RESEARCH PROPOSAL

An Evaluation of the Impact of CrediAmigo and the Expansion of Access to Financial Services in Brazil

Thursday, November 18, 2004

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Summary of Proposed Study

This proposal outlines the plan to evaluate the impact of delivering credit to micronetreprenuers in the Northeast region of Brazil, the poorest region of the country. The program evaluated is the CrediAmigo (CA) program of Banco do Nordeste, the largest microfinance program in Brazil. In May 2000, the World Bank provided a US$50 million loan to strengthen CrediAmigo’s capacity to grow and become sustainable.

In an effort to carry out the Bank’s loan requirements about an evaluation of the socio-economic impacts of the program, the main objectives of the proposed study are to:

(i) determine the business-level and household-level impact of access to small loans by credit-constrained micro-entrepreneurs;

(ii) learn more about the type of client who joins (and who does not), the market size of microcredit, and how the program’s outreach to the poor can be improved;

(iii) evaluate the targeting of the program among the poor households in the Northeast region of Brazil.

Analytic Approach and Work program

The proposed evaluation design, developed by close collaboration with CA, builds on the planned policy change in the way CA selects its clients. Under the current policy of CA households whose names appear in the SPC Credit Information Registry are not eligible for either a first (new) loan or a renewal of their old loan. Under the new rule for client selection to be adopted by CA, clients with “minor” (specified in the body of the proposal) credit restrictions whose names appear in the SPC are to considered as eligible for a loan. The proposal described herein takes advantage of this planned policy change by developing a randomized design evaluating the impact of the program based on the pool of credit-constrained households directly benefiting from this policy change.

Careful measurement of the economic impact of microfinance programs or institutions is fraught with methodological difficulties, and often studies find contradictory results2. No consensus exists that is supported by hard scientific evidence. The plan put forth here is one of the first randomized control experiments to assess the impact of delivering credit to microentrepreneurs. At the core of the impact evaluation are two surveys: a baseline survey and a follow-up survey of the same entrepreneurs one year later. Specifically, the baseline survey collects information from loan applicants with minor SPC restrictions from 24 regional offices in the northeast of Brazil. The survey is to take place prior to the determination of whether a loan is to be granted. Immediately after the survey, households are randomly assigned into the treatment group (those determined as eligible for a loan under the new policy) and into a control group (those for whom the current requirement of a clean credit history continues to be enforced). Such a randomization ensures that the comparison of the treatment and control groups yields a credible estimate of the program’s impact.

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2 For example Khandker (1998) and Morduch (1999) arrive at different conclusions regarding poverty impacts using the same data for Grameen Bank.
**Budget**

Many of the activities related to the design of the evaluation of the CrediAmigo program have been, and continue to be, supported by the CMU supervision budget of the World Bank loan to BNB. After two years of slow but steady progress, these activities have now reached the critical stage that demands more intensive collaboration on the implementation of the evaluation design and for ensuring the integrity of the evaluation.

The costs of the survey work (approximately US$300,000) are being financed by the World Bank loan to BNB for the CrediAmigo program, provided the Bank continues its engagement in building the capacity of BNB for the impact evaluation of their programs, through close collaboration in the design of the evaluation of CrediAmigo program, the survey work and the analysis of the data.

The proposed project is expected to last about 24 months, beginning in January 2005 and ending by December 2006. The funding requested is for $138,660. Of the total amount, $40,000 is for travel (Bank staff and consultants), $98,660 is for consultant time and research support for data processing and econometric analysis.

**Products**

The outputs of the proposed research include:

(i) Policy Reports and Research Papers

a. An evaluation of the business-level and household-level impact of access to credit.

b. The effect of relaxing restrictions on credit history on CA’s operations (outreach and sustainability) along with the policy implications for the design of microfinance project.

c. An evaluation of the targeting of the program among the poor households in the Northeast region of Brazil.

d. The performance of quasi-experimental methods on the impact evaluation of Microfinance programs

(ii) Other Products

a. Data Set: The generation of a panel data set (baseline and follow-up surveys) with detailed socioeconomic data on poor micro-entrepreneurs in the NE of Brazil.

b. Capacity Building: Many of the intermediate steps needed for the success of the proposed research will also have substantial capacity-building contributions to the collaborating institution. The establishment of the randomized process to select clients with minor negative reports at the leading Credit Information Registries provides the basis for future experimentations aimed at improving the marketing strategy of CrediAmigo. The assessment of the effects of the randomized experiment on CrediAmigo’s operations will necessitate the creation of a monitoring system of financial indicators. Lastly, the project will also help strengthening BNB’s in-house expertise for credit scoring methods and the design and implementation of impact evaluations.

**Audiences**
The primary audiences for this study are two: (i) the Brazilian Federal Government, Banco do Nordeste and CrediAmigo; and (ii) the international community of donors supporting microfinance initiatives throughout the developing world.

The proposed study will be strategically important for the development of an efficient broad based microfinance sector in Brazil. The new government of Brazil has elected poverty reduction and social inclusion as its main mission. It has pledged to achieve major poverty alleviation via growth promoting and inequality-reducing policies, which include, among others, targeted cash transfers (Bolsa Familia), microcredit and land reform programs. These three types of programs are all aimed at lessening current poverty and achieving long-term social inclusion by promoting accumulation of assets and human capital by the poor. Therefore, efforts to evaluate the effectiveness of any one or all of three lines of attack in terms of their cost effectiveness, targeting efficiency, and impact on poverty are particularly important. In this context, an impact evaluation of CrediAmigo is essential in order to validate the government’s efforts in promoting economic development by developing the microenterprise sector, raising household incomes, and thus reducing poverty. The overall objective of the proposed study would be to assess the costs and benefits of CrediAmigo as an instrument in promoting economic development.

In addition, the opportunity to evaluate the impact of a microfinance program through a randomized control experiment and the lessons learned from expanding access to microfinance through relaxing carefully selected credit registry restrictions are of vital interest to governments, donors and other international agencies aiming to alleviate poverty through microcredit initiatives.
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I. INTRODUCTION

A. Background and Motivation

The large amount of micro and small enterprises operating within Brazil suggest that microfinance has the potential to cause significant favorable impacts in the country. For example, in 1994, Brazil’s 4.5 million formal micro and small enterprises accounted for 98 percent of all firms in Brazil, 30 percent of GDP, 44 percent of total employment and more than 60 percent of urban jobs. In addition, there are an estimated 9.4 million informal microenterprises in Brazil, of which 26 percent are in the Northeast region, the poorest of the country.

The efforts of the Brazilian government to date have focused more on fostering the availability of financial services and expanding access to microfinance. A primary example of such efforts is the creation and rapid growth of the CrediAmigo program of the Banco do Nordeste, the largest microfinance program in Brazil. Hardly anything is known, however, on the extent to which access to microfinance is associated with a positive impact on the welfare of the target of these policies, the poor microentrepreneurs. In this proposal, we outline how we can address both of these questions through an evaluation of the economic impact of the CrediAmigo program.

Since the Lula administration came to power, there has been an intense debate about how access to microfinance can be facilitated and on the specific policies that can be adopted to accomplish this task. The two most relevant policies include the new **Provisional Measure** (adopted in June 30, 2003), and the “positive” credit information registry (SCR) announced by the Central bank in June 30th, 2004. The Provisional Measure stipulates that all public and private banks must set aside 2% of their demand deposits for microcredit operations directed towards providing loans to low income individuals and small business owners at an interest rate of 2% per month. The major improvement associated with the adoption of the SCR which replaced the Central Bank’s previous credit registry, the Central de Risco, it that rather than only track negative information on borrowers, the SCR will also gather data on the credit history of reliable customers.

While representing significant improvements over the pre-existing policies, both of these measures do not hold much promise as having a direct impact on the day to day lives of the millions of potential microcredit clients. One year after the adoption of the Provisional Measure, there is a general consensus that its impact has been rather disappointing. Moreover, the SCR is designed to monitor only operations above R$5,000 which implies that typical microcredit clients will not experience the benefits of credit information registry collecting positive information.

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3 The Brazilian Geographic and Statistic Institute IBGE defines micro-enterprises as those with up to 19 employees in industry and up to 9 employees in services and commerce, and a small enterprise as those with up to 99 employees in industry and 49 employees in services and commerce.

4 Banks that do not want to offer microcredit will be required to pass their demand deposits to another bank or credit cooperative.

5 For example, only R$153 million of the R$1.2 billion intended for microfinance have actually been dolled out- a mere 13%. In addition The Banco do Brazil, expected to serve as an example for other banks, has so far only allocated R$18 million to microcredit, a small fraction of the R$320 million legal minimum. The Caixa Economica Federal has only granted R$20 million in small loans, a small percentage of the required R$90 million.

6 In fact, Central Bank staff have acknowledged that middle and upper middle class clients have the greatest advantage, and information on transactions of less than R$5,000 will continue to be superficial. The Central Bank president, Henrique Meirelles, has defended this policy on the basis that the Bank lacks the funds and infrastructure necessary to track transactions under 5,000. Doing so would effectively triple the number of registered borrowers, overloading the new system.
In the context of these recent development and the eagerness of the CrediAmigo program to expand its services in the Northeast of Brazil, the decision has been taken to change the policy used to select its clients. Under the present policy of CA households whose names appear in the SPC Credit Information Registry\(^7\) are not eligible for either a first (new) loan or a renewal of their old loan. Under the new rule for client selection to be adopted by CA, clients with “minor” (specified in the body of the proposal) credit restrictions whose names appear in the SPC may be granted a loan.

The proposal outlined herein takes advantage of this planned policy change by developing a randomized design evaluating the impact of the program based on the pool of households directly benefiting from this policy change. Careful measurement of the economic impact of microfinance programs or institutions is fraught with methodological difficulties, and often studies find contradictory results\(^8\). No consensus exists that is supported by hard scientific evidence. The plan put forth here is one of the first randomized control experiments to assess the impact of delivering credit to credit constrained microentrepreneurs.

Targeting to the poor is a second major issue we address in this study. A separate survey is proposed for the purpose of mapping the survey data to existing data on microentrepreneurs in Brazil. This way CrediAmigo can be better informed about the level of poverty it is reaching. This is an important issue as CrediAmigo is one of the important pillars in the Brazilian government’s fight against poverty.

**B. Objectives of proposed evaluation:**

The main objectives of the proposed evaluation of the CA program are to:

- determine the impact of providing small loans to credit-constrained micro-entrepreneurs;
- improve the design of the CA through the construction of a profile of the typical CrediAmigo client.
- improve the design and performance of the credit scoring system currently in the process of development by CA for assessing the riskiness of its potential clients.

These objectives are to be achieved by close collaboration with CA staff to first develop a thorough understanding of the current operational procedures of CA for selecting clients, and then implementing additional steps or procedures that are essential for the credible evaluation of the program’s impact and designed taking into consideration the constraints imposed by the financial viability and profitability of the CA program.

**C. Description of the CrediAmigo program**

Banco do Nordeste do Brasil (BNB), which is a state-owned development bank created in 1952 to promote the development of the Northeast Region of Brazil. With the support of the World Bank, in 1997 BNB launched a microcredit program called CrediAmigo, aimed at expanding access to credit in the region. In May 2000, the World Bank provided a US$50 million loan to strengthen CrediAmigo’s capacity to grow and become sustainable and to extend a line of credit for on-lending to microenterprises. The project’s objective was to improve the access of micro-enterprises throughout the Northeast Region of Brazil to sustainable, formal financial services. This loan allowed CrediAmigo to live up to its mission statement “to contribute to the development of microenterprises through the offering of financial services

\(^7\) For a brief description of the main Credit Information Registries in Brazil see Appendix A.

\(^8\) For example Khandker (1998) and Morduch (1999) arrive at different conclusions regarding poverty impacts using the same data for Grameen Bank.
and training, in a substantial, opportune and accessible way, strengthening and ensuring new opportunities for employment and income generation in the Region.”

Today CrediAmigo distributes its products through 165 of Banco do Nordeste’s 174 branch network and 56 one-stop sales points. The CrediAmigo program offers loans to established micro-entrepreneurs for the financing of their working capital and fixed asset needs. Loans are collateral-free, but are extended using the solidarity group technique to small groups of three to five borrowers who cross-guarantee each other’s loan. Solidarity loans usually have a three-month duration. First loans are limited to 300 to 1000 Reais (about US$130 – 300), but repeat loans can be up to 4,000 Reais (US$1,700). The program initiated with a 5 percent flat monthly rate, but the interest rate has since decreased to 2.0 percent.9 While interest rates are higher than those charged by Banco do Nordeste on larger loans, they are substantially lower than those charged by informal moneylenders and trade credit providers. Timely repayment is encouraged by offering borrowers a 15 percent discount on interest payments if all of their installments are paid on time. After a borrower has successfully paid back two loans under the solidarity program, the borrower becomes eligible for individual credit, with a loan maturity of up to 6 months. Fixed investment credit is also offered, with a maturity of up to 18 months. Also, as of June 2004, CrediAmigo started offering basic debit accounts to all of its clients.

At the end of 2002, roughly fifty percent of CrediAmigo’s clients were women and forty percent of its clients were 35 years old or under. In terms of education, fifty seven percent had reached the primary school level. As for their economic status, forty one percent were considered poor, earning between US$1-2 per day.

CrediAmigo is among the top microfinance institutions in Latin America in terms of geographical penetration, numbers of clients and depth of outreach. As of July 2004, the program had 150,083 clients with a loan portfolio of R$88.7 millions (US$27.2 millions), making it the largest microfinance institution in Brazil. Its average loan size was only 590 Reais (US$180), confirming the institution’s focus on the really poor.

In terms of portfolio quality and staff productivity, CrediAmigo is also at international best practice levels. Only 4.9% of its loans are overdue, using a strict 30-day portfolio-at-risk measure. Its annualized loan loss rate is also 3.4 percent. As to productivity, on average, loan officers were each handling an average of 260 clients as of December 2003. Profitability is also progressing well, despite the program not benefitting from any direct subsidy.10 The average return on assets has been positive since 1999, reaching 2.7% in December 2003. Administrative costs as percentage of total loans declined from 51.2% in December 1999 to 29% in December 2003.

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9 This rate only applies to loans under 1000 Reals. Clients are also required to pay a few other fees when obtaining a loan.

10 CrediAmigo only benefits from “in-kind” subsidies from Banco do Nordeste, all stemming from its right to use Banco do Nordeste’s network, know how and infrastructure. These “in-kind” subsidies are registered as costs in CrediAmigo’s program.
**D. Literature Review of Impact Evaluations of Microcredit Programs**

Despite a plethora of microfinance projects around the world, and related impact studies, much debate remains as to the benefits to poor participants and the economy from further expansion of microcredit. The studies to date have found mixed results, although typically they have been positive. No study, however, has used an experimental methodology as rigorous as the one proposed here.

Existing studies use different methodologies, broadly categorized as experimental (randomized), quasi-experimental (using matching or reflexive comparison), or non-experimental (using instrumental variables). These studies have produced mixed results, which can possibly be attributed to different true impacts from different programs. However, these disparities may be due to the different methodologies employed and their inherent biases.

In the following section we present highlights of the impact assessments that have been conducted using alternative methodologies. Before doing so, however, we briefly discuss the problems associated with conducting an impact evaluation of microcredit programs.

Two endogeneity problems are particularly poignant for empirical microcredit impact studies: self-selection of clients into the programs, and targeted program placement by the microfinance institutions. These problems make it difficult to conduct non-experimental studies without heroic assumptions.

In most cases, a client joins a credit program because of her quest to improve her personal or household welfare. While this is a wonderful objective, it causes a serious problem for evaluators: identifying the counter-factual for someone with such entrepreneurial spirit. Unfortunately, the typical impact study has not been able to successfully carry out this critical, yet extremely difficult task. Three econometrically strong evaluations that attempt to address this issue find conflicting results regarding the sign of this bias. Pitt and Khandker (1998) and Kaboski and Townsend (2002) both find that the selection bias underestimates impact, whereas Coleman (1999) finds that the selection bias overestimates impact (actually to the point of eliminating all impact).

Of the three types of impact studies, only quasi-experimental and non-experimental have been used to evaluate microfinance. We discuss each of these here.
**Quasi-Experimental Empirical Studies**

Four quasi-experimental academic impact studies stand out in the existing literature. First, Pitt and Khandker (1988) rely on somewhat arbitrary qualification criteria (maximum of 0.5 acres of land) for participating in the Grameen Bank, BRAC or BRDB in Bangladesh. This study finds a 0.3 standard deviation shift (18 taka) in household consumption expenditures for every 100 taka borrowed by a woman, and a 0.2 standard deviation shift for men. The basic strategy of this paper uses a limited information maximum likelihood estimation to compare households with the choice to enter a lending program to households without such a choice. Since program placement is not random, village-level fixed effects are used to avoid problems from community unobservables.

Second, Coleman (1999) draws the most revealing yet disturbing results on this issue: he finds that naïve estimates of impact of a group lending program in Northern Thailand are strong and positive, yet once corrected for self-selection biases the results vanish.

Third, a recent evaluation by Kaboski and Townsend (2002) uses a particularly thorough dataset on communities, households and institutions in Thailand to examine the relative impact of microcredit on different types of institutions. Although no instrumental variable or randomization exists to provide a clean identification, the thorough dataset allows for extensive controls for community and household characteristics. Kaboski and Townsend find a reduction of borrowing from moneylenders after the introduction of microfinance institutions to a village, but no other systematic impacts were observed.

The fourth and most recent evaluation is by Burgess and Pande (2003). This study takes advantage of legislation enacted in 1977 and carried out until 1990 in India that encouraged the opening of rural branches. A regression discontinuity analysis finds that a 1 percent increase in the number of rural branches per capita reduced poverty by 0.42 percent. The legislation caused an overall increase in banking, not just lending, so the mechanism through which this legislation worked is unclear. The study proposed here builds on work such as this and will allow us to understand the path through which such expansions help reduce poverty.

**Non-experimental Studies**

The small-budget quantitative cross-sectional studies have been promoted by the United States Agency for International Development (USAID) through its Assessing the Impact of Microfinance Services (AIMS) project. This project promotes the use of a practitioner-led tool (or package of five tools) to assess impact. The tool has two main components: a quantitative cross-section tool and a qualitative self-assessment tool. The qualitative tools have many merits and can be thought of as market research tools that help managers think proactively about how to improve their services. We intend to incorporate some of those tools into the qualitative component of our plan. The quantitative tool calls for comparing new entrants to a microfinance program to veteran members, and attributing any differences in current assets, consumption or income to program impact. This empirical strategy, however, makes many assumptions about the nature of dropout, program placement, and the timing of the participation decision (Karlan (2001). Little evidence exists to support these assumptions. In fact, evidence exists to the contrary: individuals who drop out tend to be poorer, and tend to have less success with the program. Both of these facts are likely to cause the cross-sectional impact assessment to overestimate the impact of the microcredit program. The study we propose can shed insight into the validity of using cross-sectional impact assessments, and can help suggest alternative designs that build off of the existing benefits of a cross-sectional methodology.
II. EXPERIMENTAL DESIGN AND EMPIRICAL ANALYSIS

A. CrediAmigo’s Client Selection Criteria and Planned Changes

A quick description of CrediAmigo’s current client selection process is essential for understanding the proposed evaluation design. In order for a micro-entrepreneur to be eligible for a loan from CrediAmigo (CA), he/she must meet certain criteria. These include:

(i) owning a microenterprise that operates in the informal economy;
(ii) owning a non-agricultural business (e.g. manufacturing, commerce, services);
(iii) having been in operation for at least 1 year; and
(iv) having a clean record with SPC (a network of Credit Information Registries)

In combination these criteria are aimed at minimizing “type II” errors in the selection process arising from the informational asymmetry that is prevalent in credit markets between borrowers and lender. A type II error occurs when a loan is granted to a borrower who may not or does not repay. However, an unfortunate consequence of these criteria is that they may also increase the chances of committing “type I” errors. Type I errors occur when a potential borrower who would repay is denied a loan. The prevalence of type I errors, in particular, implies that there may be considerable room for expanding access to microfinance through careful and selective changes in the rules used to select loan clients.

This is precisely the risk that CrediAmigo is willing to undertake by deciding to adopt marginal changes in its selection criteria. Traditionally, Brazilian Credit Information Registries (CIR) have focused on keeping default and delinquency lists on borrowers, thus playing the dual role of informing creditors and encouraging defaulters to settle their debts to have their names removed from the list (Pinheiro and Maura, 2003). Indeed, inclusion of one’s name in any of the Credit Information Registry blacklists (SERASA, or SPC) is sufficient to exclude him or her from the credit market. Persons with a marred credit record are often unable to carry out formal credit activities, trapped in a situation of semi-marginality and excluded from a series of financial and economic services.11

The willingness of CrediAmigo to relax some of these restrictions applied to date can provide very valuable information on the creditworthiness and size of the population that is being (perhaps unfairly) excluded from access to microcredit simply due to criteria that are adopted in the credit market with the intention keep out those who are perceived are high risk clients.12

Under the new proposed policy of CrediAmigo individuals with “minor” restrictions are to be considered as potential clients. The date of the adoption of this new policy will depend on the date at which the old monitoring data base has been revised to allow digitization of the additional information on the credit record of loan applicants.13

11 The National Bank for Social and Economic Development (BNDS) estimated in 2002 that between 20% and 30% of its potential microcredit customers were blacklisted in the SPC and SERASA.

12 In fact, credit scoring systems that rely exclusively on negative information, such as that available in the Brazilian Credit Information Registries, is likely to result in higher type I and II errors. Barron and Staten (2003), for example, show through simulations that both type I and II errors increase when only negative information is used. Also, with a scoring system that relies only on negative information there is a lower fraction of applicants who get a loan and a higher default rate, relative to a scoring model using both negative and positive information.

13 CA is actually in the process of adopting a new software for its revised monitoring and evaluation system, that is likely to be in place and working by March 2005. It was agreed that in order to speed up the implementation of the evaluation survey, the old monitoring and evaluation system in the cities where the evaluation is to take place, will
According to the new proposed policy of CrediAmigo, potential clients are distinguished by the number of loans they had previously with CrediAmigo.

A. New Clients (first transaction with CA)
   a. Maximum loan of R$ 100,00
   b. Date of credit restriction: more than one year
   c. Source of credit restriction: cannot be a financial institution
   d. Maximum number of restrictions: 2

B. Returning client (second transaction with CA)
   a. Previous loan paid exactly on time
   b. Maximum loan of R$ 100,00
   c. Date of credit restriction: more than six months
   d. Source of credit restriction: cannot be a financial institution
   e. Maximum number of restrictions: 2

C. Returning client (third or fourth transaction with CA)
   a. Previous loan paid within 5 days of due date
   b. Maximum loan of R$ 200,00
   c. Date of credit restriction: superior to four months
   d. Source of credit restriction: cannot be a financial institution
   e. Maximum number of restrictions: 2

D. Returning client (as of 5th transaction)
   a. Previous loan paid within 15 days of due date
   b. Maximum loan of R$ 300,00
   c. Date of credit restriction: irrelevant
   d. Source of credit restriction: cannot be a financial institution
   e. Maximum number of restrictions: 2

E. Other requirements
   a. This new policy of flexible credit restrictions will only apply to entities with a portfolio of risk assets (carteira de risco) of up to 3,0%
   b. Solidarity groups will have a limited number of members with credit restrictions

<table>
<thead>
<tr>
<th>Size of Solidarity Group</th>
<th>Members with credit restrictions</th>
</tr>
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<tbody>
<tr>
<td>Up to 5 people</td>
<td>1</td>
</tr>
<tr>
<td>6 - 8 people</td>
<td>2</td>
</tr>
<tr>
<td>9 – 10 people</td>
<td>3</td>
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B. The Experimental Design

The proposed evaluation of the CA program builds upon the stated intention of the CA administration to relax some of the SPC restrictions imposed on current and new clients. The evaluation proposal takes advantage of this planned policy change through two key steps. First, selecting the sample of households be revised to include the new information needed for the client selection process. The changes in the old monitoring system can be comfortably implemented by September 2004, so as to allow the evaluation surveys to take place between October 2004 and December 2004.
to be surveyed for the impact evaluation from the pool of loan applicants with one of the minor restrictions detailed above. Second, after the completion of the interview, the sample households (denoted by the indicator variable \( SS = 1 \)) are randomly assigned into two groups: those as eligible for qualifying for a loan \((e = 1)\) or treatment group) and those who are not eligible to qualify for a loan \((e = 0)\) or control group) based on the old policy that an individual whose name appears in the credit registry (cadastro) is not eligible for a loan.

The preceding sequence of steps for selecting the sample of households to be included in the study ensures that all households are interviewed before the randomization takes place, thus minimizing any possible differences in the expectations of treatment and control households about approval of the loan. Also, close collaboration with CrediAmigo officials ensured that this process minimizes interference with the day to day operation of the program.

A valid control group is essential for any evaluation that attempts to attribute observed changes over time to actions of specific programs since, at the operational level, “other unknown and unexplained factors, in addition to the intervention, may also contribute to changes in the project area. In a well-designed and executed evaluation, the control group detects and adjusts for changes that are unrelated to the project, while the intervention group detects changes due to the project. Therefore, changes in the intervention group minus those in the control group should reveal impacts attributable only to the intervention” (Valadez and Bamberger 1994, page 230–1). Without a control group, an evaluation can document changes, but it can never attribute these changes with certainty to a project or program. The evaluation of CrediAmigo is characterized by a design that guarantees “there is only a small known probability that the differences between programme and control areas were due to confounding bias, or to chance” (Habicht, Victora, and Vaughan 1999, page 14).

While there is a variety of methods used to construct control groups summarizing the counterfactual of what the participants would have experienced (on average) had they not participated in the program, the preferred approach is through social experimentation or randomization of individuals/households (or communities) into treatment and control groups. Such a randomization ensures that the selection bias associated with the decision to participate in the program is equalized between treatment (loan granted and control groups which in turn ensures that the comparison of the treatment and control groups yields a credible estimate of the program’s impact.

C. Hypotheses and Tests

The main hypotheses that will be tested can be classified into three core groups: Hypotheses about the impact of the program, its targeting, and the relative performance of alternative impact evaluation methods. In this section we discuss each of these core hypotheses in more detail.

Hypotheses about the impact of CrediAmigo

Microfinance has become one of the most popular development tools to help fight poverty. Yet little research has been conducted with strong methodological underpinnings to evaluate the effectiveness of microfinance projects in alleviating poverty. We plan to measure impact on two levels: business, and household. The outcomes section below will provide further detail on the outcomes we want to include. The process for developing and refining the outcome measures will include extensive discussions with BNB and CrediAmigo in order to capture the full interests of all parties and expected outcomes.

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14 For a more thorough discussion of the various solutions to the evaluation problem see Heckman, LaLonde and Smith (1999), Ravallion (1999), and Baker (2000).
In unequal societies like the Brazilian society, the poor may lack access to credit because they lack the minimum wealth required by banks as collateral. Lack of credit prevent the poor from starting small businesses, educating their children or themselves, buying inputs for farm and non-farm production, smoothing consumption during periods of crisis, and accumulating assets. That is, lack of access to credit markets caused by the lack of wealth prevents the poor from pulling themselves out of poverty, thereby helping to preserve the historical patterns of inequality in the country. In addition to keeping the Brazilian society unequal, missing or imperfect credit markets based on collateral pledging may also have severe macroeconomic implications by hindering productive efficiency.

Microfinance intermediation technology relies on positive assortative matching and peer monitoring to reduce or eliminate the dependence of banks on collateral. This in turn should increase access to credit by the asset poor, and lead them to choose more desirable (socially and privately) occupations. By increasing the cost of reneging and reducing the cost of monitoring borrowers, micro-finance institutions may offer loans to the very poor at lower interest rates than conventional lenders. This in turn may make easier for poor agents living under subsistence to expand small enterprises. This may generate further employment in the informal sector, or even help small enterprises move from the informal into the formal sector.

Alternative theories exist that predict otherwise. For instance, suppose that entrepreneurs given access to credit borrow more than they should. Their return on investment, and perhaps even their expected return on investment, is less than the interest rate on the debt. Perhaps the debt does not get invested in the small enterprise but instead, because money is fungible, gets consumed on household durables. If individuals are forward thinking and “rational” by economic models, then this makes them strictly better off: any purchase of a household durable otherwise not possible implies a welfare improvement. However, expensive debt may in fact make individuals worse off. Tempted by immediate gratification, individuals find themselves burdened with more debt than their income can handle. Theories of hyperbolic discounting suggest that restricting access to cash might improve individual welfare in these cases (D. Laibson, 1997, 1996, R. Thaler, 1990).

In addition to physical or monetary wealth, the literature also suggests that the asset poor may increase their accumulation of human capital as a result of gaining access to credit when asset markets are incomplete or imperfect (see Jacoby and Skoufias {1997}, Becker and Tomes {1986}). That is, under capital market imperfection, low levels of wealth may hinder educational choices. Therefore, beneficiaries of CrediAmigo may improve their credit history and be better able to finance investments in human capital through other sources. Also, if they do accumulate more physical assets, as suggested by other hypotheses here, they may also be better able to finance education by selling their assets.

Specifically the following hypotheses will be tested explicitly:

**Hypothesis 1: Business-level impact:** Improved access to microcredit will contribute to business expansion resulting in more fixed assets, larger inventory, higher revenue, higher employment, lower cost of funds, and higher profitability. By contributing to business expansion, microenterprises may perhaps enter the formal sector (e.g., registration with government authorities).

**Hypothesis 2: Household-level impact:** By increasing the profitability of microenterprises, household income will increase. This in turn will lead to increased expenditures on health and education. The introduction (or expansion) of micro-credit will allow households better opportunities to smooth consumption across time periods. Improved investment in health and education and less volatile consumption flows may affect other indicators of household well-being. Although our sample size is probably too small to allows us to address these issues, we may also investigate the extent to which access to micro-credit impacts on the prevalence of malnutrition, the incidence of respiratory and gastro-intestinal diseases, as well as the incidence of infectious disease.
Hypothesis 3: Empowerment. Most microfinance programs target females. Although this is not the case for CrediAmigo, we still plan to evaluate the impact on gender empowerment for female participants. By providing women, a group with typically less access to formal sector credit, with access to credit, we hypothesize that women in the household will have more decision-making power. By including survey questions in the follow-up survey on the decision-making process in the household, we can measure whether access to credit in fact gave the woman more power within the household, and whether this additional power led to increased investment in education and health care for the children.

Hypothesis 4: Social Capital. Because CrediAmigo offers loans to small groups, there is potential for impacts, both positive and negative, on social and business relationships within the community. On the one hand, by requiring individuals to form groups, the lending process might create a financial link between people that otherwise would not have existed. This link, if successful, might encourage further links, such as buying and selling between each other, lending directly to each other, or providing informal insurance between each other (e.g., tending each other’s business if one person falls sick). These are important contributions to development and poverty alleviation, and if measurable would be important in understanding the full impact of CrediAmigo. On the other hand, if loans go into default, this could destroy relationships and the social networks within a community.

Hypotheses about the Targeting of CrediAmigo

The impact hypotheses outlined above can each be conducted on a subset of the clients. This allows for conditional impact assessment, which can help improve targeting and hence overall social impact. For instance, perhaps household impact is strongest on women with children under the age of five, or on women who have businesses in the home (rather than in a market place), or on women above (or below) a certain educational level. These are but three examples of the types of analyses that we will conduct. With the sample size large enough to conduct such tests on subsets of the data, these analyses can inform CrediAmigo as to what type of clients they should target in the future in order to maximize social welfare.

Hypotheses 5: Introducing (or expanding) microcredit to certain identifiable subsets of potential clients leads to higher (lower) individual impact than introducing (or expanding) to other subsets of clients.

Hypotheses 6: Introducing (or expanding) microcredit to certain identifiable subsets of potential clients leads to higher (lower) household impact than introducing (or expanding) to other subsets of clients.

Hypotheses about the Relative Performance of Alternative Impact Evaluation Methods

The largest methodological problem with conducting an impact evaluation has been the control group strategy (or lack thereof). Microcredit programs seek participants with entrepreneurial spirit, and it is not always simple to create a control group of similarly motivated individuals. Given the rare opportunity of having a control randomized design, this study will also provide important insights into effective impact assessment strategies for the future. Given the plethora of different impact designs, research is needed to inform policymakers on the relative merits of alternative strategies. Using the experimental measurement as the “true” outcome, we can then compare alternative non-experimental (or quasi-experimental) specifications with the same data. This allows us to measure the unobservable selection bias that is often discussed and feared in typical impact studies.

Hypothesis 7: Quasi-experimental estimates of impact of microcredit programs that use “matching methods” may understate (overstate) the true impact of programs (obtained through experimental methods).

Hypothesis 8. Quasi-experimental estimates of impact of microcredit programs that use cross-sectional econometric strategies may underestimate (overstate) the true impact of programs (obtained through experimental methods). Subsequent tests under this hypothesis will attempt to isolate the source of the
bias, such as the attrition bias from omitting dropouts or the timing bias from the non-random decision to join a microcredit program in one year versus another.

Hypothesis 9: The estimated impact using non-experimental methodologies without a control group over (under) estimate impact.

**D. Estimation Strategy**

For a better understanding of the estimation strategy that will be used for the evaluation of CA it is useful to use the linear regression framework that is commonly used by economists in program evaluation. The regression approach to evaluating a microcredit program consists of using the sample generated from the sample selection rule discussed above (SS=1) to estimate a regression of the form,

$$ Y = \alpha + \beta X + \gamma e + \eta $$

where the coefficients $\alpha, \beta, \gamma$, are parameters to be estimated, $Y$ is an outcome or impact indicator that we are interested in for measuring program impact, $X$ is vector of observable individual, household and community characteristics that may affect the measured outcome, $e$ is an indicator variable equal to 1 if the individual/household is randomized as eligible to receive a CA loan (treatment group), and $e=0$ if the individual is classified as not eligible for receiving a CrediAmigo loan (control group), and $\eta$ is a random variable summarizing the influence of all unobservable factors on the outcome indicator $Y$.

In practice, one major problem that arises in the evaluation of the impact of the program is ensuring that the estimate of the parameter $\gamma$ in regression (1) above yields an unbiased estimate of the effect of a CrediAmigo loan on the outcome indicator $Y$.

Estimation of regression equation (1) from a non experimental sample drawn from the population in the area of interest, is likely to yield an estimate of $\gamma$ that is a biased estimate of the impact of the CA program. The main source of bias arises from the Mean Selection Bias (MSB) that describes how the outcome in the pre-program state differs between CA program participants and nonparticipants. It is possible for example, that the mean unobserved ability or business intellect of those who chose to receive a CA loan is higher than the mean unobserved ability or business intellect of those who do not receive a CA loan.

Random assignment of individuals into treatment or control groups ensures that the mean selection bias summarizing differences in the unobservable components of the outcome indicator $Y$ between the two groups is equal to zero (Heckman, 1996; Heckman, LaLonde, and Smith 1999). In turn, this ensures that the comparison of the treatment and control groups yields a credible estimate of the program’s impact.

In brief, the experimental evaluation design provides a simple and clean method of estimating how the availability of CA loans affects the outcome variables of interest. This can be achieved by estimating equation (1) on the full sample of households (treatment and controls). Randomization ensures that the

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15 The quasi-experimental methods such as propensity-score matching and the regression discontinuity design may also be interpreted as alternative methods aiming at equalizing the mean selection bias present in control and treatment groups. In practice the extent to which such quasi-experimental approaches succeed at equalizing the mean selection bias between the two groups is an empirical issue that intend to address in our research proposed herein.
variable $e$ is exogenous (i.e. uncorrelated with $\eta$) and the estimate of parameter $\gamma$ provides the effect of the availability of CA loans or the “intent to treat effect,” (ITT) i.e.

$$E(Y_T \mid X, SS = 1, e = 1) - E(Y_C \mid X, SS = 1, e = 0),$$

(2)

where $E(Y_T \mid X, SS = 1, e = 1)$ is the mean value of the outcome indicator in the treatment group (conditional on $X$ and the sample selection rule denoted by the indicator variable $SS=1$) and $E(Y_C \mid X, SS = 1, e = 0)$ is the corresponding mean in the control or comparison group. The ITT effect is the average of the causal effects of the new policy of allowing individuals with minor restrictions to be eligible for CA loans.

In reality there is a nontrivial probability that not all individuals in the treatment group end-up receiving a loan (treatment) and some of the individuals in the control group end up receiving a loan either from CrediAmigo or from a competing microfinance institution. For example, under the new proposed policy change, individuals classified as eligible for a loan (into the treatment group) may not necessarily end up getting a loan either because they are not approved or because they change their mind and decide they do not want a loan. Also, it is possible that a fraction of the individuals with cadastro restrictions randomized into the control group and classified as not eligible for a loan, decide to pay off their overdue debt so as to remove the restrictions preventing them from getting a loan.16 As discussed in detail in Heckman, (1996), Heckman, Smith, and Taber (1998) and in Heckman, LaLonde, and Smith (1999), in this situation it is possible to identify the average effect of the loan on those who actually receive a loan or “the treatment of the treated effect” (TOT) using treatment assignment as a instrumental variable. This requires that several assumptions be satisfied, the most important being that the random assignment to the treatment or control group affects nontrivially the probability of receiving loan but not the manner in which a loan affects the outcome variable of interest (Heckman, 1997). Specifically, the TOT may be estimated based on the expression:

$$\frac{E(Y_T \mid X, SS = 1, e = 1) - E(Y_C \mid X, SS = 1, e = 0)}{Pr(L = 1 \mid X, SS = 1, e = 1) - Pr(L = 1 \mid X, SS = 1, e = 0)},$$

(3)

where $Pr(L = 1 \mid X, SS = 1, e = 1)$ is the probability of receiving a CA loan among those in the treatment group and $Pr(L = 1 \mid X, SS = 1, e = 0)$ is the probability of receiving a microfinance loan among those in the control group.17 Clearly, the estimation of the TOT is possible only as long as there is a non-zero (hopefully positive) difference in the probabilities of receiving a loan between the treatment and control groups. The random assignment of eligibility for a CA loan must lead to a significant change (hopefully increase) in the probability of getting a CA loan in comparison to the current practice of denying loan eligibility to individuals whose names appear on the SPC cadastro.18 As expression (3) reveals a large

16 In fact this is the current procedure in the client recruitment process of CA. Based on the social security number submitted by each loan applicant, CA staff consult with the SPC credit registry to check whether the applicant’s name appears in the registry. If it does, the CA advises the applicant (confidentially) to pay off the loan so that they can remove his/her name from the registry and become eligible for loan.

17 o, note that our sample size calculations have taken into consideration the possibility that there are likely to be differences in the probability of receiving a loan in the treatment and control groups.

18 It should be noted that, with the baseline survey data, it will not be possible to test reveals whether this assumption is valid. The baseline data are to be collected prior to the application of randomization routine and thus before knowing whether anyone in the treatment or control group ends up getting a loan (either form CA or other competing lending institutions).
difference in the probability of receiving a loan in the treatment and control groups is likely to result in smaller estimated “treatment of the treated effect” relative to the estimated “intent to treat effect.”

**E. The strengths and potential weakness of the proposed evaluation design**

The proposed evaluation is designed to yield reliable estimates on the impact of microcredit on the group of households who are credit constrained and have some minor negative instances in their credit history. The findings of the impact evaluation will be critical for the decision of CrediAmigo to adopt the new client selection policy in the whole of the Northeast region of Brazil.

It is important to note that for the time being CrediAmigo does not intend to publicly announce its new policy of relaxing some of the “cadastro” restrictions. Confidentiality laws prohibit the revealing of the names of the members of solidarity group whose names appear on the cadastro. Given these restrictions the public announcement of the policy change may inhibit rather than facilitate the formation of the solidarity groups that are at the core of the loan granting process.

Another explanation may be found in the uncertainty about the impacts of the CA loans or the potential profitability of the proposed policy change. Up to this point in time there is no guarantee that the granting of loans to clients whose names appear on the “cadastro” will result in the same default rate or the same profitability. In fact, the new clients obtained under this new policy may indeed prove to be higher risk clients as it was implicitly assumed prior to the policy change.

The willingness of CrediAmigo to determine the answers to some of these questions, using experimental methods, suggests that the “reputation risk” associated with not granting loans to some households on the cadastro are outweighed by the potential benefits of finding out the true impact of CA loans on credit constrained households. In the event that the experimental program evaluation shows with sufficient confidence that the new policy has a positive effect on household welfare while not hurting default rates and program profitability, then it is quite conceivable that the policy may be announced publicly at a later date.

One of the potential shortcomings, however, is that the impact evaluation is based on a group of micro-entrepreneurs who may not be representative of the average client of CrediAmigo up to this point in time. The extent to which the findings of the proposed impact evaluation design can be generalized to the average CrediAmigo client depends on how different the average CA client is from the (average) potential client with a minor cadastro restrictions.

In order to shed some light on this question, a small informal survey was administered during the last two weeks of June 2004 (in collaboration CrediAmigo) to a variety of micro-entrepreneurs. The survey had two main objectives. First, obtain information about people’s general level of knowledge concerning the restrição cadastral (i.e. do they know what it is, do they know if they have one, do they know that having one disqualifies them from getting a loan, etc.). Second, collect information on whether people have ever been denied a loan due to a restrição cadastral, and if so, what exactly the situation was (i.e. did they know they had the restrição cadastral when they applied, did they do anything to get rid of it, etc.).

The findings of the informal survey (discussed in detail in Appendix B) served mainly to confirm that the general research design is appropriate for the evaluation of the program’s impact. In particular, the survey confirmed the likelihood of potential differences between the “intent to treat effect” and the “treatment of the treated effect” due to differences in the probability of receiving a loan in the treatment and control groups.

**F. Overall Significance of the Proposed Research**
The proposed study will be strategically important for the development of an efficient broad based microfinance sector in Brazil. The new government of Brazil has elected poverty reduction and social inclusion as its main mission. It has pledged to achieve major poverty alleviation via growth promoting and inequality-reducing policies, which include, among others, targeted cash transfers (Bolsa Familia), microcredit and land reform programs. These three types of programs are all aimed at lessening current poverty and achieving long-term social inclusion by promoting accumulation of assets and human capital by the poor. Therefore, efforts to evaluate the effectiveness of any one or all of three lines of attack in terms of their cost effectiveness, targeting efficiency, and impact on poverty are particularly important. In this context, the proposed impact evaluation and easing of CA’s credit restrictions will both be extremely useful activities. The former will provide crucial information about CrediAmigo’s outreach (targeting) and client base, while the latter could vastly transform the loan-granting process to the benefit of excluded microentrepreneurs.

Specifically, the proposed research will allow us to

(i) determine the business-level and household-level impact of access to small loans by credit-constrained micro-entrepreneurs;

(ii) learn more about the type of client who joins (and who does not), the market size of microcredit, and how the program’s outreach to the poor can be improved;

(iii) evaluate the targeting of the program among the poor households in the Northeast region of Brazil; and

(iv) determine ways in which CrediAmigo could improve the design and performance of its credit scoring system. Given that credit scoring systems are still a relatively unexplored territory among microfinance institutions the findings of the proposed research will be of considerable use in the design of credit scoring systems throughout the world.19

Many of the intermediate steps needed for the success of the proposed research will also have substantial “capacity-building” contributions to the collaborating institution. The establishment of the randomized process to select clients with minor negative reports at the leading Credit Information Registries provides the basis for future experimentations aimed at improving the marketing strategy of CrediAmigo. The assessment of the effects of the randomized experiment on CrediAmigo’s operations will necessitate the creation of a monitoring system of financial indicators. Lastly, the project will also help strengthening BNB’s in-house expertise for credit scoring methods and the design and implementation of impact evaluations.

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19 Recent studies suggest that credit scoring based on information from CIR has a strong potential in microfinance. Information provided by credit bureaus, allows microfinance institutions to quantitative information and may be even apply credit scoring methods that allow them to assess risk better, and thus cut the costs and increase efficiency and profitability. For example, Schreiner (2000) estimates that scoring could save a Colombian microfinance lender about $75,000 per year (or $1 million in present value terms.)
G. Data Requirements

At the core of the impact evaluation are two measurements: a baseline survey conducted before the beginning of the intervention and one follow-up survey, conducted afterward. Schematically, can be summarized in the following manner:

<table>
<thead>
<tr>
<th>Baseline Survey</th>
<th>Follow up Survey</th>
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<tbody>
<tr>
<td>of Treatment and Control Households</td>
<td>of Treatment and Control Households</td>
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</table>

The Advantages of a Baseline Survey

In principle, the experimental design adopted for the impact evaluation does not require a baseline (or pre-program) survey. Following the random assignment of households into intervention or control groups, households could be surveyed for the first time after one or two years or after sufficient time for the program to have a measurable impact has elapsed. However, the possibility of conducting a baseline survey offers a number of advantages that enhance the rigor of the impact evaluation. A baseline survey allows one to determine if the different groups (intervention and control) are comparable at the beginning of the program. In addition, in case there are some pre-program differences between the intervention and the control groups, the availability of a baseline survey allows one to remove these differences from the estimated measure of impact through the use of the double difference estimator. “The lack of information on the pre-project situation also makes it difficult to know the magnitude and direction of change that has occurred in the project and control groups” (Valadez and Bamberger 1994, page 261). The size of the change is a critical factor for any policymaker contemplating the continuation or expansion of a social investment program.

In addition, the baseline survey can be used to assess the distributional impacts of credit. In other words, we can say that credit had a greater impact on people with income < Y1 than it did on people with income < Y0 or that credit had no impact on people with businesses whose monthly sales were < S1, but an impact where sales were < S2. Without the baseline, one is not able to analyze impact on characteristics (such as income) that change. Instead, we will only be able to divide people by age, gender, etc (i.e., things that do not change) and say things like credit had a larger impact on males than females.

Sample Sizes needed to measure impact

We conclude the total baseline sample size should be 4,000 households, 2000 “new or first-time” clients and 2000 “renewing” clients. Based on the number of loan officers, the number of municipalities with clients, the number of active clients, the average loan size, and the portfolio-at-risk it is estimated that 24

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20 In the future, we hope to be able to identify additional funding source for a second follow-up survey.

21 Appendix C at the end of this proposal provides a more detailed description of the assumptions made for the power calculations.
branches (see table below) will be required in order to generate the flow of “new” clients into the study. Given the rather special features of the sample (i.e., loan applicants whose name appears in the *cadastro*) it is estimated that the collection of the survey data on the 4,000 households will last for 5 or 6 months.

The Municipalities in NE Brazil where the baseline survey will take place

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<thead>
<tr>
<th>MUNICIPIO</th>
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<tr>
<td>1. MACEIÓ</td>
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<td>2. ILHÉUS</td>
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<td>3. ITABUNA</td>
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<td>4. FORTALEZA</td>
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<td>5. SOBRAL</td>
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<td>6. LIMOEIRO DO NORTE</td>
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<td>7. JUAZEIRO DO NORTE</td>
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<td>10. IMPERATRIZ</td>
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<td>12. JOÃO PESSOA</td>
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<td>13. CAMPINA GRANDE</td>
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<td>14. PATOS</td>
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<td>15. RECIFE</td>
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<td>16. CARUARU</td>
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<td>17. PETROLINA</td>
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<td>18. GARANHUNS</td>
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<td>19. TERESINA</td>
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<td>20. PARRAÍBA</td>
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<td>21. NATAL</td>
<td>RN</td>
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<td>22. MOSSORÓ</td>
<td>RN</td>
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</table>
Impact Indicators

CrediAmigo has the potential of an impact on a number of areas. The first set of impacts is at the microenterprise level. By participating in CrediAmigo, assets and cash flows tend to increase together with changes in the liability structure. A second set is at the household level, where access to finance would contribute to improving living conditions of household members. Another dimension of potential impact includes building of social capital and strengthening of women’s empowerment.

The impact indicators discussed below provides further detail on the outcomes to be included in the survey. The process for developing and refining the outcome measures will include an extensive workshop with BNB and CrediAmigo in order to capture the full interests of all parties and expected outcomes.

a) Business–level impact: Improved access to microcredit will contribute to business expansion resulting in more fixed assets, larger inventory, higher revenue, higher employment, lower cost of funds, and higher profitability. By contributing to business expansion, microenterprises may perhaps enter the formal sector (e.g., registration with government authorities). Some of the key indicators of impact to be collected by the evaluation surveys include: The value of sales in the last 12 months (or any other more appropriate recall period), the value of input purchases/rentals in last 12 months, the value of microenterprise profits and net worth, the value of durable items owned by the microenterprise, the value of investment in installations or equipment, the value of investment in repairs or construction of installations (e.g. sanitary), whether the microenterprise is physically located in the residence, or at a another fixed location, whether the microenterprise maintains its finances separately from the household finances, whether it maintains record of its costs and receipts, value or incidence of sales and purchases through credit, whether the microenterprise is registered as a formal enterprise, whether the microenterprise is part of an association or a syndicate, if any employee is attended training (over last 12 months), the number of employees in the microenterprise and whether the pays provides health insurance to its employees.

b) Household-level impact: By increasing the profitability of microenterprises, household income will increase. This in turn may lead to increased expenditures on health and education. The introduction (or expansion) of microcredit will allow households better opportunities to smooth consumption across time periods. Improved investment in health and education and less volatile consumption flows may affect other indicators of household well-being, namely the prevalence of malnutrition, the incidence of respiratory and gastro-intestinal diseases, as well as the incidence of infectious disease. It should be noted that the sample size will probably be too small to allows us to address these issues. In any case the list of potential impact indicators includes the value of assets financial and non-financial assets, (separately) such as the value of durable assets, the house and land, value of household income, value of household consumption, value of repairs and construction activities performed on the residence, expenditures related to education and health for adults, expenditures related to children (such as food, education, and health), participation in a health plan, percent of children (by gender) attending school or other courses, and if family members (woman, mother, children) work for pay in any other activities.
c) Empowerment. Most microfinance programs target females. Although this is not the case for CrediAmigo, we still plan to evaluate the impact on gender empowerment for female participants. By providing women, a group with typically less access to formal sector credit, with access to credit, we hypothesize that women in the household will have more decision-making power. By including survey questions in the follow-up survey on the decision-making process in the household, we can measure whether access to credit in fact gave the woman more power within the household, and whether this additional power led to increased investment in education and health care for the children. In addition we can examine whether CA loans are associated with a greater involvement of women in the administration of the microenterprise.

d) Social Capital. Because CrediAmigo offers loans to small groups, there is potential for impacts, both positive and negative, on social and business relationships within the community. On the one hand, by requiring individuals to form groups, the lending process might create a financial link between people that otherwise would not have existed. This link, if successful, might encourage further links, such as buying and selling between each other, lending directly to each other, or providing informal insurance between each other (e.g., tending each other’s business if one person falls sick). These are important contributions to development and poverty alleviation, and if measurable would be important in understanding the full impact of CrediAmigo. On the other hand, if loans go into default, this could destroy relationships and the social networks within a community.

Evaluating the Poverty Outreach (Targeting) of Credit Amigo

A sample survey of the current CrediAmigo clients is essential for constructing a profile of the current CrediAmigo client and for an analysis of the targeting of CA. These two activities are critical if one wants to address who, in the spectrum of poverty, is being serviced by the microfinance organization. CrediAmigo is also interested in conducting a sample survey of the CrediAmigo clients separately from the impact evaluation survey which is applied on a rather special group of people. Even though it is proposed that the survey be very similar to the impact evaluation survey, personnel and resource constraints prohibit the simultaneous collection of the surveys on the two samples.

<table>
<thead>
<tr>
<th>Sample Survey of Current CrediAmigo Clients</th>
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<td>May-June 2005</td>
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A rigorous impact evaluation as we propose can yield valuable information for the proper design of a targeting exercise. By combining the sample survey of current CrediAmigo clients with the Pesquisa de Orçamentos Familiares (POF) 2002-03 (released in July 2004) and the ECINF (March 2005) we can conduct three critical analyses to help improve poverty targeting techniques.

On purpose, many of the questions we are using in the survey come directly from other surveys recently conducted by the Brazilian government. Specifically, the household section will be mapped to the IBGE-Pesquisa de Orçamentos Familiares 2002-03 and to census data. The business section will be mapped to the IBGE-Economia Informal Urbana- 2003. This allows us to map the income/consumption of the CrediAmigo client survey into the national or regional distribution of income and consumption as

22 The research team is currently in the process of determining the sample size that would be required for the evaluation of the program’s targeting.
summarized by the these two larger surveys. The same mapping can also be used to help CrediAmigo and other organizations learn how to improve targeting using simpler data. All of this combined will prove to be an essential part of this study as CrediAmigo is very interested in finding out what level of poverty they are reaching and how to best reach their desired level (if it isn’t already being reached).

Second, we examine which simple demographics best predict impact. By combining the application data with the impact assessment, we can help direct CrediAmigo towards clients that benefit most from their services, and away from clients that are not helped. This is even better than simple poverty targeting, since it allows CrediAmigo not just to target the poor, but also to hone in on clients that are poor and likely to be helped by microcredit services.

Third, the survey instruments, both qualitative and quantitative, can help shed insight into why certain clients did not benefit (perhaps they needed training services, or perhaps the loan size was too small, or too large, or the group size was wrong, etc.), and how the services can be changed in order to help these people. By first using the impact assessment to identify the individuals that are not helped (or made worse off), we can then conduct further interviews with those individuals in order to learn how to improve the CrediAmigo services.
III. ORGANIZATION

A. The Work Program

<table>
<thead>
<tr>
<th>TASK</th>
<th>RESPONSIBLE PARTIES</th>
<th>START DATE</th>
<th>DURATION</th>
<th>PRODUCTS</th>
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<tr>
<td>PRE-PILOT PHASE</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Finalization of the TOR for the Survey Firm</td>
<td>WB &amp; CA Teams</td>
<td>August-October 2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hire Survey Firm</td>
<td>CA Team</td>
<td>October-November 2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Baseline Survey Instrument (includes focus groups and formal testing of survey instrument)</td>
<td>WB</td>
<td>November 2004</td>
<td>1 month</td>
<td>Final Baseline Survey Instrument</td>
</tr>
<tr>
<td>FULL LAUNCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of Baseline Survey</td>
<td>WB &amp; CA Teams</td>
<td>December 2004</td>
<td>5 months</td>
<td>Baseline survey data for impact evaluation</td>
</tr>
<tr>
<td>Data input</td>
<td>Survey Firm</td>
<td>December 2004</td>
<td>6 months</td>
<td>Complete, cleaned baseline dataset</td>
</tr>
<tr>
<td>CA CLIENT PROFILE SURVEY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct CA Client Profile Survey</td>
<td>WB &amp; CA Teams</td>
<td>May 2005</td>
<td>1-2 months</td>
<td>Raw data</td>
</tr>
<tr>
<td>FOLLOW-UP SURVEY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Follow-up Survey Instrument (includes focus groups and formal testing of survey instrument)</td>
<td>WB &amp; CA Teams</td>
<td>November-2005</td>
<td>1 month</td>
<td>Final Follow-up Survey Instrument</td>
</tr>
<tr>
<td>Conduct follow-up survey</td>
<td>WB &amp; CA Teams</td>
<td>January 2006</td>
<td>1-2 months</td>
<td>Raw data</td>
</tr>
<tr>
<td>Data input</td>
<td>Survey Firm</td>
<td>January-2006</td>
<td>2-3 month</td>
<td>Complete, cleaned dataset</td>
</tr>
<tr>
<td>ANALYSIS AND DISSEMINATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial analysis</td>
<td>WB &amp; CA Teams</td>
<td>March 2005</td>
<td>1 month</td>
<td>Initial internal reports</td>
</tr>
<tr>
<td>Internal workshop to discuss results</td>
<td>WB &amp; CA Teams</td>
<td>June 2006</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>Policy reports</td>
<td></td>
<td></td>
<td>3 months</td>
<td>Articles appropriate for dissemination to governments and policymakers</td>
</tr>
<tr>
<td>Academic publications</td>
<td>3 months</td>
<td>Articles appropriate for academic publications and presentation at university seminars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy presentations</td>
<td>?</td>
<td>Presentations in appropriate forums for dissemination of results of study</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Research Outputs

The table below summarizes the main outputs to be produced and disseminated by the project.

<table>
<thead>
<tr>
<th>Product Title</th>
<th>Contents</th>
<th>Delivery Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Methodological Report</td>
<td>• Detailed description of the study methodology</td>
<td>Nov-04</td>
</tr>
<tr>
<td>Report on the Baseline Survey</td>
<td>• An evaluation of the randomization through a detailed comparison of the Treatment and Control groups in the baseline survey</td>
<td>Dec-05</td>
</tr>
<tr>
<td>CrediAmigo Targeting Report</td>
<td>• Who are the clients of CrediAmigo?</td>
<td>Mar-06</td>
</tr>
<tr>
<td></td>
<td>• Where are they in the distribution of income?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What factors may lead to a better target of the program?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How to include the poor without affecting the financial health of the program</td>
<td></td>
</tr>
<tr>
<td>Policy Report on the Impact of Access to Micro Credit</td>
<td>• What are the impacts of more access to micro credit on fixed assets, inventory, revenue, employment, and profitability of micro-businesses?</td>
<td>Sep-06</td>
</tr>
<tr>
<td></td>
<td>• What are the impacts on consumption in the household, household’s investment in health and education, power and decision making in the household for the female participants, household’s opportunities to smooth consumption across time periods?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What is the impact of the program on employment and the formalization of micro-businesses?</td>
<td></td>
</tr>
<tr>
<td>Academic Paper on the Relative Performance of Non-Experimental and Quasi-Experimental methods for estimating micro credit impacts</td>
<td>• Do estimates of impact of a micro credit program from quasi-experimental studies that use “matching” econometric strategies, over or underestimate its impact?</td>
<td>Dec-06</td>
</tr>
<tr>
<td></td>
<td>• What is the source of the bias, such as the attrition bias from omitting dropouts or the timing bias from the non-random decision to join a micro credit program in one year versus another, in a non-experimental design?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In non-experimental methodologies without a control group what is the magnitude and direction of estimation bias?</td>
<td></td>
</tr>
<tr>
<td>Policy paper on the effect of relaxing credit policies on CA’s operations (outreach and sustainability) and policy implications for the design of microfinance projects</td>
<td>• What are the impact on CrediAmigo’s operations of relaxing its credit policies?</td>
<td>Dec-06</td>
</tr>
<tr>
<td></td>
<td>• How do the benefits/costs to CrediAmigo’s operations compare to the benefits/costs to clients?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What types of clients are more/less profitable for microfinance operations?</td>
<td></td>
</tr>
</tbody>
</table>

C. The Research Team

The inter-sectoral research team formed for the evaluation of the CA program is composed of experienced members with highly complementary skills. **The CV’s of all the team members are attached below**
World Bank
Emmanuel Skoufias (Task team leader) Senior Research Economist (LCSPP)
Pedro Olinto, Senior Economist (LCSPP)
Susana Sanchez, Senior Financial Economist. (LCSFF)

Princeton University
Dean Karlan, Assistant Professor of Economics and International Affairs (visiting Yale University during 2004-05). Selected on the basis of his knowledge, expertise in, and experience with innovative experimental evaluations of microfinance and savings programs in a variety countries.

The primary contact in our collaborating institution Banco do Nordeste do Brasil is:
Stélio Gama Lyra Júnior
Superintendente
Banco do Nordeste
Superintendencia de Microfinanças e Projetos Especiais
Av. Paranjana, 5.700 Passaré
60740-000 Fortaleza, Ceará
Tel. (55-85) 299-3069
Fax: (55-85) 299-3585
stelioglj@banconordeste.gov.br
http://www.banconordeste.gov.br

D. Preliminary dissemination
The results of the studies above will be disseminated in Brazil and at the bank via internal program workshops and broader policy seminars in the former, and policy research seminars in the latter.

The internal workshops in Brazil will be to discuss initial results with CA program officials and thereby obtaining feedback from the ground. The broader in country Policy seminars will be aimed Brazilian policy makers and academic alike, and civil society organizations interested in microcredit policies. It is expected that Bank country operations will provide the resources needed for the in country policy seminars.
IV. RESOURCE REQUIREMENTS

Many of the activities related to the design of the evaluation of the CrediAmigo program have been, and continue to be, supported by the CMU supervision budget of the World Bank loan to BNB. After two years of slow but steady progress, these activities have now reached the critical stage that demands more intensive collaboration on the implementation of the evaluation design and for ensuring the integrity of the evaluation. For example, during November 2004 CrediAmigo is incorporating a randomization routine in their client selection and monitoring process. It is also ready to issue a call for proposals for the baseline survey work based on the proposed baseline questionnaire (attached in this proposal). Both of these activities require visits by Bank staff and consultants as well as the continuous presence of a consultant for ensuring the quality and for monitoring the survey work.

The costs of the survey work (approximately US$300,000) are being financed by the World Bank loan to BNB for the CrediAmigo program, provided the Bank continues its engagement in building the capacity of BNB for the impact evaluation of their programs, through close collaboration in the design of the evaluation of CrediAmigo program, the survey work and the analysis of the data.

The proposed project is expected to last about 24 months, beginning in January 2005 and ending by December 2006. The funding requested is for $138,660. Of the total amount, $40,000 is for travel (Bank staff and consultants), $98,660 is for consultant time and research support for data processing and econometric analysis.

The attached worksheet describes the staff and consultant time and travel expenses required for the success of this project along with the funding sources. The detailed worksheet is accompanied by the completed Administrative Summary Form.
REFERENCES CITED


The three main Credit Information Registries (CIR) in Brazil

a) SERASA Centralização dos Servicos Bancarios S/A

Due to its unmatched access to credit data from banks who are its shareholders, SERASA is the largest private credit reporting firm in the developing world and the market leader in Brazil, with annual sales in excess of $100 million. It provides information for more than 300,000 direct and indirect customers and processes over 2.5 million queries per day. Data available from SERASA includes information on about 8.6 million companies legally established in Brazil and 65 million individual consumers, i.e. 56% of the population in the age group of 15 to 64. The agency uses a credit scoring system whereby the probability of default is rated from 1 to 1000—the higher the number, the greater the likelihood of nonpayment. Established in 1968 by Brazil’s domestic banks to enhance information sharing, today SERASA exchanges data with many public banks, such as Banco do Brazil and Caixa Economica Federal. Although it also started to offer positive information since the Real Plan, several of its main products still focus on restrictive data. The database “Credit Bureau”, for example, includes positive information on individuals obtained from and used by credit card, financial, leasing, factoring, and insurance companies as well as other organizations related to individual credit.

b) SPC

Next in importance as a major provider of credit information is the SCPC (SPC), a network of CIRs established at the municipal level and administered by Sao Paulo’s Chamber of Commerce. While the SPC began largely as a file of information on credits at retail establishments, banks are now major contributors and users of this data. The SPC contains approximately 40 million records on about 10 million individuals and provides information to roughly 100,000 clients. Until recently, the data in this registry was almost exclusively from retail merchants in relation to store credits. This is changing, however, and banks now comprise a significant share of the information provided to the SCPC. A consultation runs from R$0.46 to R$0.70. It is the SPC, which carries data on individuals only, that is the most used and best known for default and delinquency lists.

c) Equifax do Brazil

Third in overall popularity and second among private credit reporting firms is Equifax do Brazil. The firm is majority owned by the US credit reporting agency Equifax and contains a database with records on 13 million enterprises. The traditional focus of Equifax is trade credit where it maintains a dominant position in this market segment (25,000 clients and 10% growth per year). But the firm is also interested in challenging SERASA’s dominance in the consumer credit reporting market.
Report for BNB (CrediAmigo) Microcredit Impact Study:
Summary of SPC/SERASA Questionnaires

In accordance with the Terms of Reference, Innovations for Poverty Action conducted a survey in Fortaleza, Brazil regarding SPC/SERASA restrictions, or more generally, cadastro restrictions. The following provides a summary of the findings.

The report proceeds as follows: Section I describes the motivation behind conducting the survey, Section II discusses how the survey was carried out, Section III summarizes the results of those denied credit by CrediAmigo and of those microentrepreneurs that resemble CrediAmigo clients, and Section IV concludes by explaining how this affects the impact evaluation strategy.

I. Motivation

The motivation behind conducting this survey stems from an impending study to evaluate the impact of credit on CrediAmigo clients. In this study, some clients with “acceptable” cadastro restrictions (i.e. restriction is not from failure to pay a loan from a financial institution, but rather from failure to pay a utility bill, etc.) will randomly be given the opportunity to receive credit that, under normal procedures, they would have been denied. This preliminary survey is an attempt to gain a better understanding of who these people are (those that applied for credit even though they had a cadastro restriction). Prior to this survey, we only knew that some individuals were denied a loan or were denied the opportunity to renew a loan due to having a cadastro restriction.23

Two tangible results come from this study:

1. We learn whether these clients are representative of clients in general, and hence how well we can generalize from the impact we observe on these participants to the expected impact on the average CrediAmigo client. More specifically, we wanted to find out whether they were aware that they had a restriction when they applied, whether they knew that CrediAmigo denies credit to people with restrictions, and whether they had done anything with respect to their restriction. We also wanted to find out whether these people were considerably different from normal CrediAmigo clients. This was extremely important as it could alter what the evaluation would tell us: the impact of credit on CrediAmigo clients (or credit constrained clients) vs. the impact of credit on a very specific unique group of clients. Thus, a survey was also given to microentrepreneurs that resemble CrediAmigo clients.

2. We learn whether there are particular circumstances often surrounding the Cadastre survey that suggest particular questions in the baseline survey should be included (e.g., spousal decision-making questions, in the case that a significant number of individuals have bad credit reports due to spousal bad debt, not own-bad debt.)

II. Conducting the Surveys

The survey consisted of 14 questions (such as “do you know how a person gets a cadastro restriction?”, “do you know how one finds out if they have a restriction?”, and “have you ever been denied a loan because you had a restriction?”), and took 10-20 minutes to administer. It was given to two distinct groups of people: 1) people that had applied for a loan with CrediAmigo, but were rejected due to a cadastro restriction; and 2) people that resembled CrediAmigo clients.

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23 For example, results of the “Porta a Porta” project carried out in Serrinha, Fortaleza in 2002 show that roughly 8% of interested potential clients were not able to take a loan and that 15% of current clients were not able to renew their loan because of a cadastro restriction.
Rejected Applicants
During June of 2004, CrediAmigo’s four branches in Fortaleza kept a record of applicants who applied for a loan with CrediAmigo, but were not approved due to cadastro restrictions. The names and addresses of the 55 people identified through this process were given to surveyors, who then attempted to find these people and give them a survey. The surveyors presented themselves to the rejected applicants as university students conducting surveys as part of an academic research project for an American University. At no time, did they reveal their affiliation with CrediAmigo.

Microentrepreneurs Resembling CrediAmigo Clients
The surveyors also conducted surveys with 211 microentrepreneurs that resemble CrediAmigo clients, i.e. people who work in local urban markets or bus terminals, have few employees, have limited access to credit, etc. CrediAmigo credit officers helped to identify such people.

III. Summary of Survey Results
In total, 47 surveys with rejected applicants and 211 surveys with microentrepreneurs that resemble CrediAmigo clients were successfully conducted.

Summary of Surveys of Rejected Applicants
In general, most of the 47 people interviewed had a good understanding of what an SPC/SERASA restriction was, admitted to having a restriction, admitted to being denied credit due to the restriction and were interested in obtaining a loan. However, their knowledge of their restriction and how this affected their applying to CrediAmigo was quite varied. The following tables provide more detailed description of their answers.

The particularly important results come from Table 5 and Table 6. In Table 5, we see that 43% did not know they had a restriction, and we see that in 20% of the cases the rejection was due either to a spouse with a bad mark (in some cases this was an “honest” mistake, in other cases there appears to be some intended deception wherein the “clean” spouse applied for the loan rather than the business owner, but was rejected nonetheless). Table 6 shows that 19% of the individuals claim to have cleared their name already, and 6% (albeit only 3 individuals, so noisily measured) are now clients of CrediAmigo. This 6% does suggest that the evaluation strategy will have to account for clients assigned to the control group clearing their name and wanting credit.

Table 1: Understanding of SPC and SERASA

<table>
<thead>
<tr>
<th>Degree of Understanding</th>
<th>Number</th>
</tr>
</thead>
</table>

24 Due to the fact that some rejected applicants were extremely difficult or impossible to find, CrediAmigo continued to record the names of rejected applicants and pass on their information to the surveyors during the three weeks the surveys were being conducted.

25 Seventeen people on the list were not given the survey due to their refusal to answer or incomplete/hard to find addresses.

26 Determined by the surveyors in response to the question “Do you know what SPC/SERASA restrictions are? And if so, please specify.”
<table>
<thead>
<tr>
<th>Very Good</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>32</td>
</tr>
<tr>
<td>Poor</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 2: Admits to Having Restriction

<table>
<thead>
<tr>
<th>Answer</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>42</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 3: Admits Having Been Denied Credit from CrediAmigo Due to Restriction

<table>
<thead>
<tr>
<th>Answer</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 4: Interested in Getting a Loan

<table>
<thead>
<tr>
<th>Answer</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>44</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 5: Knowledge of Own Restriction and Application Situation
<table>
<thead>
<tr>
<th>Categories</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not know about restriction before applying</td>
<td>20</td>
</tr>
<tr>
<td>Knew about restriction, but didn’t know CA rules</td>
<td>3</td>
</tr>
<tr>
<td>Knew about restriction and CA rules, but tried anyway</td>
<td>10</td>
</tr>
<tr>
<td>Used relative’s name because knew about own restriction and CA rules</td>
<td>5</td>
</tr>
<tr>
<td>Not given loan because spouse had restriction</td>
<td>4</td>
</tr>
<tr>
<td>Other (i.e. denies having restriction)</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

**Table 6: Cleared Name**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleared name</td>
<td>6</td>
</tr>
<tr>
<td>Cleared name and now are clients of CrediAmigo</td>
<td>3</td>
</tr>
<tr>
<td>Have not cleared name</td>
<td>33</td>
</tr>
<tr>
<td>Other (i.e. denied having restriction)</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Summary of Surveys of Microentrepreneurs Resembling CrediAmigo Clients

The results show that roughly 45% of the microentrepreneurs surveyed admitted to ever having a cadastro restriction. Of those that have had a restriction, 20% have applied for a loan in the last 12 months and only 32% of them were rejected (only 2 out of the 6 were rejected due to having a cadastro restriction). Thus, the majority of them paid off their debt, so that they no longer have a restriction.

**Table 7: Restrictions and Applications for Microentrepreneurs Resembling Clients**

<table>
<thead>
<tr>
<th></th>
<th>Has not applied for a loan in last 12 mo</th>
<th>Has applied for a loan in last 12 mo</th>
<th>Total</th>
</tr>
</thead>
</table>
It is also interesting to note that of the 42 people that applied for a loan in the last 12 months, 13 of them applied for a loan with CrediAmigo. Moreover, all but one (who was denied due to a group member having a restriction) ended up being approved and received a loan.

**Table 8: Microentrepreneurs that Applied for a Loan with CrediAmigo**

<table>
<thead>
<tr>
<th></th>
<th>Approved</th>
<th>Rejected</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never had a Restriction</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Has had a Restriction</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

### IV. Conclusion

The conclusions are as follows:

- The majority of clients were unaware (or claimed to be unaware) of the bad mark beforehand. We did find considerable honesty amongst many, so although we can not rule out that everyone knew but only half told us the truth, we do believe that for most they did indeed learn about their bad mark through the Crediamigo loan application process.

- Since 20% of the applicants have some sort of spousal or family-driven situation, wherein for instance the entrepreneur is barred due to poor fiscal management of their spouse, this suggests that we should add to the baseline survey instrument some simple questions about household decision-making. We should learn who makes the decisions, who exactly runs the business, and who makes decisions about whether to borrow and save.

- Since 6% of clients did end up getting a loan from Crediamigo, this study confirmed that we will experience some contamination in the control group whereby individuals assigned to the control group clear their name and then want a loan from Crediamigo. These individuals of course will still need to be considered control group participants, not treatment group. This does not effect the results of the basic question, what is the average impact on client welfare from relaxing the Cadastre restriction. However, if we think that the randomization process (i.e., assignment to treatment and hence to receive a loan anyhow) might inspire different behavior (i.e., no impetus to clean their Cadastre), then this does effect our ability to measure net impacts. Given the small...
percentage that we observe, this is an issue to be aware of and to address through the follow-up
survey instrument (by, e.g., asking about what efforts they undertook to clean their record), but
this is not a large enough issue to be an obstacle to the overall research design.
POWER CALCULATIONS FOR THE IMPACT EVALUATION

This appendix outlines the power calculations for the proposed impact evaluation. The power calculations are driven primarily by: 1) the expected impact on the outcomes measures; and 2) the assumed underlying variation observed in the sample. After the power calculations, we then examine the flow of SPC clients expected in each branch in order to estimate the number of branches needed for the study.

We assume that those who report income in the top 10 percent of the CrediAmigo population (an absolute monetary threshold to be established later) are not included in the study. This reduces the variation in the sample as well as the necessary sample size. It does, however, eliminate our ability to assess the impact for those (wealthier) individuals.

This table shows the power calculations for the impact evaluation; data comes from CrediAmigo, and consists of the mean and standard deviations for first cycle individuals rejected due to SPC.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Outcome</th>
<th>Necessary sample size for treatment group, per sub-sample, after attrition, power = 90%, alpha = 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family income</td>
<td>1,782.12</td>
<td>1,732.26</td>
<td>15% higher</td>
<td>885</td>
</tr>
<tr>
<td>Family income</td>
<td>1,782.12</td>
<td>1,732.26</td>
<td>20% higher</td>
<td>498</td>
</tr>
<tr>
<td>Family income</td>
<td>1,782.12</td>
<td>1,732.26</td>
<td>25% higher</td>
<td>319</td>
</tr>
<tr>
<td>Family income</td>
<td>1,782.12</td>
<td>1,732.26</td>
<td>30% higher</td>
<td>222</td>
</tr>
<tr>
<td>Business inventory</td>
<td>6,953.09</td>
<td>14,212.60</td>
<td>15% higher</td>
<td>3902</td>
</tr>
<tr>
<td>Business inventory</td>
<td>6,953.09</td>
<td>14,212.60</td>
<td>20% higher</td>
<td>2197</td>
</tr>
<tr>
<td>Business inventory</td>
<td>6,953.09</td>
<td>14,212.60</td>
<td>25% higher</td>
<td>1406</td>
</tr>
<tr>
<td>Business inventory</td>
<td>6,953.09</td>
<td>14,212.60</td>
<td>30% higher</td>
<td>976</td>
</tr>
<tr>
<td>Business assets</td>
<td>35,896.16</td>
<td>55,066.56</td>
<td>15% higher</td>
<td>2199</td>
</tr>
<tr>
<td>Business assets</td>
<td>35,896.16</td>
<td>55,066.56</td>
<td>20% higher</td>
<td>1237</td>
</tr>
<tr>
<td>Business assets</td>
<td>35,896.16</td>
<td>55,066.56</td>
<td>25% higher</td>
<td>792</td>
</tr>
<tr>
<td>Business assets</td>
<td>35,896.16</td>
<td>55,066.56</td>
<td>30% higher</td>
<td>550</td>
</tr>
<tr>
<td>Business revenues</td>
<td>5,491.17</td>
<td>6,193.60</td>
<td>15% higher</td>
<td>1190</td>
</tr>
<tr>
<td>Business revenues</td>
<td>5,491.17</td>
<td>6,193.60</td>
<td>20% higher</td>
<td>669</td>
</tr>
<tr>
<td>Business revenues</td>
<td>5,491.17</td>
<td>6,193.60</td>
<td>25% higher</td>
<td>429</td>
</tr>
</tbody>
</table>
As the table indicates, the different outcome measures along with the different outcome goals provide a wide range of necessary sample sizes. Choosing a base-case treatment sample size of 800 seems reasonable given the above, as this provides detectable impacts at a 15% improvement for family income, 35% improvement for business inventory, 25% improvement for business assets, and 18% improvement for business revenue.

The 800 would be the required treatment sample size for the post-analysis, hence attrition must be considered. If only 85% of those surveyed in the baseline are successfully surveyed for the follow-up, then this implies a necessary baseline treatment sample size of 941 (800 / 0.85). Hence, 1882 completed baseline surveys would be required (assuming equal sized treatment and control groups).

Next, we must account for the fact that not everyone in treatment group will borrow, and some in the control group might end up clearing their name from the Cadastro. If CrediAmigo decides to lend to them after they clear their name, they would still need to be maintained for the analysis in the control group. This effects the needed sample size. Assuming a 95% take-up rate in the treatment group and a 5% take-up rate in the control group, this implies about a 10% larger sample size. Since there is no hard data to know exactly what the extent of this contamination will be, we suggest an increase of the sample size from 1882 to 2000. After the experiment has progressed for a month or two, this should be recalculated based on actual numbers.

Last, in order to calculate impacts for sub-samples (e.g., first time applicants versus renewals), the above is the necessary sample size for each such group. Assuming the two samples of interest are new and old clients, this implies a necessary sample size of 4000. Note that this doubling of the sample also provides similar sub-sample analysis for men versus women, educated versus uneducated, etc., but does not provide the ability to study the interaction of the two (female first time applicants versus female renewal applicants). Such sub-sub samples would require a multiplication of 4 for the sample size.

**Flows from Operations**

Next we examine the flow of potential clients from the study. Based on data provided to us during our visit to CrediAmigo on June 21st and June 22nd, 2004 we estimated an average of 20 SPC-rejected first-time clients per branch per month. Assuming the collection of clients into the study continues for four months, this means that 23.5 branches are needed to be included in the study (1882 / 4 / 20 = 23.5). With flow data for renewal clients, a similar calculation should be made to determine how many branches are necessary for the study.
Attachments

D. Request for Proposals by CrediAmigo and proposed baseline questionnaire

E. CV’s of Emmanuel Skoufias, Pedro Olinto, Susana Sanchez and Dean Karlan