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Abstract

This paper examines the effects of tying microenterprise credit cooperatives (or "village banks"), with health and education services, using data from two Latin American countries, Ecuador and Honduras. Credit constraints particularly affect women (microentrepreneur) borrowers. Evidence suggests that mothers' income increases are more likely to be spent on nutrition and other health improving expenditures for children than fathers' income increases. Thus, relaxing credit constraints for women has been viewed as a particularly powerful development policy tool; and village banking has been a popular strategy for doing so. Many micro credit institutions, such as the Grameen Bank, bundle social programs together with credit, so their effects are difficult to disentangle. Tie-ins assume that credit may not be sufficient to raise incomes, while raising family income is not sufficient to meet development goals such as ending malnutrition, reducing infant mortality, and increasing the education levels of girls. There is at least some evidence supporting these assumptions, as reviewed in the next section. But non-financial responsibilities divert the attention of financial institutions from their comparative advantage; and a banking role causes health NGOs to lose their own comparative advantage. Other costs of a tie-in approach are reviewed. To resolve the debate on tie-ins, and to understand the source of effectiveness of micro credit, experimental evidence is needed. The paper uses financial and health data collected from mothers participating in Project HOPE's Village Health Banks, in conventional credit-only village banks, and from women not participating in either type of bank, in Ecuador and Honduras, to provide the first evidence on the effectiveness of tie-ins. Fixed effects are accounted for with 104 community dummy variables for Ecuador, and 70 for Honduras; we also control for period effects, family size, age and education of the mother, and her marital status, past child deaths, and other proxies for general wealth and health. Effects on expenditures and breastfeeding incidence of health and credit bank participation were ambiguous. However, in Honduras, health bank participation was robustly associated with reduced conditional child diarrhea probability, while in no specification was credit bank participation found to reduce the conditional probability of diarrhea. In Ecuador, results were mixed but if anything supported a larger effect of the credit only banks. For Honduras, in all specifications health bank participants have significantly higher subsequent conditional probability of cancer screening, our proxy for formal health care. A much weaker effect was found for credit only participants. Similar but less pronounced effects were found for Ecuador. There is no clear link between tie-ins and performance of the banks themselves.

I. Introduction: The Debates on Micro Credit and Health

Economic research has consistently found that availability of credit is a binding constraint for microenterprise development. Lack of credit particularly, though certainly not exclusively, affects women (microentrepreneur) borrowers, for reasons ranging from lack of property rights to local cultural practices; but lack of collateral is arguably the most important. Evidence suggests that mothers' income increases are more likely to be spent on nutrition and other health improving expenditures for children than fathers' income increases (e.g., Thomas, 1990, 1993; Pitt and Khandker, 1996). Thus, relaxing credit constraints for women has been viewed as a particularly powerful development policy tool. Partly as a result, credit cooperatives, such as village banks, have particularly focused on women borrowers. However, one may need improved health to be a productive microentrepreneur; and higher income does not automatically lead to better health. These observations have led some development practitioners to conclude that health services and education should be delivered in a simultaneous and integrated fashion with micro credit.

Three related factors have made it difficult to relax credit constraints to low-income women microenterpreurs: First, poor microentrepreneurs often have little or no collateral. Second, it is difficult for conventional lenders to determine borrower quality. Third, small loans are more costly to process per dollar lent.

Village banking seeks to solve these problems in part through what could be called the "collateral of peer pressure" (Smith, 1997, ch. 5). For example, in the case of the classic village banking system, the Grameen Bank in Bangladesh, small microentrepreneurs are organized into credit cooperatives, to which seed capital is lent. Before qualifying for a loan, each member is required to identify several other members or potential members willing to cosign loans with them. Often, once a member of a cosigning group receives a loan, no other member may borrow until the first borrower has established a regular repayment record; and in any case no repeat loans are approved until all members' accounts are satisfactorily settled. Progressively larger loans are approved over time, as borrowers gain experience, develop a credit history, and successfully identify productive uses for larger loans. Members know the characters of the cosigning group members they select, and may be expected to join groups

with members they believe likely to repay their loans. Thus the banks make use of the information "impacted" in the village or neighborhood about who is a reliable and capable borrower, getting villagers to reveal this information in an incentive compatible way. At the same time, an implicit collateral is created by the pressure that members would be expected to place on each member in the group to repay funds. The good will of these relatives and friends of the borrower represents part of the borrowers' capital, which failure to pay the loan puts at risk. Finally, village banks extensively utilize volunteer member labor (as do traditional consumer cooperatives), thus lowering the bank's effective costs.

Bank members reveal by participating that the value of the time thus spent is less than the value of the enhanced credit. For reasons that are not fully understood, but that undoubtedly include a more binding credit constraint, practitioners claim that village banking arrangements are more attractive to female than to male borrowers, and in practice appear to be more effective among groups of women borrowers. Indeed, the well-known Grameen Bank began with women representing fewer than half of its borrowers, but the share of women borrowers has climbed steadily over the years and reached 94% by the end of 1995. Interestingly, in a survey half of Grameen's women borrowers said they were unemployed at the time they became Grameen members, compared with less than 7% of men (Smith, 1997, ch. 5).

Empirically, such village banks have an impressive track record, with a very high repayment rate (typically over 90%), and an unusually large capacity to become financially self-sustaining. However, development agencies and nongovernmental organizations (NGOs) typically play a significant role in establishing village banks. While their seed capital for initial loans is usually repaid, their time and other resources provided are not; and thus these banks do enjoy a significant subsidy (Khandker, Khalily, and Khan, 1995). The success of village banking has led major development agencies to embrace the concept and expand funding. The Microenterprise Summit of February, 1997 put micro credit and village banking firmly in the mainstream of development policy (World Bank, 1997).

A very active debate is underway in the microenterprise credit community about whether subsidies are appropriate. Known as the "microfinance schism," the debate pits the "Consultative Group to Assist the Poorest," a donor consortium headquartered within the World Bank, and other mainstream

donors, against other NGOs and academic critics, notably Morduch (1998). CGAP effectively argues that one can reach more borrowers by requiring sustainability, so that available dollars go further. This argument is reasonable as far as it goes, but there is no reason to believe that the poorest borrowers can afford to pay the high interest rates that this would require with the business opportunities they realistically face. Moreover, the poor have an understandably high level of risk aversion. Put more precisely, the interest elasticity of the demand for credit on the part of the poor is not close to zero. Thus, some subsidy is required to truly reach the poorest current and potential microentrepreneurs. Of course, it will be essential to ensure that these subsidized credit programs are run efficiently, the credit is allocated to appropriate investments, and that credit actually ends up in the hands of poor households. In this regard, it may be useful to tie credit with social services demanded only by the poor, as a kind of screening mechanism to ensure that nonpoor borrowers are not taking advantage of a subsidy not intended for them. There is almost certainly going to be at least some subsidy in programs that offer the poor health or educational services along with credit. These issues are likely to fuel a potential, and already emerging new schism in the microfinance community, over whether to integrate credit with health or other programs, and that is the topic of this paper.

Better access to credit can have a positive affect on health and education. Econometric evidence suggests that growth patterns for children in landless households have been influenced by wealth shocks among credit constrained households (Foster, 1995). A 1989 UN study concluded that the harvest from an irrigated rice project in the Gambia reduced seasonal fluctuations in food availability and improved the nutritional status of children (see Marek, 1992). There is some evidence that lack of access to credit can result in lower school attendance and poorer educational outcomes (see esp. Jacoby, 1994).

But expanded credit alone is no guarantee of higher productivity and incomes. Some studies have suggested that the poorest of the poor may not be made better off by village banking, and indeed may be made worse off, if they take on additional debt that is for them unproductive, but for which they must pay interest (see e.g. Khandker et al, 1995).

There is a substantial economic literature on the income elasticity of the demand for calories, that is, in estimating the percent change in calories consumed for a percent change in family incomes,

under a wide range of scenarios. This research indicates that increasing credit, and even increasing income, is not sufficient for broader social goals of development, and may indeed not be possible without complementary programs. Estimates of the income elasticity of the demand for calories in the literature range from approximately 0 to about 0.5, depending on the region and the econometric strategy (Bouis and Haddad, 1992; Behrman and Deolalikar, 1987; Subramanian and Deaton, 1996). If this relationship is very low, development policies that emphasize increasing credit, and even the incomes of the poor, without attention to the way these additional resources are expended within the family, may not lead to successful development, at least not very quickly.

Marek (1992) and Ray (1997) review numerous additional studies that indicate the elasticity of calorie consumption with respect to income is positive but well under unity. This less than proportional response is due to two factors: income is spent on other goods besides food, and part of the increased food expenditures is used to increase food variety without necessarily increasing the consumption of calories. The weight of the evidence is that average income is not the sole determinant of the consumption of calories among the poor. Seasonal fluctuations of both income and prices are important.

Note that even if income elasticities for calories are higher than the traditional estimates imply--say, on the order of 0.3 to 0.5, as Subramanian and Deaton (1996) recently estimated using a newer econometric strategy--calories are not the same as nutrition; and nutrition of earners is not the same as nutrition of their children. An increase in income frequently allows families in developing countries to switch consumption from nutritious foods such as beans and rice, to nonnutritious "empty calories" such as candy and soda, which may be perceived as modern and a symbol of economic success. Parents may then fail to place restrictions on children's consumption of such items or to place positive restrictions on consumption of nutritious foods.

On the other hand the income elasticity of "convenience " foods is greater than unity (see Schiff and Valdes, 1990, Marek, 1992). Bouis (1991) found that intake of vitamins A and C is not positively associated with income in the Philippines and argued that consumer education was important. Moreover, morbidity does not necessarily decrease significantly with income (Bouis and Haddad, 1990; Kennedy et al (1992)). Poor health (e.g. diarrheal diseases) can negate the health advantages of better nutrition. In a study of the Gambia, Von Braum et al (1989) found that diarrhea is associated with

reduced nutritional status even after calorie intake is controlled for.

In a different vein, it has been consistently found that additional education for girls in rural regions provides one of the very highest economic rates of return of any developing country investments (Smith, 1997, ch. 16). Education of girls has also been shown to be one of the most cost-effective means of improving local health standards. However, evidence from Pakistan, Bangladesh, and elsewhere shows that we cannot assume that education of girls will increase automatically with increases in family income.

Taken together this evidence shows that we cannot automatically expect income to rise among the absolutely poor after relaxation of credit constraints without improvements in their health status; and on the other hand, increases in income do not automatically result in improved health status.

Recently, practitioners in many aspects of development have sought to tie their work with village banking. For example, Freedom From Hunger has attempted to integrate village banking with its basic education programs in rural Thailand and elsewhere. A group of NGOs engaged in tie-ins between credit and other social development goals has recently begun an active "practitioners' network" called the "Credit with Education Learning Exchange" (see e.g. Vor der Bruegge et al, 1997). Project Hope (1993) has integrated village banks with health education and services in what it terms "health banks" in Ecuador and Honduras.

The Grameen Bank in Bangladesh has been a pioneer in tying social development goals with credit. Grameen, with over 1000 branch offices and about two million members, has long included a moral component in its training program, stressing the Bank's 16 principles, or "Decisions," to be adhered to by each member. These Decisions were formulated in a national conference of 100 female center chiefs in 1984. They emphasize modern values, including self-discipline and hard work, mutual assistance, hygiene, and refusal to participate in backward practices like demanding or providing bridal dowries. Adherence to these principles and attendance at rallies featuring the chanting of the Decisions are not formal requirements for receiving loans, but they are said to have become effective, implicit requirements.

Such noncredit tie-ins, usually focused on education or health goals, are established partly out of a conviction that while removing credit constraints on microenterprises represents an unusually

effective development strategy, it stops short of being the long-sought "silver bullet" for traditional sector development.

The tie-ins are predicated on the argument that raising family income is not sufficient to meet development goals such as ending malnutrition, reducing infant mortality, and increasing the education levels of girls; evidence on the economic evidence for these arguments was reviewed in the previous section. Part of the basis for these claims is the observation that higher incomes do not necessarily lead to better education or health for mothers or their children, while the poorest of the poor are often unable to effectively utilize credit, in part because of poor family health. It is argued that many low income microentrepreneurs, particularly women, are too lacking in basic health services, and essential knowledge about health as well as about business practice, to successfully raise their families out of poverty with access to credit alone. They also argue that without such access, even mothers knowledgeable about health will be unable to break the cycle of poverty. Such observations suggest to practitioners an interdependency between income, health and education that is best dealt with through a simultaneous and integrated program strategy.

Proponents of integrating village banking with development public health also argue in effect that credit availability is an incentive for mothers to participate in health programs that generate externalities, or benefits of which the participants may be unaware. Proponents also argue that increased access to credit is not sufficient for improved health outcomes, because health knowledge and intentions, such as how to identify nutritious foods, may be lacking; and that credit provision may not be sufficient for improved incomes, because illness or malnutrition or other indicators of poor health, of either the mother or her children, may curtail labor market participation (Project HOPE, 1994).

Another type of argument has not been stated explicitly, but could be considered implicit in NGO behavior: that interventions by NGOs contain some “jointness” across activities. It may be costly for outside agencies to “penetrate” a village, urban neighborhood, or other area where the poor are concentrated. Once one NGO that happens to be specializing in a specific field such as health, education, or credit, has acquired a knowledge base about the region and its people and the trust of the clientele, it may be the lowest net cost option for this NGO to work in other fields of development. Expressed in terms of transaction cost economics, it may be costly to transmit village and client

information across organizational boundaries even if all the right incentives to do so were in place, and even if coordination of otherwise parallel institutions would make more sense than fully integrated single organizations. For example, the combination of programs may allow for joint collection and use of information on villagers. This is in addition to the advantages of sharing other, non-informational resources "under one roof," such as the jeep in which the driver, the credit specialist, and the health specialist, travel together to the integrated health services and credit NGO, or a building that is not otherwise always in full use. Gains from this latter type of joint use might be more easily realized through a joint venture rather than organizational integration, but for various reasons–because of various types of costs–it also seems very difficult for NGOs to establish formal joint ventures with each other. Very few NGO joint ventures are seen in the field.

Yet another argument that might be offered is that, to the extent that health, and the capacity to be productive and increase earnings, are closely related, the health component should actually improve the performance of the bank component, using conventional measures. For example, banks whose members have higher health or educational status should be able to achieve higher repayment rates, sustain larger loan amounts, and make better use of other credit services.

Practitioners are also aware that development funders now consider village banking highly effective, and that funding such programs has become fashionable, so there is a clear incentive to "package" their development programs in a way thought likely to appeal to funders. If only because of this incentive, claims of the effectiveness of program tie-ins must be evaluated very carefully.

Indeed, there are some important counter-arguments to the tie-in proposals. Non-financial responsibilities divert the attention of financial institutions from their comparative advantage. Bank personnel, and banking organizations as a whole, develop skills needed to make sound financial decisions and extend credit in a cost-efficient manner. To get the full benefits of this investment in human capital and other assets, these individuals and organizations should be allowed to fully specialize in the banking activities that they can do with comparatively greater efficiency. Moreover, there is no reason to believe that the same individuals and organizations that are efficient in credit provision will also be efficient in the provision of health services. (One economist, on being told of the tie-in debate, was heard to exclaim, "why can't they just let a bank be a bank!") For analogous reasons, the assumption of

a banking role causes health NGOs to lose their own comparative advantage. There are gains to efficiency when those who are relatively better at providing health services specialize in doing so. We do not wish to lose the potential development rewards that may be had when health specialists concentrate with their full attention on what they know how to do best.

Further, despite potential complementarities in health and income *outcomes*, it is by no means clear that there are any complementarities in the *production* of health and credit. This may be a valid area for debate but the evidence is not available, while the costs of losing comparative advantage are much clearer. Indeed, many health benefits may result from increased income of program participants without other health interventions, or, if health interventions are needed at the same time as credit interventions are implemented, these interventions may be successfully implemented with parallel institutions. It is not clear that such institutions cannot operate at "arms length" from each other in at least as cost effective a manner. At the same time, regulations or incentives which pull an institution away from its comparative advantage may reduce overall efficiency even as they seem to be helping society to realize certain goals in the short run. In this view, the net economic benefits of conventional village banks would be greater than that of health banks, and health NGOs should focus on their comparative advantage in health provision.

Further, it may be argued that at minimum, participants should be allowed to choose whether to participate in a credit-only bank, or a bank with a tie-in. Clients not in need of special services such as those of health banks, or at least having relatively higher levels of family health to begin with, but able to get access to credit only through this source, might be worse off than if they participated in credit-only banks. Not only would such clients lose time participating in health education or other activities that could be productively spent working with their enterprises, but, under financial sustainability, any incremental costs of running a bank with tie-ins would ultimately be reflected in a higher interest rate paid by borrowers. The upshot of these counter-arguments is that services should either be supplied separately or at least that clients should be offered an opportunity to receive them separately.

II. A Latin American Example: Project HOPE's Village Banking Project

Historically, the private voluntary organization Project HOPE has focused on provision of improved public health and other health services for developing countries. HOPE's village banking and income generation project began in Ecuador and Honduras in August 1993. HOPE developed the project in part on the premise that their past maternal and child health programs were often limited in providing *sustained* improvements in health and nutrition because of constraints due to poverty. As HOPE (1993) put it, "poor families many times cannot afford the nutritious foods, medicines, health services, or environmental conditions they need for protecting their health." As a result, HOPE sought "to improve the health status of low-income mothers, and their infants and young children in Ecuador and Honduras, by creating 'village health banks' that combine loans and popular economic education with maternal and child health promotion activities."[1] HOPE argued that "the strengths of the health-bank approach over the traditional child survival approach include: 1) Village health banks seek to supply the *means* as well as the knowledge necessary to improve nutrition and health service utilization, and to promote health seeking behaviors; 2) Peer pressure and group solidarity are used as a means to encourage the practice of health seeking behaviors; and 3) Village health banks contain an element of financial sustainability." HOPE also believes that the availability of credit can act as an incentive for mothers to participate in maternal and child health programs that they would otherwise not participate in due to time and other constraints, despite their benefits.

The health banks provided credit and basic business skills to low-income women for use in productive activities. In addition, health promotion activities seek to provide individuals with basic health knowledge and access to basic health services. These may include basic hygiene, maternal health, family planning, and women's preventative health care, as well as child survival interventions, including acute respiratory infections (ARI), Expanded Program on Immunization (EPI), control of diarrheal diseases (CDD), breastfeeding, and nutrition. The business and health education components of this project are intended to improve the benefits of increased income, and to reinforce behaviors conducive to sustained improvements in the health status and income of the family. Improved health status is at least implicitly also intended to improve efficiency on the job and to decrease time lost from work due to child illness.

Banks proceed according to "loan cycles," each of which lasts for 16 weeks. In addition to credit and basic business information, the health banks also provided health promotion activities focusing on maternal and child health. The health interventions take the form of fifteen minute health lectures and other activities at each biweekly meeting of the bank, led by each bank's health officer. All bank members are required to attend. Health messages for each cycle are printed in simple language on the reverse of each borrower's account booklet (a majority of participants have at least basic literacy skills). For each health bank, the health promotion component begins with the second cycle, as given in Table 1.

Table 1: Health Activities Across Cycles

Cycle 1:	No health-related activities
Cycle 2:	Maternal and women's health
Cycle 3:	Management of Acute Respiratory Infections (ARI)
Cycle 4:	Control of Diarrheal Diseases (CDD) and basic hygiene
Cycle 5:	Nutrition and management of child illnesses
Cycle 6:	Expanded Program on Immunization (EPI)
Cycles 7 and up:	Determined by the health needs/priorities of each bank.

In addition, each bank designates a member as its health officer, whose responsibility it is to monitor immunizations of children and women, record births and deaths, weigh children under two on a quarterly basis, and refer members to local health services for care.

Project HOPE estimates that the marginal cost of providing the health services they cover is about 6% of total program costs. This is in line with the 4-7% estimates of the education component reported by Freedom from Hunger for their rather different programs (Vor der Bruegge et al, 1997).[2]

III. The Data Set.

At the suggestion of the author, Project HOPE conducted an experiment comparing conventional village banking with their health bank model. Women of fertile age (aged 15-49) without children under 2 (WFA), and women with children under two years of age (WC2) were surveyed in

each of the two types of banks, first in June 1994 (the "baseline"), and again in June 1996 (the "follow-up"). In addition, HOPE surveyed women who met the study criteria but who were not members of either type of bank, nor in Project HOPE child survival programs.[3] A range of valuable information was collected in both 1994 and 1996 surveys, reported in Table 2.

Data for total monthly expenditures and monthly food expenditures are reported by participants from memory, and so may be subject to measurement error. However, in developing country surveys, reported expenditures is generally considered more reliable than reported income. In addition, consumption provides a better measure of family welfare. All values are converted to 1994 units of local currency. Project HOPE reports that the presence of diarrhea is the most reliable indicator of child health in Latin America. The activity of breastfeeding is considered a key health practice. HOPE considers the presence of cancer screening the best measure of maternal health in both Ecuador and Honduras, because it is done routinely in all health care visits at least once per year. If a respondent has not had cancer screening in the previous year, this generally indicates that she has had no regular contact with the medical profession for at least that long.

Table 2: Data used in the study, with variable names.

Consumption
Monthly total expenditures (MSUMEXP)
Monthly food expenditures (MALIMENT)

Indicators of family wealth and factors affecting health:
kitchen (KITCHEN)
log of number of rooms (LNROOMS)
trash collection (TRASH)
flush toilet (FLUSH)
dirt floor (DIRT)
whether the respondent has received a previous loan (PREVLOAN)

Indicators of child health:
incidence of diarrhea (DIARRHEA)
incidence of breastfeeding (BREASTFD)

Indicator of women's health:
cancer screening, which is done routinely in clinics, and so represents a proxy for visits to medical profession (CANCSCRN)

Demographic
community of residence (COMUNID)
log of age (LOGAGE)
log of education (LOGEDUC)
marital status (MARRIED)
whether there is a child under two (INFANT)
log of number of children living (LNCHILD)
whether any children have died (DECEASED)

Bank Types
Credit Only (CREDBANK)
Health Bank (HLTHBANK)
Credit bank at follow-up (CREDBFOL)
Health Bank at follow-up (HLTBFOL)

Sample means and standard deviations are found in Table 3 (page 31). For Honduras we have a total of 1026 observations, and for Ecuador 1006 observations. A few of these included (usually very young) women without any children; these and a few other faulty observations were excluded from the sample, to yield a total of 981 for Honduras and 963 for Ecuador. (The availability of breastfeeding and diarrhea data only for the subsample with children under two, and the presence of some missing values, result in a lower total for some of the variables). About 42% of these respondents are from the sample with children under two (INFANT) in Honduras, and 44% in Ecuador. About 38% of the sample in Honduras and 43% in Ecuador are drawn from health bank participants, from 26 health banks in Honduras and 19 in Ecuador. About 10% of the sample in Honduras and 13% in Ecuador are drawn from credit only participants, from 5 credit banks in Honduras and 6 in Ecuador. Control group respondents are sampled from 26 communities with neither type of bank in Honduras, and 34 in Ecuador.

As seen in Table 3 (page 31), the samples from the two countries are similar in many respects, but there are differences, some reflecting the fact that the Honduras sample is drawn from urban slums, while the Ecuador sample is largely drawn from villages and rural areas. In each country about a fifth of the sample have at least one deceased child. About one-eighth in each sample have *previously* received a loan (defined as prior to joining the village bank in the case of participants, ever in the case of

nonparticipants). Roughly two-thirds of mothers practice breast-feeding in both countries. However, in Ecuador about three-fifths of the mothers are married, but only about a quarter are in Honduras. Only 7% of the respondents' houses have dirt floors in Ecuador, compared with 22% in Honduras; and houses have significantly more rooms and are more likely to include a kitchen in Ecuador. About 30% benefit from trash collection in Ecuador, while only 17% do in Honduras. But 34% report flush toilets in Honduras, while only 17% do so in Ecuador. There are also differences in health status. In Honduras, 37% of the mothers with children under two reported that these children had diarrhea within the last two weeks, while 28% did so in Ecuador. Some 48% of respondents have received cancer screening in Ecuador, while 67% have done so in Honduras.

IV. Empirical Analysis.

IV.1 Issues in Selection Bias.

There are three sources of possible selection bias in the sample: nonrandom choice of communities for bank placement, nonrandom placement of health banks versus credit only banks within these communities, and nonrandom selection of bank participants from within communities. In this subsection, we address each of these potential concerns.

There is a concern that nongovernmental organizations may place programs in communities where they believe the program may be more successful. Project HOPE representatives stated that the communities chosen for bank placement were not selected on the basis of either positive or negative expected bank performance; rather they were "communities in need of assistance." There is no reason to doubt this, but if the communities chosen were deemed "in need," program placement may thus not have been random, and the programs may as a result have had either more or less measured impact than in a strictly randomized setting. Moreover, while control communities are supposedly similar, there is no record of any formal randomizing procedure used in the selection of the communities chosen for control group sampling. Thus, we first compare the initial characteristics of communities with banks with those of the control group communities.

In Honduras, there were no statistically significant differences in initial average expenditures comparing communities where a bank was placed with those not receiving a bank, nor were there any

significant differences in initial average health or wealth indicators.[4] However, in the one exception, respondents in communities where a bank was to be placed were less likely at the 1% level to have received a previous loan than those in control group communities. Thus, there was apparently some tendency in Honduras for HOPE to start village banks in communities in which micro credit was *less* available.

In Ecuador, respondents in communities where banks were placed[5] had total expenditures that were on average 4.8% higher than those in control communities, while food expenditures were on average 2.5% higher; each difference is statistically significant at the 1% level. There were no significant differences in initial diarrhea incidence or breastfeeding rates, but respondents in these bank placement communities had a higher rate of cancer screening, significant at the 10% level, and a higher incidence of flush toilets, at the 1% level. On the other hand, there were no significant differences in the incidence of previous loans. But the danger of a more serious community selection bias is evident in Ecuador.

Once Project HOPE selected communities where banks were to be established, these communities were assigned one of the two types of banks on an essentially random basis.[6]

Among participants within communities, the danger of self-selection bias in the sample might be considered minimal, because both credit constraints and health needs are pervasive and the incentive to participate in a village bank, if available, is so high.[7] On the other hand, participants do have to cosign loans across the entire basic bank unit of about 25 borrowers. We do not have fully detailed information about how the bank groups were formed. Although HOPE states that groups were formed in communities on an essentially first come, first served basis, members may plausibly have taken steps to exclude from membership those they considered to be poor risks. Indeed, as reviewed in the introduction, such a selection process is part of the conventional explanation of how village banks have functioned so effectively.

Thus, we next tested whether health status, wealth or expenditure predicted the decision to join a bank, by examining characteristics of the Honduras subsample that had a choice (that is, the sample of those from communities with a bank for which we had respondents who did not join).[8] The number available for the test was 253 for the full sample and 125 for the sample with children under two. We found that wealth and health status were not statistically significantly associated with the decision to join

a bank. However, on average bank joiners did have about 2.5% less expenditures (in both total and food expenditures) than non-joiners, a difference that is significant at the 5% level. We are not concerned about this isolated finding because, as argued below, changes in health outcomes are those for which interpretations are unambiguous. Moreover, unlike health or wealth, expenditures can be changed quickly. These respondents were joining a village bank at the time of the baseline survey, and they knew they would be required to save as members; thus, the 2.5% difference may well reflect a very recent increase in savings. Certainly, better off or potentially better off members were not being systematically selected for inclusion in the bank. Characteristics of the control group are thus closely matched with those of bank members in Honduras.

Taken together, this evidence suggests that selection bias is not a problem in Honduras but may possibly be in Ecuador. But as one further control against selection bias, in each country we separately examine the subsample of those joining banks. Thus, we will make two types of comparisons: between those in health and credit only banks excluding the nonparticipants, and between the health and credit banks (considered simultaneously) in relation to the control group.[9]

IV.2 Econometric Results.

To analyze the data, we begin by creating two dummy variables. The first (HLTHBFOL) takes a value of 1 if the respondent is a health bank member sampled at the follow up period. Analogously, the second (CREDBFOL) takes a value of 1 if the respondent is a credit-only bank member sampled at the follow up period. Then, for each dependent variable, two econometric strategies are used. In the first, we assume that the full sample is essentially homogeneous at the start of the experiment. Statistically significant coefficients on either of these dummy variables is taken as an effect of the bank, conditional on the wealth, public health, and social status indicators used as controls, as well as on the community fixed effects. Assuming no selectivity bias, the result should provide a conservative measure of program impact, because it omits possible indirect effects of the program on other wealth variables. Second, in addition to comparing bank participants with those in the control group, we directly compare health bank participants with credit only participants. This has the drawback of reducing the sample size and restricting the reference group, but the advantage of offering a further control against selection bias of participants into the banks. As analyzed in the last section, this may have been a problem in Ecuador,

though probably not in Honduras.

In each case, we consider results both with and without community fixed effects. There is a case for either formulation. On the one hand, we do wish to control for unobserved differences across communities. This may be particularly important if NGOs place programs in communities where they believe the program may be more successful. On the other hand, if the programs have positive spillovers across community residents, such as through demonstration effects, increased demand for labor or local services, increased competition in credit supply, and reduced spread of illness, then the use of community dummy variables may bias downward the estimated total effect of the program. Moreover, in each case we conduct tests both with and without instrumenting for expenditures, which following economic theory should be an endogenous variable.

Finally, though available data are very limited, we conduct some comparisons of health and credit-only bank performance, such as loan delinquency ratios.

IV.2.1. Impact on expenditures.

We first consider the effect of participation in the banks on expenditures. We control for several proxies for wealth, health, or both, including the log of the number of rooms in the house (LNROOMS), whether the home has a kitchen (KITCHEN), whether there is some form of trash collection (TRASHCOL), whether the home has a dirt floor (DIRT), whether there is a flush toilet (FLUSH), the (log of the) age (LOGAGE) and education (LOGEDUC) of the mother, her marital status (MARRIED). We also control for the log of the number of children who are her own and others of her spouse or partner who are living with her (LNCHILD),[10] and include a dummy variable taking the value of 1 if any of her children have died (DECEASED) as an additional control for general health human capital conditions and past wealth. We control for period effects by including a dummy for time (FOLLOWUP), that takes a value of 1 if the observation is from the summer 1996 followup survey and 0 if from the 1994 baseline survey. Finally, we control for whether the respondent has a child under two (INFANT) and hence is a participant in our separate sample to examine impact on infant health.[11] In regressions in which we control for community fixed effects for expenditures, for the full sample respondents come from 58 communities in Honduras and 92 in Ecuador, while for the banks-only regressions there are 32 communities in Honduras and 28 in Ecuador.[12]

Coefficients on control variables that are statistically significant have the correct sign. Consider first Table 4 (page 32), which presents regressions that include data from both bank and nonbank participants. In both countries, expenditures are higher among those who are married, are older and (less strongly) have more education, and more children, but not infants, have received a previous loan, and whose houses have more rooms. In addition, in the Honduras sample, those with fewer deceased children, who benefit from trash collection, do not have dirt floors, and were sampled at the follow-up, have higher expenditures. When we consider the banks-only sample (Table 5, page 33), we also find that those with kitchens spend less in Ecuador, perhaps because they can save by cooking more meals at home (the corresponding coefficients are also negative in Honduras, but in that case the effect is not statistically significant).

As seen in Table 4 (page 32), considering the whole sample, when fixed effects are not included, there is a positive conditional affect on expenditures of both health and credit bank participation in Ecuador, but this effect disappears when fixed effects are included. Health bank participants show marginally higher conditional total, but not food, expenditures at the follow up in Honduras, while credit bank participants reveal marginally lower expenditures, though this largely reflects the slight decline in food expenditures for the sample as a whole in Ecuador in the second period. The community dummy variables are jointly significant.[13]

As seen in Table 5 (page 33), we find that there are some differences when we consider only bank participants (as a check against selection bias). In Honduras the positive expenditure effect of health bank participation is now significant at either the 1% or 5% level, and is substantial in magnitude. The positive expenditure effects in Ecuador, however, disappear completely. In fact, the results suggest that there may even be some expenditure decline (at least at the 20% significance level) for health bank participation in Ecuador (with no effects for credit bank participation).

The evaluation of this impact seems open to question. While higher expenditures on food, at least, must be considered a favorable outcome, and expenditures are a good proxy for income (and perhaps more reliable in this regard than reported income), it is not clear whether it is optimal for micro credit participants to be increasing general expenditures at an early stage. Instead, it may be better for them to invest larger amounts in their enterprises. Moreover, participants are required to save a fraction of each loan amount, and this would tend to depress consumption in the short run. Additional voluntary

investment in the microenterprise may also be undertaken. Health measures are not subject to such ambiguities, and we turn to them now.

IV.2.2. Impact on child diarrhea incidence.

In Table 6 (page 34), we present probit regressions on the probability of infant diarrhea for the Honduras and Ecuador samples, respectively, with four different specifications depending on whether we use fixed effects (FE), and instrument for expenditures (IV). In these regressions, we use the subsample of mothers with children under two (INFANT). In Table 7 (page 35), we present comparable regressions for the banks only sample. In predicting expenditures, we use a similar set of variables as used in the previous subsection, including, time, in the form of a dummy variable for follow-up respondents, and various wealth variables, which are endogenous in the long run but arguably not with respect to monthly expenditures, and nonlinear terms.[14] In the estimation of the probit equations, a positive coefficient is associated with a value of zero in the dependent variable.

Although fewer control variables proved statistically significant than for the regression on expenditures, and the pattern of significance was less consistent, where significance is found it generally tells a very plausible story. Consistently across specifications, those with a flush toilet have a lower probability of diarrhea in Honduras. The presence of trash collection has a similar impact, that is particularly significant in the Honduras bank only sample; the presence of a kitchen is also associated with lowered subsequent probability of diarrhea in that subsample. In Ecuador, more educated mothers and those with houses with more rooms have lower child diarrhea probability. Strangely, however, when the coefficient on deceased is significant, it is associated with a lowered probability of diarrhea incidence. Married mothers also tend to have a higher probability of child diarrhea in the Ecuador banks only sample. There seem to be no obvious explanations for these last two findings. The community dummy variables are jointly significant; again, we do not report their coefficients but they are available from the author. Generally, the lack of a close correlation between illness and the wealth proxies may offer some confirmation of the hypothesis that health does not automatically improve with wealth.

In Honduras, health bank participants have significantly reduced conditional diarrhea probability at the follow up in all eight specifications. On the other hand, in no case do credit bank participants have reduced subsequent conditional diarrhea probability in the Honduras sample. In Ecuador, health bank

participation is also positively associated with lower conditional diarrhea probability; however, this impact is statistically significant in only two of the eight specifications. On the other hand, credit bank participants have a much larger reduction in conditional diarrhea probability that is statistically significant in seven of the eight specifications. Thus, the results reflect support for the tie-in hypothesis for urban and peri-urban Honduras but not for (largely) rural Ecuador. In Ecuador, there is instead evidence that village banking may lower child diarrhea, but that a health tie-in at best has no further positive effect.

IV.2.3. Impact on Breastfeeding Behavior.

Breastfeeding of children under two is considered a key health-enhancing behavior, but it has to contend with popular images of bottle feeding as a more modern alternative. There is some tendency in Honduras and Ecuador, as well as elsewhere in Latin America, for the lowest-income mothers to practice breastfeeding at higher rates than those in the income groups above them. Thus, as bank participants enjoy rising incomes, we might find reduced breastfeeding incidence. On the other hand, the health knowledge component of the health banks may more than counteract this effect.

Probit regressions on breastfeeding are presented in Tables 8 and 9 (pages 36-37). In both countries, the presence of more children is associated with a higher conditional probability of breastfeeding of infants in all specifications. In Ecuador, the presence of a dirt floor is associated with a higher conditional probability of breastfeeding, that is statistically significant in all eight specifications. In Honduras, this dirt floor effect is confirmed in three of the specifications. In Honduras, those mothers with higher expenditures generally have a significantly lower conditional probability of subsequent breastfeeding. The implication is that those who can afford to use formula instead of breastfeeding tend to do so. The other scattered significant coefficients tend to confirm this wealth effect, except for the presence of a kitchen, which tends to be positively associated with breastfeeding. In Ecuador, older mothers have a lower conditional tendency to breastfeed; but more educated mothers have a higher conditional probability of doing so. The fact that these probits generally revealed that those with higher wealth and income have a tendency to breastfeed less offers some confirmation for the argument that health practices do not improve automatically with wealth.

In Honduras, health bank participants have higher conditional probability of breastfeeding at the followup, though this result is only marginally statistically significant, in just two of the specifications in the

bank only sample. We may conjecture that the health banks may at least serve to arrest the local tendency to breastfeed less as members' wealth and incomes rise. There is no significant effect for credit bank participation in Honduras. In Ecuador, however, participation in either type of bank is associated with lowered conditional probability of subsequent breastfeeding. Thus, for Honduras, a knowledge effect may outweigh or at least balance an income effect for the health bank participants, but the reverse may hold in Ecuador.

IV.2.4. Impact on maternal health.

Tables 10 and 11 (pages 38-39) present probit regressions on the incidence of cancer screening. Again, this indicator was selected because field experts state that those with virtually any contact with the health care system will receive such screening in these two countries.

First, expenditures are generally associated with a higher conditional probability of cancer screening. For the full sample, this effect is statistically significant for three of the four specifications in Ecuador and two of four in Honduras (though there is an opposite sign in one specification significant at the 20% level). However, in only two specifications is the coefficient significant for the banks only sample. Mothers who are married, who have more children, and more education, and who have a kitchen, conditionally receive more health care in both countries consistently across specifications. In Ecuador, older mothers, and also mothers with children under two receive less care. Conditionally, women received less care in the later period in Ecuador but more in Honduras.

The conditional effect of bank participation on the probability of subsequent cancer screening for the Honduras sample is striking and uniform. In all specifications health bank participation is associated with significantly higher subsequent rates of cancer screening. For credit only participants, such an effect is also found, in four of eight specifications, in particular those without fixed effects; however in all four cases both the magnitude of the coefficient and the p-value are lower. Moreover, statistical significance disappears whenever fixed effects are included, and in two cases the parameters even change signs. Considering the two sets of results together, it seems likely that the strong health bank results reflect a health education effect. As a proxy, the results not only suggest that cancer screening has increased, but that its associated contact with the medical profession has increased as well.

These results are only partially confirmed for the Ecuador sample. Including both bank participants and nonparticpants in the regressions, there is a statistically significant increase in the conditional probability of subsequent cancer screening in three of four specifications for health bank participation. Credit only participation shows a similar effect, but it is smaller in magnitude and (weakly) significant in just two of four specifications. Presumably, this is an income effect. On the other hand, when the sample is limited to bank participants only, these findings are reversed for both types of bank. However, the incidence of cancer screening was significantly lower across subsamples in the follow-up period than in the baseline period in Ecuador; and we cannot control for this time effect with the banks-only sample. Thus, in this case, clearly more weight should be placed on the more encouraging findings from the full sample.

IV.2.5. Impact of the Health Component on Bank Performance.

In our final research strategy we will in a sense turn the analysis conducted so far on its head. That is, we consider the affect of adding the health component to the credit banks on banking indicators. The idea of this test is that if the tie-ins really are effective, they should lead to better projects, better loan repayment rates, faster accumulation of individual savings accounts, and other indications of positive bank performance.

Although the sample size is small and data are available for only one country, Honduras, we present results in part to introduce this evaluation strategy to the literature, and to encourage its use with other data sets in which banks differ in their use of tie-ins.

Of 20 available observations on credit only banks, 6 (or 30%) had at least one delinquent loan, while of 84 available observations on health banks, 27 (or 32%) had a delinquent loan; this difference was not statistically significant. As would be expected, the number of delinquent loans increased as later bank cycles were reached, but there were no discernable differences in patterns by cycle across bank types (through the last cycle for which observations on both bank types are available, cycle 5). The available bank performance indicators were: the value of delinquent loans per member, delinquent loans as a fraction of internal bank savings or of external loans, savings per member, and external loans per member; after controlling for bank cycle, only in the case of external loans per member was the type of bank a significant explanatory variable (just within the 5% significance level with a t statistic of 1.99,

reflecting higher external loan amounts per member for the credit only banks). Of course, the failure to find significant differences in bank performance may be due to the small available sample size.[15]

V. Conclusions

In this paper, arguments for tying-in microenterprise credit with other services, notably health and education, were reviewed. Such tie-ins are common among village banking systems, even those normally regarded as "minimalist," such as the Grameen Bank. The review of arguments in the debate and a consideration of available empirical evidence uncovered potentially very significant costs as well as benefits of such program integration. It was concluded that to resolve the debate on tie-ins, and to understand the source of effectiveness of micro credit, experimental evidence was needed. The paper used financial and health data collected from mothers participating in Project HOPE's Village Health Banks, in conventional credit-only village banks, and from women not participating in either type of bank, in Ecuador and Honduras, to provide the first evidence on the effectiveness of tie-ins.

Results provided some evidence of benefits of tie-ins. Effects on expenditures of health and credit bank participation were ambiguous. However, in Honduras, health bank participation was robustly associated with significantly reduced conditional child diarrhea probability, while in no specification was credit bank participation found to reduce the conditional probability of diarrhea in the Honduras sample. In Ecuador, health bank participation was also positively associated with lower conditional diarrhea probability; however, this impact was statistically significant in only two of eight specifications. On the other hand, credit bank participation has a much larger impact that is statistically significant in seven of the eight specifications in that country. Thus, the results reflect support for the tie-in hypothesis for urban and peri-urban Honduras but not for (largely) rural Ecuador. In Ecuador, there is instead evidence that village banking may lower child diarrhea, but that a health tie-in at best has no further positive effect.

In Honduras, participation in the health bank is associated with higher subsequent conditional probability of breastfeeding, that is statistically significant in two of the specifications in the bank only sample. We conjecture that the health banks may at least serve to arrest the local tendency to breastfeed less as members' wealth and incomes rise. In Ecuador, however, participation in either type of bank is associated with lowered conditional probability of breastfeeding. Thus, for Honduras, a knowledge effect may tend to outweigh an income effect in the health bank participants, but the opposite effect may dominate in Ecuador.

For Honduras, in all specifications health bank participants have significantly higher subsequent

conditional probability of cancer screening, our proxy for formal health care. A much weaker effect was found for credit only participants. It is likely that these findings reflect a health education effect for the health bank participants. For Ecuador, a similar effect was found only for the full sample; we argued that, in this case, results for the full sample will be more reliable than those of the banks only sample. As noted earlier, the major obvious difference between programs in the two countries is that Honduras is an urban slum program, and Ecuador is a rural and village program (with a few exceptions in neighborhoods of a medium sized city).

Although much further work is needed, it is clear that credit tie-in programs cannot be summarily dismissed as an unproductive interference with the natural comparative advantage of institutions designed to provide credit to the poor. At the same time, the use of program tie-ins must be considered in a more subtle manner: we found that health banks can have very different effects on different objectives, such as child health, maternal health, food consumption, and general household consumption. Thus, the form of the intervention would depend crucially on the objective.

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Table 3
Descriptive Statistics

	Ecuador			Honduras		
Variable Name	N	MEAN	S.D.	N	MEAN	S.D.
LOGEXPEND	955	12.632	.746	981	6.962	.527
LMNFOOD	927	12.231	.600	975	6.497	.535
LNCHILD	963	1.117	.631	981	1.057	.615
DECEASED	963	.194	.396	981	.217	.412
KITCHEN	960	.806	.395	981	.683	.466
TRASHCOL	963	.301	.459	981	.170	.376
INFANT	963	.441	.497	981	.422	.494
PREVLOAN	963	.125	.330	981	.123	.329
MARRIED	963	.605	.489	981	.256	.437
DIRT	963	.072	.258	981	.215	.411
FLUSH	963	.165	.371	981	.339	.474
LNROOMS	952	1.280	.455	981	.848	.558
FOLLOW-UP	963	.560	.497	981	.558	.497
LOGAGE	963	3.428	.260	981	3.405	.305
LOGEDUC	904	1.753	.573	978	1.530	.685
HLTHBFOL	963	.263	.440	981	.284	.451
CREDBFOL	963	.085	.279	981	.082	.274
HLTHBANK	963	.431	.495	981	.382	.486
CREDBANK	963	.125	.330	981	.104	.305
DIARRHEA	423	.374	.484	414	.283	.451
BREASTFD	425	.635	.482	414	.684	.466
CANCSCRN	963	.475	.500	981	.671	.470

Table 4
Expenditures (Full Sample)

Regression Specification	Ecuador				Honduras			
	Total w/o FE	Total w/FE	Food w/o FE	Food w/FE	Total w/o FE	Total w/FE	Food w/o FE	Food w/FE
Independent Variables								
INTERCEPT	10.169***	10.806***	11.109***	11.305***	6.231***	6.328***	5.783***	5.817***
	(.463)	(.514)	(.393)	(.445)	(.206)	(.218)	(.221)	(.230)
LNCHILD	.069+	.060	.076*	.076*	.161***	.185***	.151***	.148***
	(.051)	(.052)	(.043)	(.045)	(.030)	(.031)	(.032)	(.033)
DECEASED	-.006	-.067	-.027	-.060	-.058+	-.071*	-.084**	-.074*
	(.064)	(.063)	(.054)	(.055)	(.038)	(.040)	(.041)	(.042)
KITCHEN	-.021	-.051	-.040	-.058	.076*	.049	.051	.059
	(.069)	(.070)	(.058)	(.058)	(.045)	(.047)	(.047)	(.050)
TRASHCOL	.060	.006	.019	-.030	.126**	.132**	.086+	.092
	(.056)	(.069)	(.047)	(.059)	(.049)	(.063)	(.053)	(.067)
INFANT	-.065	-.069	-.084*	-.099**	-.055+	-.082**	.001	-.005
	(.056)	(.055)	(.047)	(.048)	(.034)	(.034)	(.037)	(.037)
PREVLOAN	.162**	.170**	.158**	.185***	.125***	.123**	.077+	.064
	(.073)	(.075)	(.062)	(.065)	(.047)	(.050)	(.050)	(.053)
MARRIED	.117**	.079+	.094**	.035	.114***	.133***	.118***	.137***
	(.049)	(.054)	(.041)	(.047)	(.035)	(.037)	(.038)	(.039)
DIRT	.047	.014	.049	.037	-.174***	-.133***	-.185***	-.135***
	(.094)	(.093)	(.079)	(.080)	(.038)	(.041)	(.041)	(.043)
FLUSH	.077	-.028	.060	-.009	.068*	.012	.041	-.019
	(.066)	(.069)	(.056)	(.059)	(.035)	(.046)	(.037)	(.049)
LNROOMS	.005	.092+	.045	.116**	.096**	.095**	.122***	.144***
	(.062)	(.063)	(.053)	(.055)	(.039)	(.040)	(.041)	(.043)
FOLLOW-UP	.039	.088	-.103*	-.071	.061+	.110*	.041	.010+
	(.064)	(.121)	(.054)	(.106)	(.046)	(.061)	(.050)	(.065)
LOGAGE	.578***	.505***	.256**	.252**	.086+	.066	.099+	.092

	(.139)	(.140)	(.118)	(.121)	(.061)	(.063)	(.066)	(.067)
LOGEDUC	.125***	.018	.045	-.010	.052**	.030	.029	.009
	(.045)	(.048)	(.038)	(.042)	(.024)	(.025)	(.026)	(.027)
HLTHBFOL	.210***	-.084	.137**	-.006	.065+	.120*	.022	.049
	(.071)	(.130)	(.059)	(.112)	(.047)	(.063)	(.050)	(.067)
CREDBFOL	.368***	.043	.278***	.064	-.092+	.052	-.067	-.016
	(.095)	(.165)	(.080)	(.142)	(.065)	(.202)	(.070)	(.213)
R-bar-squared	.14	.24	.07	.14	.18	.21	.13	.15
N	885	885	859	859	971	977	971	971

Note: Standard errors are in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 5
Expenditures (Banks-Only Sample)

Regression Specification	Ecuador				Honduras			
	Total w/o FE	Total w/FE	Food w/o FE	Food w/FE	Total w/o FE	Total w/FE	Food w/o FE	Food w/FE
Independent Variables								
INTERCEPT	12.008***	12.191***	12.143***	12.295***	6.026***	6.109***	5.491***	5.486***
	(.532)	(.631)	(.532)	(.637)	(.398)	(.438)	(.439)	(.478)
LNCHILD	.056	.044	.068	.068	.161***	.205***	.134***	.149***
	(.058)	(.059)	(.058)	(.059)	(.045)	(.048)	(.050)	(.053)
DECEASED	-.067	-.067	-.017	-.008	-.052	-.078+	-.120*	-.112*
	(.077)	(.069)	(.067)	(.069)	(.056)	(.058)	(.062)	(.063)
KITCHEN	-.190**	-.177**	-.176**	-.166**	-.044	-.029	-.023	-.012
	(.076)	(.076)	(.075)	(.076)	(.071)	(.073)	(.079)	(.068)
TRASHCOL	-.020	-.004	-.012	-.017	.126	.061	-.034	-.014
	(.057)	(.070)	(.056)	(.071)	(.110)	(.117)	(.121)	(.129)
INFANT	-.070	-.087	-.085	-.010	-.019	-.065	.085	.074
	(.062)	(.063)	(.062)	(.063)	(.063)	(.066)	(.070)	(.072)
PREVLOAN	.342***	.299***	.394***	.354***	.161***	.168***	.107*	.102+
	(.084)	(.086)	(.085)	(.088)	(.059)	(.063)	(.065)	(.068)
MARRIED	.130**	.054	.142***	.066	.101*	.101*	.088+	.089+
	(.054)	(.064)	(.054)	(.065)	(.052)	(.053)	(.057)	(.058)
DIRT	.071	.058	.117	.096	-.180***	-.136**	-.226***	-.175***
	(.096)	(.096)	(.095)	(.097)	(.055)	(.058)	(.060)	(.063)
FLUSH	.079	.040	.061	.020	.034	-.005	-.025	-.086
	(.068)	(.072)	(.068)	(.073)	(.052)	(.064)	(.057)	(.071)
LNROOMS	.221***	.229***	.185***	.190**	.130**	.110*	.112*	.096+
	(.065)	(.068)	(.066)	(.069)	(.058)	(.059)	(.064)	(.064)
FOLLOW-UP	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
LOGAGE	.160	.239+	.017	.053	.171+	.185+	.189+	.198+
	(.158)	(.161)	(.158)	(.163)	(.117)	(.122)	(.129)	(.133)
LOGEDUC	.003	-.005	-.049	-.042	.014	.019	.023	.027
	(.051)	(.055)	(.051)	(.055)	(.037)	(.038)	(.040)	(.042)
HLTHBFOL	-.007	-.026	-.098+	-.093+	.158**	.289***	.161**	.295***
	(.060)	(.065)	(.060)	(.066)	(.074)	(.086)	(.082)	(.094)
CREDBFOL	.097	-.005	-.006	-.077	-.006	.119	.068	-.085
	(.080)	(.108)	(.080)	(.109)	(.089)	(.492)	(.099)	(.537)

R-bar-squared	.09	.13	.09	.10	.16	.22	.11	.15
N	513	513	508	508	471	473	471	471

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 6
Diarrhea Incidence (Full Sample)

	Ecuador				Honduras			
Regression	NO FE	FE	NO FE	FE	NO FE	FE	NO FE	FE
Specification	NO IV	NO IV	IV	IV	NO IV	NO IV	IV	IV
Independent Variables								
INTERCEPT	-.040	1.070	.392	-.1.683	.123	1.265	.021	-13.677
	(1.462)	(2.048)	(2.219)	(2.819)	(1.359)	(1.720)	(2.816)	(26.662)
LOGEXPEND	-.034	-.113	-.076	.123	-.053	-.109	-.033	2.330
	(.086)	(.118)	(.188)	(.257)	(.133)	(.155)	(.429)	(4.357)
LNCHILD	.123	.162	.116	.156	-.073	.070	-.073	-.374
	(.152)	(.196)	(.150)	(.158)	(.144)	(.690)	(.158)	(.803)
DECEASED	.338+	.123	.332+	.242	.161	.054	.163	.244
	(.213)	(.248)	(.213)	(.221)	(.203)	(.241)	(.204)	(.402)
KITCHEN	-.235	-.299	-.233	-.177	.010	-.010	.013	-.231
	(.194)	(.234)	(.193)	(.203)	(.203)	(.245)	(.207)	(.357)
TRASHCOL	-.058	.167	-.047	.008	.261	.587*	.261	.226
	(.158)	(.234)	(.158)	(.187)	(.205)	(.306)	(.210)	(.728)
INFANT	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
PREVLOAN	-.065	-.101	-.061	-.063	-.136	-.246	-.143	-.564
	(.216)	(.278)	(.217)	(.230)	(.246)	(.304)	(.253)	(.631)
MARRIED	-.120	-.130	-.138	-.169	-.135	-.221	-.137	-.525
	(.138)	(.194)	(.138)	(.153)	(.173)	(.197)	(.181)	(.585)
DIRT	-.260	-.334	-.269	-.376+	-.016	.154	-.015	.477
	(.250)	(.294)	(.250)	(.266)	(.164)	(.201)	(.178)	(.619)
FLUSH	-.231	-.091	-.239	-.118	.521***	.369+	.519***	.367+
	(.200)	(.2530	(.200)	(.220)	(.165)	(.258)	(.166)	(.259)
LNROOMS	.241+	.148	.217+	.159	.059	.151	.053	-.093
	(.160)	(.202)	(.159)	(.173)	(.178)	(.207)	(.180)	(.460)
FOLLOW-UP	.077	-.450	-.065	-.043	.054	.095**	.056	-.338
	(.170)	(.387)	(.169)	(.207)	(.180)	(.272)	(.183)	(.837)
LOGAGE	.084	.223	.124	.029	.134	-.020	.123	-.249
	(.410)	(.522)	(.420)	(.452)	(.376)	(.440)	(.379)	(.610)
LOGEDUC	.177+	.201	.185+	.209+	.067	.098	.067	.016
	(.127)	(.162)	(.129)	(.136)	(.108)	(.130)	(.113)	(.199)
HLTHBFOL	.165	.704+	.170	.393+	.516**	.585*	.512**	.548+
	(.216)	(.428)	(.217)	(.292)	(.229)	(.330)	(.228)	(.334)

CREDBFOL	.472	.983+	.494+	.593+	.156	-.184	.154	-.003
	(.328)	(.539)	(.332)	(.431)	(.403)	(.788)	(.406)	(.848)
LL	-250	-203	-253	-240	-231	-201	-231	-201
N	392	392	397	397	412	412	412	412

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 7
Diarrhea Incidence (Banks-Only Sample)

	Ecuador				Honduras			
Regression Specification	NO FE NO IV	FE NO IV	NO FE IV	FE IV	NO FE NO IV	FE NO IV	NO FE IV	FE IV
Independent Variables								
INTERCEPT	-.273	-1.572	8.519	9.500	.107	1.831	-2.882	-8.639
	(2.822)	(3.229)	(7.242)	(24.776)	(2.026)	(2.461)	(4.018)	(15.931)
LOGEXPEND	-.031	.034	-.772+	-.902	.050	-.156	.521	1.454
	(.173)	(.195)	(.587)	(2.087)	(.194)	(.239)	(.579)	(2.488)
LOGCHILD	-.099	.016	-.062	.075	-.242	-.039	-.313+	-.417
	(.234)	(.256)	(.587)	(.291)	(.197)	(.255)	(.215)	(.622)
DECEASED	.204	.035	.132	-.036	.562*	.392	.570*	.528
	(.287)	(.312)	(.292)	(.343)	(.306)	(.391)	(.306)	(.430)
KITCHEN	-.242	-.078	-.390+	-.250	.561*	.552+	.556*	.603*
	(.266)	(.290)	(.290)	(.486)	(.303)	(.357)	(.306)	(.355)
TRASHCOL	-.059	.025	-.072	.025	.642*	.874*	.671*	.942*
	(.206)	(.272)	(.207)	(.272)	(.342)	(.457)	(.347)	(.504)
INFANT	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
PREVLOAN	.028	.169	.260	.421	-.237	-.327	-.316	-.587
	(.329)	(.370)	(.374)	(.684)	(.281)	(.368)	(.296)	(.517)
MARRIED	-.362*	-.559*	-.280+	-.532*	-.087	-.101	-.127	-.265
	(.203)	(.273)	(.212)	(.281)	(.254)	(.290)	(.258)	(.517)
DIRT	-.360	-.593+	-.327	-.531+	.176	.300	.261	.543
	(.316)	(.352)	(.316)	(.373)	(.238)	(.290)	(.258)	(.467)
FLUSH	-.310	-.099	-.269	-.061	.448*	.253	.462*	.275
	(.262)	(.306)	(.262)	(.312)	(.267)	(.413)	(.268)	(.415)
LOGROOMS	.196	.137	.368+	.367	-.102	-.037	-.150	-.239
	(.210)	(.243)	(.250)	(.570)	(.258)	(.300)	(.262)	(.403)
FOLLOW-UP	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
LOGAGE	.358	.432	.502	.657	-.120	-.223	-.160	.323
	(.634)	(.704)	(.645)	(.863)	(.526)	(.594)	(.551)	(.730)
LOGEDUC	.054	.210	.060	.218	-.011	-.012	-.025	-.052
	(.207)	(.239)	(.207)	(.240)	(.166)	(.203)	(.167)	(.216)
HLTHBFOL	.253	.297	.221	.260	.734***	.859**	.753***	.783**
	(.214)	(.280)	(.216)	(.292)	(.239)	(.396)	(.238)	(.387)

CREDBFOL	.550*	.576+	.557*	.541+	.383	.440	.471	.797
	(.333)	(.420)	(.331)	(.417)	(.417)	(.815)	(.428)	(1.033)
LL	-127	-114	-114	-126	-109	-92	-109	-92
N	205	205	205	205	203	203	203	203

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 8
Breastfeeding Incidence (Full Sample)

	Ecuador				Honduras			
Regression	NO FE	FE	NO FE	FE	NO FE	FE	NO FE	FE
Specification	NO IV	NO IV	IV	IV	NO IV	NO IV	IV	IV
Independent Variables								
INTERCEPT	-1.859	-4.057*	-1.592	-.696	-3.095**	-3.369**	-2.952	-33.207
	(1.478)	(2.201)	(2.216)	(2.834)	(1.306)	(1.606)	(2.736)	(29.381)
LOGEXPEND	.035	.060	.022	.065	.292**	.310**	.253	5.177
	(.087)	(.118)	(.188)	(.260)	(.132)	(.150)	(.418)	(4.791)
LOGCHILD	-.405***	-.686***	-.359**	-.334**	-.198+	-.262+	-.205+	-1.143+
	(.154)	(.204)	(.153)	(.160)	(.136)	(.160)	(.149)	(.883)
DECEASED	.064	.002	.063	-.023	.046	.021	.055	.388
	(.200)	(.241)	(.200)	(.214)	(.195)	(.221)	(.194)	(.419)
KITCHEN	-.175	-.311+	-.149	-.178	-.134	-.176	-.147	-.469+
	(.196)	(.237)	(.195)	(.204)	(.495)	(.226)	(.199)	(.355)
TRASHCOL	-.099	-.231	-.103	-.182	-.452**	-.319	-.451**	-1.061+
	(.158)	(.226)	(.157)	(.187)	(.201)	(.269)	(.206)	(.764)
INFANT	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
PREVLOAN	.032	.089	.040	.058	.250	.275	.281	-.318
	(.214)	(.277)	(.216)	(.229)	(.242)	(.286)	(.246)	(.666)
MARRIED	-.023	.032	-.032	.003	.091	.021	.085	-.652
	(.137)	(.192)	(.137)	(.153)	(.584)	(.186)	(.173)	(.635)
DIRT	-.654**	-.651*	-.649**	-.622**	-.349**	-.421*	-.347+	.235
	(.291)	(.336)	(.290)	(.306)	(.172)	(.207)	(.184)	(.672)
FLUSH	-.046	-.254	-.030	-.105	.092	.264	.098	.280
	(.204)	(.263)	(.204)	(.231)	(.154)	(.228)	(.154)	(.229)
LOGROOMS	.180	.483**	.158	.307*	.097	.145	.116	-.300
	(.163)	(.209)	(.162)	(.178)	(.169)	(.189)	(.171)	(.490)
FOLLOW-UP	-.055	-.002	-.039	.010	-.175	-.140	-.192	-1.109
	(.171)	(.391)	(.171)	(.209)	(.178)	(.257)	(.171)	(.952)
LOGAGE	.463	1.060*	.411	.398	.274	.321	.313	-.121
	(.419)	(.548)	(.428)	(.460)	(.350)	(.410)	(.348)	(.615)
LOGEDUC	-.063	-.231+	-.051	-.088	.079	.075	.081	-.080
	(.127)	(.167)	(.128)	(.136)	(.110)	(.125)	(.113)	(.196)
HLTHBFOL	.313+	.002	.310+	.108	-.294	-.208	-.273	-.197
	(.214)	(.433)	(.215)	(.286)	(.215)	(.296)	(.215)	(.296)

CREDBFOL	.490+	.828+	.492+	.736*	-.585	.444	-.553	.457
	(.307)	(.541)	(.310)	(.417)	(.474)	(.962)	(.471)	(.961)
LL	-249	-203	-253	-240	-243	-218	-245	-219
N	393	393	398	398	412	412	412	412

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 9
Breastfeeding Incidence (Banks-Only Sample)

	Ecuador				Honduras			
Regression Specification	NO FE NO IV	FE NO IV	NO FE IV	FE IV	NO FE NO IV	FE NO IV	NO FE IV	FE IV
Independent Variables								
INTERCEPT	3.624+	-4.271+	6.172	25.389	-4.264**	-5.511**	-32.301**	-6.776*
	(2.799)	(3.212)	(6.861)	(25.968)	(1.898)	(2.421)	(14.980)	(3.957)
LOGEXPEND	.072	.168	-.758	-2.340	.387**	.507**	4.451*	.754+
	(.169)	(.190)	(.556)	(2.191)	(.197)	(.247)	(2.304)	(.560)
LOGCHILD	-.655***	-.688***	-.629***	-.538*	-.384**	-.503**	-1.441**	-.454**
	(.236)	(.261)	(.238)	(.292)	(.184)	(.237)	(.577)	(.203)
DECEASED	.101	.144	-.008	-.059	.196	.005	.299	.214
	(.278)	(.317)	(.286)	(.350)	(.274)	(.344)	(.395)	(.274)
KITCHEN	-.158	-.170	-.320	-.631	-.339	-.524+	-.507+	-.388+
	(.269)	(.294)	(.293)	(.507)	(.292)	(.342)	(.345)	(.291)
TRASHCOL	-.201	-.237	-.207	-.233	-.325	-.483	-.168	-.271
	(.207)	(.272)	(.208)	(.273)	(.320)	(.415)	(.467)	(.316)
INFANT	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
PREVLOAN	.290	.352	.546+	1.020+	.349	.638*	.016	.311
	(.327)	(.377)	(.372)	(.733)	(.275)	(.350)	(.498)	(.286)
MARRIED	-.214	-.124	-.121	-.040	.303	.195	-.288	.241
	(.198)	(.268)	(.210)	(.279)	(.241)	(.276)	(.365)	(.243)
DIRT	-.836**	-.823*	-.796**	-.630+	-.062	-.213	.396	.016
	(.376)	(.423)	(.376)	(.430)	(.238)	(.293)	(.442)	(.255)
FLUSH	.124	.065	.199	.172	.237	.624*	.784**	.271
	(.269)	(.329)	(.270)	(.335)	(.235)	(.359)	(.371)	(.236)
LOGROOMS	.135	.244	.308	.863+	.058	.201	-.200	.055
	(.216)	(.252)	(.248)	(.605)	(.246)	(.284)	(.384)	(.249)
FOLLOW-UP	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
LOGAGE	1.101*	1.051+	1.294**	1.683*	.423	.581	.648	.442
	(.647)	(.711)	(.655)	(.901)	(.453)	(.543)	(.680)	(.451)
LOGEDUC	-.279*	-.390+	-.281+	-.396+	.147	.176	.122	.138
	(.201)	(.241)	(.202)	(.243)	(.169)	(.201)	(.212)	(.169)
HLTHBFOL	.293+	.116	.265	.016	-.379+	-.422	-.366	-.309+
	(.216)	(.287)	(.218)	(.297)	(.230)	(.334)	(.329)	(.227)

CREDBFOL	.452+	.951**	.452+	.844**	-.581	.047	1.014	-.440
	(.311)	(.405)	(.311)	(.411)	(.502)	(.799)	(.952)	(.502)
LL	-127	-115	-126	-115	-113	-94	-93	-114
N	205	205	205	205	203	203	203	203

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 10
Health Care Evidence (Cancer Screening), Full Sample

	Ecuador				Honduras			
Regression	NO FE	FE	NO FE	FE	NO FE	FE	NO FE	FE
Specification	NO IV	NO IV	IV	IV	NO IV	NO IV	IV	IV
Independent Variables								
INTERCEPT	1.360	1.598	1.370	.484	-.563	-1.082	-.875	-.21.493+
	(1,098)	(1.362)	(1.639)	(2.100)	(.825)	(.901)	(.863)	(14.344)
LOGEXPEND	-.252***	-.270***	-.253*	-.137	-.144+	-.177*	.086	3.391+
	(.065)	(.076)	(.137)	(.189)	(.091)	(.010)	(.284)	(2.265)
LNCHILD	-.107	-.204*	-.122+	-.144+	-.135+	-.111	-.176*	-.793+
	(.096)	(.109)	(.095)	(.098)	(.086)	(.093)	(.100)	(.443)
DECEASED	.090	-.078	.082	.071	.061	.119	.077	.370*
	(.119)	(.131)	(.118)	(.123)	(.112)	(.120)	(.113)	(.199)
KITCHEN	-.254**	-.353**	-.235*	-.259**	-.140	-.139	-.159	-.344*
	(.129)	(.141)	(.128)	(.122)	(.127)	(.138)	(.129)	(.190)
TRASHCOL	.264**	-.036	.243**	.021	-.051	-.033	-.078	-.540+
	(.104)	(.145)	(.103)	(.122)	(.136)	(.178)	(.140)	(.371)
INFANT	.456***	.467***	.449***	.448***	.056	.012	.074	.324+
	(.104)	(.116)	(.104)	(.107)	(.098)	(.104)	(.100)	(.224)
PREVLOAN	.005	.167	.051	.011	-.004	-.075	-.036	-.543+
	(.139)	(.160)	(.140)	(.147)	(.141)	(.156)	(.145)	(.334)
MARRIED	-.241***	-.178+	-.241***	-.257**	-.211**	-.290**	-.240**	-.771**
	(.091)	(.115)	(.092)	(.102)	(.107)	(.116)	(.112)	(.325)
DIRT	-.220	-.246	-.226+	-.235+	-.068	-.064	-.032	.408
	(.178)	(.200)	(.176)	(.183)	(.113)	(.126)	(.122)	(.326)
FLUSH	-.012	-.103	-.013	-.085	.182*	.064	.167+	.037
	(.123)	(.142)	(.123)	(.132)	(.102)	(.142)	(.103)	(.142)
LNROOMS	.045	.044	.027	.055	-.023	-.025	-.042	-.365+
	(.116)	(.134)	(.115)	(.122)	(.111)	(.120)	(.114)	(.247)
FOLLOW-UP	.725***	.333+	.701***	.661***	-.488***	-.593***	-.507***	-1.239***
	(.122)	(.254)	(.121)	(.142)	(.130)	(.177)	(.134)	(.457)
LOGAGE	.571**	.743**	.587**	.482*	.262	.175	.246+	-.041
	(.265)	(.300)	(.272)	(.289)	(.176)	(.182)	(.178)	(.227)
LOGEDUC	-.146**	-.193*	-.149*	-.206**	-.195***	-.218***	-.207***	-.327***
	(.085)	(.102)	(.086)	(.092)	(.069)	(.077)	(.071)	(.105)
HLTHBFOL	-.405***	.011	-.389***	-.346*	-.394***	-.443**	-.402***	-.482**
	(.134)	(.270)	(.136)	(.177)	(.141)	(.191)	(.141)	(.192)

CREDBFOL	-.245+	.153	-.242+	-.262	-.340*	.283	-.311+	.190
	(.179)	(.338)	(.183)	(.261)	(.202)	(.589)	(.206)	(.594)
LL	-567	-501	-578	-557	-560	-519	-561	-519
N	886	886	893	893	978	978	978	978

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Table 11
Health Care Evidence (Cancer Screening), Banks Only

	Ecuador				Honduras			
Regression Specification	NO FE NO IV	FE NO IV	NO FE IV	FE IV	NO FE NO IV	FE NO IV	NO FE IV	FE IV
Independent Variables								
INTERCEPT	-.137	-.052	-.971	9.639	-1.313	-.832	-.509	-.917
	(1.691)	(1.852)	(3.969)	(11.979)	(1.515)	(1.711)	(2.624)	(8.144)
LOGEXPEND	-.252**	-.284***	-.179	-1.107	-.090	-.055	-.224	-.040
	(.101)	(.109)	(.316)	(1.017)	(.138)	(.154)	(.390)	(1.259)
LOGCHILD	-.121	-.142	-.122	-.091	.110	.180	.135	.177
	(.130)	(.139)	(.130)	(.149)	(.139)	(.161)	(.153)	(.328)
DECEASED	.002	-.038	.011	-.098	.094	.141	.084	.144
	(.152)	(.163)	(.152)	(.179)	(.169)	(.188)	(.171)	(.212)
KITCHEN	-.322*	-.404**	-.298*	-.545**	-.299+	-.173	-.302+	-.173
	(.171)	(.182)	(.180)	(.260)	(.209)	(.231)	(.209)	(.232)
TRASHCOL	.262**	-.070	.261**	-.066	-.236	-.264	-.252	.267
	(.126)	(.164)	(.126)	(.163)	(.298)	(.346)	(.299)	(.354)
INFANT	.438***	.434***	.437***	.367**	-.024	-.097	-.048	-.104
	(.139)	(.148)	(.141)	(.165)	(.210)	(.230)	(.214)	(.322)
PREVLOAN	-.005	-.066	-.029	.172	-.026	-.105	-.011	-.113
	(.193)	(.209)	(.217)	(.356)	(.181)	(.209)	(.188)	(.279)
MARRIED	-.166+	-.199+	-.174+	-.155	-.273*	-.267+	-.260+	-.270
	(.121)	(.150)	(.126)	(.157)	(.166)	(.183)	(.169)	(.255)
DIRT	-.080	-.162	-.083	-.113	-.051	-.099	-.077	-.099
	(.216)	(.232)	(.215)	(.235)	(.167)	(.209)	(.179)	(.264)
FLUSH	.038	-.053	.031	-.031	.166	.080	.166	.078
	(.151)	(.167)	(.153)	(.169)	(.158)	(.209)	(.158)	(.209)
LOGROOMS	.124	.269+	.104	.456+	.122	.062	.137	.058
	(.150)	(.164)	(.163)	(.287)	(.174)	(.188)	(.179)	(.233)
FOLLOW-UP	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
LOGAGE	.915**	.926**	.888**	1.104**	.594+	.392	.629+	.389
	(.360)	(.387)	(.360)	(.451)	(.381)	(.398)	(.396)	(.442)
LOGEDUC	-.022	-.087	-.023	-.085	-.044	-.044	-.037	-.043
	(.114)	(.129)	(.113)	(.128)	(.113)	(.125)	(.114)	(.130)
HLTHBFOL	.330**	.319**	.326	.305**	-1.088***	-1.351***	-1.110***	-1.367***

	(.134)	(.152)	(.134)	(.152)	(.229)	(.288)	(.229)	(.286)
CREDBFOL	.477***	.392+	.466**	.386+	-1.005***	-.447	-1.043***	-.454
	(.180)	(.250)	(.181)	(.249)	(.272)	(.459)	(.281)	(.540)
LL	-336	-312	-339	-315	-232	-208	-232	-209
N	514	514	514	514	474	474	474	474

Note: Standard errors in parentheses. ***, **, *, and +, denote significance at the 1%, 5%, 10%, and 20% levels respectively.

Endnotes

1. In Ecuador, the UNDP estimates that 56% of the population lives in absolute poverty. In Honduras, 46% of the population is estimated to be absolutely poor. Inequality is also high in both countries. In Honduras the highest 20% of the population possess 63.5% of all income. Official figures are not available for Ecuador, but given the level of absolute poverty and a GNP per capita of US $1,000 (nearly twice that of Honduras) inequality is also expected to be quite high. In Ecuador, more than half the working population is self-employed. A majority of entrepreneurs in Honduras are women, as are about one-third in Latin America as a whole.

2. These are informal estimates that should be examined further by independent researchers; the data are not currently available to us. Moreover, more than one program design has been used by HOPE, for example, providing health education directly, and training local bank representatives to train other members. In future research, we hope to be able to examine the comparative costs and impacts of these alternative strategies.

3. More details are found in section IV-1, where the possibility of selection bias is considered..

4. Full details of these tests are not reported here to save space but are available from the author.

5. Note that control respondents were sampled from communities without banks in Ecuador, so the community averages for that country are computed from among bank joiners only. Thus, these results can be considered less accurate than for Honduras.

6. When the decision was made by HOPE's headquarters to create credit only banks as an experiment, a few health banks had just been established in both countries. HOPE indicates that at that point, the next 6 communities on the list of selected communities in each country were assigned credit only banks. Thus although the numbers are too small for statistical tests to be meaningful at the bank level, there should be no danger of selection bias between communities with credit only and health banks.

7. Pitt and Khandker (1996) account for the bias that may arise as a consequence of the self-selection of households into credit programs. They also point out the possibility that the placement of programs itself may be endogenous, and use community fixed-effects to control for that. Finally, they ask whether there is a differential impact (on the health outcomes of

boys and girls, for example) of program participation by men versus women. Evidence of such a differential impact (which they find) would suggest that credit is not perfectly fungible within the household, contrary to the claims of Goetz and Sen Gupta (1996). While these are important issues in their own right, in the programs we study, all participants are women. In addition to comparisons with the control group, we offer comparisons of participants in the two types of banks, both of which are subject to the same possible self-selection process. We also use community fixed-effects to control for unobserved differences across communities.

8. The analogous test cannot be performed for Ecuador, because in that country the control group respondents were selected only from communities without either type of Project HOPE bank.

9. Note that there is a tradeoff in using the banks only sample: the advantage of using the sample with bank members only is as an extra check against selection bias, but the disadvantage is that we cannot control both for bank at follow-up and for time, because of perfect multicollinearity; we also end up with a smaller sample size. Thus, results based on both samples will be presented.

10. We experimented with an alternative specification in which expenditures per capita were used as the dependent variable instead of including the number of children as an independent variable, and qualitative results were not affected.

11. Some of these variables may be endogenous in the long run, if not over the two year period of the study. Unfortunately, family background data (on respondents' parents, for example) intended to instrument for them were not ultimately collected. Other available data that might be used cannot be safely considered exogenous. This is a limitation of the study that cannot be overcome; it offers valuable lessons for future research.

12. For consistency and comparability we use the same set of control variables in each regression, though experiments suggest that reducing the number of variables has little qualitative effect.

13. We do not report their coefficients here but they are available from the author.

14. These regressions are available from the author. Note that we do not include participation in the banks as an instrument. Food expenditures are used as an explanatory variable because of its anticipated impact on child health. Some regressions were run using predicted total expenditures rather than predicted food expenditures as explanatory variables for child health outcomes, but doing so did not make much qualitative difference in estimating the impact of bank participation.

15. Details are not reported here but are available from the author.