 practitioners, researchers and students, trained in impact evaluation methods; and implementation of lessons learned in M&E components of new development initiatives.
- 2 US and 3 Nicaraguan students with completed MA and project-related research completed
- Successful implementation of complementary pilot interventions enhancing household's asset accumulation potential.
- Successful completion of Q-squared evaluation and third round data collection
- Academic publications on research findings
- Dissemination of qualitative and quantitative findings through workshops, and stakeholder meetings, and a final dissemination conference.
- Publication and distribution of dissemination material integrating qualitative and quantitative findings.

Annual goals: 2007-2008

- 40 practitioners trained in program design and implementation, and policy integration of lessons learned by these practitioners.
- 20 practitioners, researchers and students, trained in impact evaluation methods, and implementation of lessons learned in M&E components of new development initiatives
- Successful completion of Q-squared evaluation.
- Dissemination of Q-squared findings through workshops, and stakeholder meetings

- Design of complementary pilot interventions enhancing household's asset accumulation potential.

Annual goals: 2008-2009

- 40 practitioners trained in program design and implementation, and policy integration of lessons learned by these practitioners.
- 20 practitioners, researchers and students trained in impact evaluation methods, and implementation of lessons learned in M&E components of new development initiatives
- Successful implementation of complementary pilot interventions enhancing household's asset accumulation potential.
- Successful completion of third round data collection and initiation of research activities to measure long-term impacts.

Annual goals: 2009-2010

- 40 practitioners trained in program design and implementation, and policy integration of lessons learned by these practitioners.
- 20 practitioners, researchers and students trained in impact evaluation methods, and implementation of lessons learned in M&E components of new development initiatives
- Successful completion of research activities to measure long-term impacts.

Annual goals: 2010-2011

- 2 US and 3 Nicaraguan students with completed MA and project-related research completed
- Academic Publications on research findings
- Publication and distribution of dissemination material integrating qualitative and quantitative findings.
- Dissemination of qualitative and quantitative findings through workshops, and stakeholder meetings, and a final dissemination conference

TIMELINE

Timeline. The proposed timeline of implementing the different phases of this project is as follows:

Phase 1 (Qualitative assessment and design complementary pilot):	Spring-Summer 2007
Phase 2 (Complementary pilot implementation):	Fall 2007-Summer 2008
Phase 3 (Third round data collection):	Summer-Fall 2008
Phase 4 (Medium term evaluation):	Fall 2008-Fall 2010
Phase 5 (Training, capacity building and dissemination):	Spring 2007-Spring 2011

QUALIFICATIONS AND PAST COLLABORATIONS BETWEEN US AND NICARAGUA RESEARCHERS

US Researchers

Karen Macours (PI) is assistant professor of international economics at the School of Advanced International Studies (SAIS) of Johns Hopkins University. Her research focuses on rural development issues in Central America, Eastern Europe, and South Asia, with focus on land and labor markets, property rights and conflict, and quantitative impact evaluations of development programs. Karen has published her research in a number of agricultural and development economics journals, and is currently a core team member of the World Development Report on “Agriculture for Development”. She received her PhD in agricultural and resource economics from the University of California at Berkeley.

Ximena Del Carpio is a Ph.D. candidate in political economy at the University of Southern California and a consultant to the World Bank. Her PhD research focuses on the relationship between conditional cash transfer programs, poverty, and migration. Ximena is also responsible for a Q-squared study on inequality of opportunity and downward mobility in Nicaragua, as part of the Nicaragua Poverty Assessment. She holds a joint MA in public policy and MBA degree from Pepperdine University, and an MA in economics from the University of Southern California.

Renos Vakis is a senior economist at the World Bank’s Social Protection Unit in the Human Development network. His research has focused on risk, vulnerability, transaction costs in rural input and output markets, and quantitative impact evaluations of development programs. Renos’ academic publications include work on the social protection role of CCTs. He is currently co-editing a book on

incorporating risk into poverty analysis. He received his PhD in agricultural and resource economics from the University of California at Berkeley.

Nicaragua Researchers

Vanessa Castro (PI) has more than 30 years of experience in education and research and is a founding member of CIASES. She is an expert in qualitative research methods for impact evaluation and has taught numerous courses on the subject. Her research focuses on education policy, early childhood development, and adult education, areas in which she also has ample operational experience. She has authored several publications on education and qualitative research methods, and is the author of a book on the 1990 elections in Nicaragua. She received a PhD in education from Harvard University, where she also won various academic awards.

María Josefina Vijil Gurdián is a professor at the Universidad Centroamerica in Managua and a founding member of CIASES. She also teaches at the Rafael Landivar university in Guatemala as part of a Central-American master program in education. She has tutored various thesis students in these institutions, as well as in the Universidad Autonoma de Nicaragua. Her research focuses on access and quality to primary education, didactic techniques, teacher's training, and impact evaluation of social programs. She also has ample operational experience in education and regional development policies. She received her PhD in education from the University Catolique de Louvain (UCL-Belgium)

Ligia Ivette Gómez is a professor at the Universidad Centroamerica in Managua and a researcher at Nitlapan. Her research has focused on the causes of rural poverty in Nicaragua, territorial development, and participatory analysis and impact evaluations of rural development and credit programs. She has closely collaborated with the micro-credit division of Nitlapan with studies on new financial products and

diversification of credit activities. She holds a master in Economics and Development from UCA and is finishing her PhD. in Economics at the University of Cordoba in Spain.

Carold Herrera is a researcher and founding member of CIERUNIC. For the last 5 years, she has worked on monitoring and evaluation of various programs at the Family Ministry, including the pilot program discussed in this proposal. She has more than 20 years of experience with data collection, training, quantitative study design, and research dissemination. She holds a BA in sociology and has done graduate training in data analysis at the Universidad Centroamericana in Managua.

Veronica Aguilera is a researcher and founding member of CIERUNIC. She has played a leading role in the planning and implementation of the panel data collection for the MIFAMILIA pilot evaluation, and has also been involved in operational components of the pilot. She is a co-author of the qualitative evaluation report of the MIFAMILIA pilot. Veronica has been part of various studies on agriculture, rural development and social policies. She holds a BA in zoology from the Universidad Centroamericana in Managua.

Miriam Enoe Moncada is a researcher and founding member of CIERUNIC. She has played a leading role in the planning and implementation of the evaluation of early childhood development impacts of the MIFAMILIA pilot, including training of the field personnel. She was also involved with to the qualitative evaluation, and has contributed to operational aspects of the pilot. Enoe has been part of various studies on gender, health and poverty and has done analysis work for the union of agricultural cooperatives. She holds a BA in social work from the Universidad Centroamericana in Managua.

Other

Patrick Premand is PhD candidate at the University of Oxford (UK). His PhD research focuses on risk, poverty and economic mobility in Nicaragua.

History of collaboration between US and Nicaraguan researchers

CIERUNIC (Centro de Investigaciones y Estudios Rurales y Urbanos de Nicaragua) is a young research organization, that capitalizes on the extensive experience of its founding members in data collection and analysis related to qualitative and quantitative impact evaluation, analytical studies based on household surveys, logistical arrangements of field work, and operational experience with the implementation and monitoring of social protection policies.

Researchers from Johns Hopkins University, the World Bank, and CIERUNIC have collaborated since the fall of 2004 in the design of MIFAMILIAS pilot project, the randomization, and data collection of the impact evaluation panel dataset. The qualitative evaluation conducted in 2006 was also a joint effort between the same set of researchers. The history of collaboration between the US researchers and CIERUNIC has included intensive day-to-day collaboration for the different stages of the qualitative and quantitative evaluation during three months of field work in 2006, as well as for shorter periods and more long-distance collaboration since the inception of the program. These past collaborations have demonstrated the complementarity of the skills of the different researchers and the potential for mutual learning. Products of the collaboration include the high-quality panel impact evaluation dataset (with less than 2% attrition between the first and second round), and a joint report with the initial qualitative assessment of the pilot program.

CIASES, (Centro de Investigación y Acción Educativa Social) is an NGO conformed by a group of four women experts in education policy and development interventions and research in the area of education. Some of the main areas on which the organization has focused collectively and individually are early childhood development, adult education and vocational training. The members of the organization are currently involved in various education related projects taking place throughout Nicaragua, mostly in the public sector and in collaboration with bi-laterals (USAID) and multilaterals (World Bank).

Vanessa Castro from CIASES has collaborated with Ximena Del Carpio since November 2006 in the preparation and design of a country-wide qualitative study for the Nicaragua Poverty Assessment. This study combines qualitative and quantitative methods (Q-squared) to enrich the investigation of poverty dynamics in the country and demonstrate how inequality of opportunities can undermine the potential for growth by limiting the poor's productive capacities. The research investigates vulnerability to aggregate and idiosyncratic shocks, coping mechanisms, downward/upward mobility and overall welfare trajectories. In the Voices Study, Vanessa Castro is the specialist in qualitative methods and research and has been responsible for the design of the qualitative approach and instruments, and the training of field personal. The research will lead to a joint research paper, and inputs to various chapters of the poverty assessment. Both researchers will be part of a country-wide dissemination.

Nitlapan is a research, training and policy institution at the Universidad Centroamericana in Managua, that focuses on rural development issues. Nitlapan has piloted and evaluated rural development interventions focusing on micro-credit, livestock, rural-off income diversification and value chains. They work in close collaboration with Fondo Desarrollo Local, a micro-credit agency that is a Nitlapan spin-off. Nitlapan actively involves students in their research and operational activities and also has ample experience in the training of rural development practitioners.

During a summer research visit to Nicaragua in which he conducted fieldwork for his dissertation, Patrick Premand was based at Nitlapan, and interacted with their researchers on a regular basis. Given the overlapping interests and the potential contributions of Nitlapan researchers in the design, implementation, and evaluation of complementary pilot programs, and in the capacity training component of this proposal, we have started to explore possible further avenues for collaboration.