Meeting the double bottom line: the impact of Khushhali bank's microfinance program in Pakistan

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The Impact of Khushhali Bank's Microfinance Program in Pakistan**

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I.   Introduction

Although Pakistan's economy enjoyed relatively stable growth during the 1990s, poverty and income inequality continued to rise.[1] The most recent official estimates are that roughly one-third of the population was below the poverty line at the start of the millennium (Government of Pakistan (2003), p. 12). In response to these widely cited figures, the Government of Pakistan established poverty reduction as its overarching objective and, recognizing the potential role of microfinance in alleviating poverty, embarked on a Microfinance Sector Development Program (MSDP) to broaden and deepen the microfinance sector to provide a broad range of financial services in a sustainable manner.

The Khushhali Bank, a retail microfinance bank established in August 2000, was the first licensed microfinance bank established under the MSDP, and expectations for Khushhali as the flagship microfinance institution in Pakistan are high. The State Bank of Pakistan views Khushhali as a "model institution" for the private sector to follow in establishing sustainable, commercial microfinance banks that substantially increase the outreach of a range of financial services to the poor (State Bank of Pakistan (2004) p. 19).

Despite its short history, the bank has performed well by these criteria. It has quickly grown into by far the largest provider of microfinance in Pakistan, now providing a range of loan products to over 230,000 active clients from its network of branches across the country, and has stayed focused on the core objectives of operational and financial self-sufficiency.[2]

But as its roots in the MSDP would suggest, in addition to the pressure to quickly expand outreach and make profits, Khushhali simultaneously faces the challenge of meeting a "second bottom line": poverty reduction. The bank's dual mission is reflected in its Annual Report, which alongside audited financial statements and indicators of financial performance such as the bank's credit rating, portfolio at risk and efficiency ratio,[3]

[1] Real GDP growth fluctuated around 3% throughout the 1990s (Government of Pakistan (2003), p.21), but the head count index using the official poverty line, which is based on calorie consumption, rose from 26.1 in 1990-91 to 32.1 in 2000-01 (Government of Pakistan (2003), p.12) and the Gini coefficient, which measures inequality, rose from 28.4% in 1984-85 to 29.6% in 1998-98 (World Bank, 2002, page 26).
[2] At the close of fiscal year 2004, Khushhali reported an operational self-sufficiency ratio (OSS) of 90.03%, and 100% OSS is projected within fiscal year 2005. Financial self-sufficiency (FSS) is currently at 56.2% and projected to reach 100% by 2007.
[3] An independent credit rating from JCR-VIS was "A-1" for short term and "A-" for long term with a positive outlook. PAR>30 days was reported at 6.4% and the operational efficiency ratio was 30.2% at the close of fiscal year 2004.

includes a statement on the "Status and Nature of Business" emphasizing that the bank was

> *...established to mobilize funds for providing micro-finance services to poor persons, particularly poor women for mitigating poverty and promoting social welfare and economic justice through community building and social mobilization with the ultimate objective of poverty alleviation* (Khushhali Bank Annual Report 2004).

This study empirically addresses the question of whether the bank is also meeting these social objectives. As such, it fills an important niche in the literature on microfinance and has important implications for the microfinance sector, not only in Pakistan, but worldwide. Case studies on the role of microfinance in helping poor households to help themselves out of poverty have inspired microfinance practitioners around the globe and spawned the "microcredit revolution."[4] But anecdotes showing the *potential* impact of microfinance are not a substitute for careful empirical studies, which report the *typical* impact of microfinance on large samples after controlling for various biases. As reported in earlier ADBI research, "although microfinance institutions are often seen by aid practitioners as a manifestly effective means of improving the position of the poor, detailed research studies have been much more guarded about their impact" (Montgomery and Weiss (2005)). To date, there have been only a handful of rigorous empirical impact studies that seriously address statistical issues such as bias. Given recent trends in the sector toward sustainable microfinance, this study is of particular interest. Khushhali is a retail microfinance bank focused on the core objectives of operational and financial self-sufficiency, so this study can play a role in informing the policy debate on the feasibility of a "double bottom line" for microfinance institutions: pursing profitable, sustainable business practices in tandem with social objectives like poverty reduction and empowerment of the poor.

II.   The Microfinance Sector in Pakistan

Microfinance is still relatively new to Pakistan, both in concept and practice. Until 2000, the main providers of microfinance were NGOs[5] and government-sponsored rural support networks[6] or, in at least one case, a traditional commercial bank with a specialized microfinance window. With the exception of KASHF, a well-known NGO operating out of Lahore, none of these institutions are specialized microfinance institutions and none have demonstrated financial sustainability[7] (Pakistan Microfinance Network (2003)). Despite the achievements of these institutions,[8] the total outreach of all

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[4] For examples of such case studies of Khushhali Bank clients, readers are referred to Yousaf, Hassah and Kanwal (2004).

[5] The major NGOs providing microfinance services in Pakistan are Development Action for Mobilization and Emancipation (DAMEN), Sungi Development Foundation (SUNGI), Taraqee Foundation (Taraqee), Orangi Pilot Project (OPP), Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO)、Asasah and KASHF Foundation (Kashf).

[6] National Rural Support Programme (NRSP), Punjab Rural Support Programme (PRSP), Sarhad Rural Support Programme (SRSP) Thardeep Rural Development Programme (TRDP).

[7] The microfinance division of the Bank of Khyber, the one traditional commercial bank offering microfinancial services, is also not financially sustainable (Pakistan Microfinance Network Performance Indicators Report 2003).

[8] The Pakistan Poverty Alleviation Fund (PPAF), for example, a national apex institution wholesaling financial services to eligible institutions – including many of the NGOs and RSPs described above – reports that as of June 2005, its 56 partner organizations had 221,150 active sub-loans.

these organizations is still less than 5% of the estimated 5.6 million poor households in Pakistan that require microfinance services (Pakistan Microfinance Network Website; see Figure 1 for details).

<Insert Figure 1 Around Here>

To reach these un-served households, in 2001 the government of Pakistan established a regulatory framework to promote the rapid expansion of microfinance throughout the country. Learning from international experiences, in promoting the expansion of access to financial services, policymakers emphasized the importance of sustainable microfinance and encouraged private sector participation from the start (State Bank of Pakistan (2004), p.19). Legislation established a specialized microfinance banking license to provide microfinancial services on the district, region or nationwide level. Prudential regulation of the licensed microfinance banks is carried out by the State Bank of Pakistan, the central bank, as it is for other commercial banks operating in the country. As with other banks, microfinance banks are required to submit to an external audit and to publish an annual report. The first step of licensing has been to allow lending. The microfinance banks are allowed to offer voluntary savings services only after being in operation for some time and having an appropriate MIS system in place. Loans are allowed up to a maximum of Rs. 100,000 and clients in turn are allowed to borrow no more than a maximum of Rs. 100,000 in total from any combination of microfinance institutions (MFIs).[9] In addition to regulating the amount of lending, the legislation regulates the opening of new branches and provisioning, rescheduling and write-off of loans, and to some extent interest rates since microfinance banks are required to implement "appropriate pricing policies which ensure access of affordable financial services to the poor as well as operational and financial self-sustainability of MFIs" (State Bank of Pakistan (2004)).

The effect of this legislation has been to dramatically increase the outreach of microfinance in Pakistan. Khushhali Bank, the flagship institution, now serves over 230,000 active clients, more than the number of clients reached by all the NGOs and rural support programs in total before its establishment in 2000.[10] In addition to Khushhali Bank, there are now several other licensed microfinance banks[11] in Pakistan and others are in the process of applying.

III.   Khushhali Bank Operations

Khushhali Bank's mandate is to serve the poor, defined as persons who have meager means of subsistence and whose total income or receipt during a year is less than the minimum taxable limit. Accordingly, Khushhali serves clients who are "poor" and "very poor," but not those who are "destitute" (receiving zakat) or the "non-poor," who receive enough income to pay income tax. In the sample drawn for this study, more than 70% of

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[9] MFIs granting loans are required to check this by gathering the relevant information from clients before issuing any money.

[10] The Pakistan Microfinance Network (2001) reports that members had reached a cumulative total of 136,205 borrowers as of June 2001.

[11] The First Microfinance Bank, Rozgar Bank and Network Microfinance Bank have recently received microfinance banking licenses.

the clients were below the official poverty line of the Government of Pakistan,[12] and 20% again were at less than half of the caloric consumption defined as poor.

Although the bank has introduced an individual scoring report to screen and classify clients according to the above criteria, it uses a group lending methodology under which clients form groups called community organizations that can be male, female or mixed gender groups of between three and 25 members (usually three to five members in urban and 10-25 in rural areas) who provide personal guarantees to each other. Loans are made directly to individuals in the group, but if one member of the group defaults then all members of that group become ineligible for loans.

The bank offers eligible clients uncollateralized microloans of Pk.Rps. 3,000 – 30,000 (approximately US$50-500). The first loan would be between Rupees 3,000-10,000 (US$50-170) with loan sizes increasing 20% with each cycle to a maximum of Pk.Rps. 30,000 (US$500). The terms of the microloan varies between 3-12 months, to be repaid with 20% interest on declining balances in equal monthly installments or in one bullet payment, depending on the purpose of the loan. Loans are offered for investments in agriculture (40% of the current loan portfolio), livestock (24%) or microenterprises (36%): to establish a new business or purchase assets or working capital for an existing business. In addition to the interest rate, clients are required to provide 10% of the loan size as mandatory savings or "financial collateral."

Most client groups are formed by the communities themselves with facilitation from Khushhali Bank staff, but some are groups facilitated by NGO groups such as Bunyaad Literacy Community Council (BLCC), Family Planning Association of Pakistan (FPAP), Health and Nutrition Development Society (HANDS), Human Development Foundation (HDF), Indus Resource Center (IRC) and Sindh Graduates Association (SGA). The costs of community mobilization through NGO service providers are provided through a separate fund – the Microfinance Social Development Fund – created for that purpose, so costs to the bank for mobilizing directly or through an NGO partner are neutral to the bank.

In addition to loans, the bank has started offering equity sharing in small infrastructure projects to interested community organizations. These projects are undertaken on an 80:20 cost-sharing basis, with the community organizations covering 20% of the costs. Many of the projects are irrigation or water supply projects, but the requests from community organizations also include rural electrification, installation of street pavement, or the construction of community buildings such as schools or computer centers. These projects are financed out of a Community Investment Fund, which is administered by the State Bank of Pakistan.

Both the Microfinance Social Development Fund and the Community Investment Fund will be available to the other newly established microfinance banks, so the effectiveness of these programs has significant implications for the sector as a whole. The small infrastructure project program was still in its pilot phase at the time the survey for this study was carried out, so that program is not assessed here, but the empirical results do

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[12] The official poverty line is based on caloric intake and translates into approximately 1,000 rupees per capita per month of food consumption. The author would like to thank Dr. Talat Anwar of CPRID for raising this issue and providing updated poverty line estimates.

include an analysis of the differential impacts of lending to groups formed by NGO partners as opposed to groups formed by Khushhali Bank staff directly.

Plans are also underway for the bank to begin offering voluntary savings accounts and distance learning training programs to build capacity among active and potential clients. These services have not yet been implemented and are not analyzed here.

At the close of the last fiscal year (December 2004), Khushhali served 175,000 active clients in 64 districts throughout Pakistan. The bulk of the clients are in rural areas (60%) and roughly one-third are women. Of them, 12% were in groups formed by NGO partners and approximately 5% were in groups that had also received a small infrastructure project in their community.

IV.   Literature Review: The Impact of Microfinance

A perfect impact evaluation really needs to answer a counterfactual question: how does the status of participants in the program compare with how those same individuals would have fared in the absence of the program? The problem with cross-sections of data (observations on many individuals at a given point in time) is that at any given point in time, individuals are observed to be either participants or not. Even panels of data (observations on many individuals through time) are problematic since over time many other things have happened to the individuals in addition to program participation and it is nearly impossible to separate out the impact of the program from all the other influences. In reality, researchers must settle for estimates of the average impact of the program on a group of participants – the treatment group – compared to a credible comparison group – a control group. The ideal control group is individuals who would have had outcomes similar to those in the treatment group if the members of the treatment group had not participated in the program.

But constructing a control group comparable to the treatment group is not straightforward. Participants in the program are usually different from non-participants in many ways: programs are usually carefully placed in specific areas, participants within those areas may be screened for participation, and the final decision on whether or not to participate is usually voluntary. To the extent that these factors are known and can be measured, they can be controlled for in the empirical analysis, but in most cases the placement of the program and self-selection of participants in those areas into the program are based on unobservable factors. These unobservable factors lead to at least two kinds of bias in any empirical impact evaluation: program placement bias and self-selection bias.

Controlling for this bias – determining the effects of microfinance alone and separating out the impact of microcredit from what would have happened to the same household without credit – is often the most difficult part of careful empirical impact studies. Well-run microfinance institutions do not randomize either the location of their operations or their selection of clients. If MFIs tend to operate in areas that have relatively better or worse infrastructure such as access by roads or more or less active markets, then estimates of the impacts of the program on participants do not measure the effects just of microfinance, but of these other factors as well. Even within a given village, if, as studies by Coleman (2002), Alexander (2001) and Hashemi (1997) suggest, microfinance clients already have initial advantages over non-clients, then the impact of microfinance will be overestimated if these initial biases are not controlled for. Similarly,

the impact of microfinance programs that deliberately target relatively *dis*advantaged households in the areas they operate may be *underestimated* if these biases are not controlled for.

Despite the importance of thinking carefully about these issues, few studies have addressed them rigorously, and for good reason. As nicely summarized in an overview of the impact of microfinance on poverty and gender equity prepared for the Pakistan Microfinance Network (Hussein and Hussain (2003)) rigorous quantitative studies are costly and time consuming. [13] Few MFIs have the resources in terms of funds or staff time to conduct them. There is a movement in the industry to create practitioner-friendly assessment tools (e.g.: the Imp-Act project based at the Institute of Development Studies at Sussex, USAIDs AIMS project and assessment tools by CGAP), but these assessments, while very useful to the institutions themselves in refining their targeting, products and marketing, are not rigorous quantitative measures of impact and do not adequately address the issues of selection bias.[14]

Armendáriz de Aghion and Morduch (2005) provide a compelling argument in favor of making the substantial investment required to conduct careful impact studies that control for these potential biases:

> *Unfortunately, this is not an esoteric concern that practitioners and policymakers can safely ignore. It is not just a difference between obtaining "very good" estimates of impacts versus "perfect" estimates – the biases can be large. In evaluating the Grameen Bank, for example, Signe-Mary McKernan (2002) finds that not controlling for selection bias can lead to overestimation of the effect of participation on profits by as much as 100 percent. In other cases …controlling for these biases reverses conclusions about impacts entirely.*

There are a handful of studies that rigorously address the issues of selection bias and endogeneity. The approaches of Pitt and Khandker (1998), Hulme and Mosely (1996), Coleman (1999), and work in progress by Banerjee and Duflo are discussed below.

A. Exogenous Eligibility Requirement

In an innovative approach to controlling for selection bias, Pitt and Khandker (1998) combine the use of a quasi-natural experiment and eligibility requirements to study the impacts of the Grameen Bank, Bangladesh Rural Advancement Committee (BRAC) and Bangladesh Rural Development Board (BRDB). They sample 1538 participants and 260 non-participants in a number of "treatment" villages where group lending programs are operating as well as randomly selected households from "control" villages without a program. They use village fixed effects to correct for the endogeneity of program placement and take advantage of the fact that the microcredit programs impose eligibility

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[13] Hussein and Hussain (2003) also mention the difficulties of overcoming selection bias as well as the fact that the factors included in quantitative studies are pre-determined, rather than open-ended as in qualitative approaches.

[14] Within Pakistan, PPAF (2004), conducted by GALLUP is a nice example of this practitioner-friendly type of quantitative assessment. PPAF (2004) recognizes the issue of bias upfront, but for practical reasons is unable to use any of the techniques described below, and instead uses client recall to proxy for change in income. Zafar and Abid (1999) is an example of the qualitative approach, using focus group discussions with Kashf clients to assess socio-economic outcomes. Zafar and Abid (1999) also discuss survey data from 55 Kashf households, but the sample includes no control group.

requirements on participants (households with land holdings of more than half an acre are ineligible) to determine eligible and ineligible households in the control villages. Impact is assessed using a difference-in-difference approach between eligible and ineligible households and between program and non-program villages. After controlling for other factors, such as various household characteristics, any remaining difference is attributed to the microfinance programs.

The study draws a number of conclusions, but the main one is that the program had a positive effect on household consumption, which was significantly greater for female borrowers. On average, a loan of 100 taka to a female borrower, after being repaid, allowed a net consumption increase of 18 taka. In terms of poverty impact it is estimated that 5% of participant households were pulled above the poverty line annually.

The accuracy of the original results as presented in Pitt and Khandker (1998) has been disputed on the grounds that the eligibility criteria of low land holdings was not strictly enforced in practice. In a reworking of the results focusing on more directly comparable households, no impact on consumption from participation is found (Morduch (1999):1605). This debate, which in part centers around details of econometric estimation, has not been resolved. An unpublished paper by Pitt reworks the original analysis to address the concerns of Morduch and is said to confirm the original results (Khandker (2003), footnote 1).

B. Prospective Clients as a Control Group

Another approach to controlling for self-selection and placement bias, used by Hulme and Mosley (1996) and Coleman (1999), is to include a sample of microcredit clients who have formed solidarity groups but have not yet received loans as the control group. In this approach, participating and non-participating households are again surveyed in treatment villages where the microcredit program is already operating and has already given loans. The control villages are villages where the microcredit program will operate and households from the village have already self-selected to participate in the program *but have not yet actually received loans*.

Hulme and Mosley (1996) employ this approach in their study of programs in a number of countries including the Grameen Bank in Bangladesh and the Bank Rakyat Indonesia (BRI). In general, a positive impact is found on borrower incomes of the poor with an on average increase over the control groups ranging from 10-12% in Indonesia, to around 30% in Bangladesh and India. Gains are found to be larger for non-poor borrowers, however, and within the poorest group, gains are negatively correlated with income.

However, Hulme and Mosley's study fails to control for the major source of bias – program placement bias – so part of the advantage of program participants relative to the control group may be due to unmeasured village attributes that affect both the supply and demand for credit.[15]

Coleman (1999) advances the literature by expanding on this concept to control for self-selection bias and introducing both observable village characteristics and village fixed effects to control for program placement bias in his study of a village banking program in

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[15] Morduch (1999) also questions the quality and accuracy of some of the data; particularly whether the control groups are truly representative.

Thailand. Utilizing data on 455 households, including participating and non-participating households in treatment villages where a village bank is already offering microcredit, and selected future participants and non-participants in control villages that have been identified to receive a village bank program but have not yet actually received funds, Coleman uses a difference-in-difference approach that compares the difference between income for participants and non-participants in program villages with the same difference in the control villages, where the programs were introduced later.

Coleman's study measures the effects of *access to* rather than *participation in* a microcredit program and finds no evidence that months of access to a village bank program has an impact on any asset or income variable and no evidence that access to village bank loans increases productive activity. The author cautions, however, against extrapolating these results to other contexts since Thailand is a rather wealthy developing country. One of the reasons for the weak poverty impact is that there was a tendency for wealthier households to self-select into village banks, and the relatively small sizes of loans may mean that they were largely used for consumption.

This approach is not perfect either. Karlan (2001) points out that in application, it often fails to correct for possible attrition bias – the fact that the control group includes potential future dropouts (or graduates) of the program, whereas the treatment group of older borrowers (who have in fact remained active borrowers) does not. Depending on the reasons for attrition, attrition bias can be positive or negative. If it is due to successful clients "graduating" out of microfinance into the formal financial sector, then impact will be underestimated. If it is due to dropouts who find the program unhelpful or whose microenterprises fail, however, then impact will be overestimated. Armendáriz de Aghion and Morduch (2005) review a number of studies that find dropout rates between 3.5%-60% per year in various microfinance programs worldwide. Even the lower-end estimates can add up over time.[16]

C. Randomized Program Design

There are a few very recent impact studies underway that use a randomized study design to control for selection bias. Interested readers are referred to Duflo and Kremer (2003), who describe the use of this type of evaluation for an educational program in Mexico. (Banerjee and Duflo (in progress) will apply this approach to a microfinance impact assessment for the Center for Micro Finance Research (CMFR).) This approach eliminates selection bias by randomly selecting treatment (those who receive microfinance) and control (those who do not) groups from a potential population of participants. With this type of study design, the researcher can be assured that on average those who are exposed to the program are no different than those who are not, and thus that a statistically significant difference between the groups' outcomes can be confidently attributed to the program rather than to selection bias.

Well-designed studies of this sort have the potential to rigorously address all kinds of potential biases, although they are limited by the fact that they can only estimate partial equilibrium treatment effects, which may differ from general equilibrium treatment effects. In the case of microfinance, this means that if, for example, microfinance is introduced on a large scale, the program can eventually affect the functioning of financial markets

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[16] Although it should be noted that these rates are still much lower than the rate of failure of newly-established enterprises in developed countries such as the United States or Japan.

and thus have a different impact than the necessarily smaller-scale program introduced for the impact study.

A more practical concern in attempting to apply randomized study design is that such studies require tremendous cooperation from the institutions being evaluated, who must be willing to allow researchers to randomize the implementation of their services. Such studies must also be longitudinal, making them costly, and it can be difficult to conduct research over a time-line long enough for some impacts to show up. In the case of Banerjee and Duflo's study for CMFR, the time frame between base line and final study is one year, which may not be long enough for some of the impacts of microfinance to show up quantitatively. For these reasons randomized studies will likely continue to constitute a tiny fraction of all microfinance evaluations.

V.   Research Methodology

The nature of Khushhali Bank's operations lent itself to an impact assessment using prospective clients who have not yet accessed loans as a comparison, or control group. The bank was rapidly expanding into new villages and the number of active clients was increasing at a rate of approximately 20,000 clients every three months. Bank management and staff were willing to cooperate with surveyors in identifying new villages that had just received the service and within those villages identifying new clients, allowing them to be surveyed in the interim between their application and the approval to get a microloan and the actual disbursement of the money.

A. Sample Selection[17]

Primary data was collected from 2,881 households – more than for any other rigorous impact study carried out to date. A stratified random sample of 1,454 Khushhali Bank clients and future clients was drawn from 139 rural villages and three urban cities where Khushhali operates. A roughly equal number (1,427) of randomly selected non-clients from the same villages or settlements were also surveyed. The survey covered 11 districts[18] from all five provinces (Punjab, Sindh, Balochistan, NWFP and AJK) of Pakistan. The 11 districts were represented roughly evenly in the sample (see Figures 2 and 3 for distribution of sample by province and district).

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At the time the sample was drawn, Khushhali was operating in approximately 42 districts in Pakistan and had about 175,000 active clients, 37,000 of which were in the 11 districts finally sampled. Thus, the sample represented more than a quarter of the districts served by Khushhali, and about 4% of the clients in the selected districts, but less than 1% of the total number of clients at that time.

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[17] The author would like to thank Brett Coleman for discussions on sampling and the application of the approach used in his 1999 study.

[18] Muzaffarabad (AJK), Dera Ismali Khan (NWFP), Kohat (NWFP), Lahore (Punjab), Dera Ghazi Khan (Punjab), Rahimyar Khan (Punjab), Karachi (Sindh), Jacobabad (Sindh), Nawabshah (Sindh), Quetta (Balochistan), Loralai (Balochistan). There is currently no truly urban lending in AJK, although Muzaffarabad includes some semi-urban areas. Urban lending in NWFP was randomly selected as Kohat, which in fact has more urban Khushhali clients than Peshawar, the largest city in the province.

Half (794, or 54%) of the client households in the sample were female clients (the female head of household was a program member). A decision was taken to over-represent females in the sample (roughly 30% of Khushhali clients are women) in order to yield more robust estimates of gender issues – an important policy question – in the empirical analysis.

One quarter (732, or 25%) of the total sample, were from urban areas in Quetta, Karachi, Lahore, or urban areas served by Kohat branch. At the time of the sampling, roughly 35% of the surveyed areas population was urban clients and approximately 15% of the total population of clients at that time was from the urban areas included in the survey and four other urban cities (Rawalpindi, Faisalabad, Sukkur and Hyderabad).

Of the clients, 11% were from branches where NGO service providers had formed groups, which corresponds to the actual population of clients, 12% of whom were in groups formed by service provider partners at the time the sample was drawn.

The sample of clients is unusual in that it included clients from not only active community organizations, but also groups that were in default, currently inactive for other reasons, or had completely dropped-out of the program,[19] removing any possible source of attrition bias from the analysis.

B. Survey Design

The design of the survey followed international guidelines, in particular those laid out in the three volume series by Grosh and Glewwe (2000) on the Living Standards and Measurement Survey (LSMS).

i. Survey Instrument – Questionnaire[20]

The design of the survey instrument, the questionnaire to be used in gathering data for the study, was primarily guided by the research question: what was the impact of the microfinance program on household welfare? It was decided to include a relatively wide definition of welfare that includes non-economic measures of welfare such as education, health or empowerment.

The core components of the LSMS were incorporated, and the final questionnaire also drew upon the AIMS-SEEP Impact Survey Tools – impact assessment tools designed specifically for assessment of microfinance institutions – as well as several carefully designed questionnaires used in previous studies in Pakistan including the Pakistan Integrated Household Survey (PIHS, round 3 of which was carried out in 1998-1999), the Household Integrated Economic Survey (HIES, which was combined with the PIHS and last conducted in 2001-2002), the Pakistan Rural Household Survey (PRHS) and the Pakistan Socio-Economic Survey (PSES). The findings of a nationwide participatory

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[19] 706 clients, or roughly half the treatment group, were currently active. 13% were inactive, 18% were members of a group where at least one in the group was in default, making all members ineligible to receive loans, and 16% had completely dropped out of the program.

[20] The author would like to thank GM Arif of ADB's Pakistan Resident Mission, Tak Kurosaki of Hitotsubashi University and Yasu Sawada of Tokyo University for helpful discussions on the design of the questionnaire.

poverty assessment[21] (Government of Pakistan (2004)) were also consulted and the results of focus group discussions with Khushhali Bank clients were incorporated.[22]

The length of the questionnaire was limited to what could be reasonably delivered in a maximum of one hour if all components were asked. In the final administration, most questionnaires took substantially less than one hour since very few households would actually respond to all sections. The sequence of the questions was guided by the LSMS, and accordingly sensitive questions on finances or empowerment issues were administered last.

To increase the accuracy of the information gathered and to enable the survey to address gender issues such as empowerment, both the male and female head of household were interviewed separately for each household. The suitability of different components of the questionnaire for the male or female version was decided based on the previous questionnaires listed above and confirmed in pre-testing.

The questionnaire was prepared simultaneously in English and Urdu and then translated into two regional languages: Pushto and Sindhi. The accuracy of the translations was checked by back translation into the original language.

The survey was pre-tested in late February 2005 in five districts on both client and non-client households. The results of this pre-test were then analyzed and discussed and some final revisions to the questionnaire or its administration were made. During pre-testing, the length of the questionnaire was found to be too long and it was subsequently shortened. Two changes to the components of the male and female questionnaires were also made. Information on animal raising was moved from the female questionnaire to the male questionnaire because during the pre-test surveyors found that although women often cared for livestock, in many rural households the males were more knowledgeable about the market price of the animals and their products. Information on children, including male children under 15, was moved to the female questionnaire. Substantial revisions to the actual content of the questionnaire were made only to the most sensitive components of the questionnaire: finances and empowerment.

<div align="center">ii.   Implementation</div>

The final survey was implemented over an eight-week period between late May and early July 2005. This period was selected as it was the most practical time to implement in agricultural areas (after the *rabi* agricultural season harvest), did not conflict with any major holidays, and was a time when there would be many new villages and clients just getting access to Khushhali Bank services for the first time, making it easier to collect data on a suitable control group.

The survey was carried out by an independent multinational survey company with offices in Pakistan. Teams of two male and two female surveyors, headed by a supervisor with three to seven years of experience, were constructed for each district, making eight teams of five people. Male surveys were conducted by male surveyors and female

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[21] The participatory poverty assessment included locally defined characteristics of the poor and very poor, compiled from well-being analysis.

[22] The author thanks Ms. Farzana Nuzhat and Mr. Asim Anwar of Khushhali Bank for facilitating the focus group discussions with clients.

surveys by female surveyors. Surveyors and supervisors for each team were recruited from local areas and interviews were conducted in local languages. Since many of the surveyors were new, one week of classroom training on survey administration, and field testing of the surveyors' skill in both rural and urban areas were conducted. Extra surveyors were trained in the event that a surveyor might have to be replaced during the training, field-testing, or once the survey was underway, but that was not necessary.

<div align="center">iii.   Quality Control</div>

Survey teams spent three to four days in each village included in the survey to allow time for the team supervisor to edit all completed questionnaires and back-check 15% of the fieldwork. If any problems were discovered during back-checking, then 100% of that individual surveyors work was checked. An independent quality control department similarly carried out back-checking of each supervisor's work. Data processing could not be conducted on-site due to cost considerations, and was instead done on edited questionnaires in a centralized location. A data program was designed to automatically check the consistency of answers, and in addition, 10% of the data entry and coding was randomly back-checked.

VI.   Empirical Methodology and Results

A. Empirical Methodology

The difficulties involved in controlling for bias as described in section III are well explained mathematically in Coleman (1999), which points out that the a typical impact evaluation would want to estimate the following system of equations:

$$B_{ij} = X_{ij}\alpha_B + V_j\beta_B + \varepsilon_{ij} \tag{1}$$

$$Y_{ij} = X_{ij}\alpha_Y + V_j\beta_Y + B_{ij}\delta_Y + \mu_{ij} \tag{2}$$

where B_{ij} is the amount borrowed from the microfinance institution, X_{ij} is a vector of household characteristics, V_j is a vector of village characteristics, Y_{ij} is an outcome on which we want to measure impact, $\alpha_B, \beta_B, \alpha_Y, \beta_Y$ and δ_Y are parameters to be estimated and ε_{ij} and μ_{ij} are errors representing unmeasured household and village characteristics that determine borrowing and outcomes, respectively. δ_Y is the primary parameter of interest as it measures the impact of credit on the outcome

The biases described in section III mean that the error terms of these two equations, ε_{ij} and μ_{ij}, are likely to be correlated. This is because, for example, unobserved individual characteristics that cannot be controlled for in X_{ij} might simultaneously influence both the amount borrowed B_{ij} and the outcome variable Y_{ij}. A commonly used example of such an unobservable would be "entrepreneurship," which is difficult to measure but likely to affect both variables. Or unobservable program placement variables, which cannot be controlled for in V_j, might influence both the amount borrowed B_{ij} and the outcome variable Y_{ij}. Many factors that influence program placement can be measured, but an example of an unobservable factor would be "village leadership" or "ability to work together," which influences how quickly and well villagers are able to organize into groups to take loans. Both of these factors are likely to affect both borrowing and the outcome variable. When the error terms are correlated, the estimation of the above

<div align="center">12</div>

system yields biased parameter estimates, including our parameter of interest, δ_Y, which measures the impact of borrowing.

However, using the approach of surveying prospective clients who have not yet accessed loans as a control group, we can estimate the impact with a single equation:

$$Y_{ij} = \beta_1 X_{ij} + \beta_2 V_j + \beta_3 M_{ij} + \beta_4 T_{ij} + \varepsilon_{ij} \tag{3}$$

where Y_{ij}, is again a vector of outcome variables (see Appendix 1 for a detailed list of variables and summary statistics for each) X_{ij} is again a vector of household characteristics (see Appendix 2), V_j represents village fixed effects, which control for observable and unobservable variables that may influence program placement, defined as above, M_{ij} is a membership dummy variable equal to 1 for any household that participates in the program, and T_{ij} is a measure of treatment: that is access to or participation in the microfinance program (see Appendix 3).

The treatment measures include two measures of access to microfinancial services: (1) "Accessed Loans," a dummy variable equal to 1 if the household has already accessed loans. This excludes the control group of new clients who have not yet accessed loans; and (2) "Months Microcredit Available," a count of the number of months the microfinancial services have been available in a given village. For the new clients who have not yet accessed loans and for non-participants, this treatment measure is equal to 0. In addition to these two measures of *access*, there are three other measures of actual *participation*: (3) "Months Since First Borrowed," the number of months elapsed since the household first borrowed; (4) "Total Amount of Loans," the total amount ever borrowed by the household; and (5) "Number of Loans," a count of the number of loan cycles the household has borrowed. The first two measures of treatment, which only measure the impacts of access to microfinance, are the strictest and most unbiased test of impact of the program.

The hypothesis tested is whether access to and/or participation in the microfinance program of Khushhali Bank has a positive effect on various outcome measures. Support for the hypothesis requires that the estimated coefficient β_4 on one of the treatment variables in (3) be statistically significantly positive. A statistically significantly positive coefficient estimate on one of the first two treatment variables indicates that simple access to the program has impact, regardless of the degree of participation. A statistically significantly positive coefficient estimate on one of the last three treatment variables indicates that the degree of actual participation in the program – the length of time the client has participated, how many loans he or she has taken and the total value of those loans – has an impact.

In addition to the overall impacts of access to and participation in the microfinance program, differential impacts from various lending methodologies are examined: lending in urban areas as opposed to rural areas, lending to women as opposed to men, or lending to groups formed by NGO service provider partners vs. Khushhali Bank staff. The specification for these regressions is as follows:

$$Y_{ij} = \beta_1 X_{ij} + \beta_2 V_j + \beta_3 M_{ij} + \beta_4 D_{ij} + \beta_5 T_{ij} + \beta_6 D_{ij} T_{ij} + \varepsilon_{ij} \tag{4}$$

where Y_{ij}, X_{ij}, V_j M_{ij} and T_{ij} are defined as above and D_{ij} is a dummy variable that takes the value of 1 in the following cases:
D_{ijU} =1 if urban
D_{ijF} =1 if female
D_{ijSP} =1 if service provider formed group

The hypothesis tested is whether access to and participation in the microfinance program of Khushhali Bank using one of these particular lending methodologies has a more positive effect on various outcome measures than does the program overall. Support for the hypothesis requires that the estimated coefficient β_6 in equation (4), the interaction of the treatment variables with a dummy variable indicating one of these lending methodologies, be statistically significantly positive. A finding of no special impact from these alternative lending methodologies does not mean that they do not have impact, but rather that their impact does not differ from the average impacts of the program overall.

Finally, the impact of the program to particularly poor households – those in the bottom quintile of the sample, which corresponds to households at less than half the official caloric based poverty line – is examined. The specification for those regressions, equation (5), is similarly:

$$Y_{ij} = \beta_1 X_{ij} + \beta_2 V_j + \beta_3 M_{ij} + \beta_4 P_{ij} + \beta_5 T_{ij} + \beta_6 P_{ij} T_{ij} + \varepsilon_{ij} \qquad (5)$$

where Y_{ij}, X_{ij}, V_j M_{ij} and T_{ij} are defined as above and P_{ij} is a dummy variable that takes the value of 1 for the very poorest households.

The hypothesis tested is whether access to and participation in the microfinance program of Khushhali Bank has a more positive effect on various outcome measures for the very poorest households than it does on other borrowers. Support for the hypothesis requires that the estimated coefficient β_6 in equation (5) – the interaction of the treatment variables with a dummy variable indicating these very poor households – be statistically significantly positive. A finding of no special impact on these households does not mean that the program has no impact on the poorest borrowers, but rather that their impact does not differ from the average impacts of the program overall.

For most of the empirical analysis, ordinary least squares analysis (OLS) was applied. For regressions in which the outcome variable of interest was a yes/no dummy variable on qualitative information, logit estimation techniques were used.

B. Empirical Results

1. Impacts of the Program Overall

Figures 4-11 present the results of the estimation of equations (3) and (4) on the entire data sample. Since there are many variables included in the regression to control for individual or village characteristics, the figures report only the main variables of interest: the coefficient estimates on the five variables indicating access to or participation in the microfinance program offered by Khushhali Bank. Each coefficient estimate represents a separate regression – dependent variables are reported as column headers and the

independent variables of interest in the five rows. Note that the independent variables indicating access or participation were included in five separate regressions, but they are reported in one row in the figures for economy of space.

a) Poverty Indicators – Consumption/Expenditure

<Insert Figure 4 Around Here>

The first set of regressions reported in appendix Figure 4 look at conventional monetary indicators of poverty. The first outcome variable, monthly consumption per capita, looks at the impact of the program on caloric consumption as measured by consumption-expenditure on food items. The items used in calculating this variable correspond as closely as possible to the items used by the government of Pakistan in calculating the official poverty line. The other items included are monthly per capita consumption of non-food items, monthly per capita expenditures on health care and annual educational expenditure per child in the household.

The parameters indicate that the program does not impact most consumption-expenditure measures – almost all coefficient estimates in Figure 4 are insignificantly different from 0. However, there is evidence that access to the program has a positive impact on health expenditures, as indicated by the statistically significant positive coefficient estimate in column 3. Clients who have already accessed loans more than one year earlier tend to have higher monthly per capital expenditures on health care. Since the bank's program does nothing explicit to encourage health awareness per se, these results most likely indicate that poor households prefer or need to use the extra income generated by the enterprises financed by microcredit on health care rather than on education or food consumption.

b) Poverty Indicators – Social Indicators

The next set of regressions look at social indicators of poverty, including again education and health, and also empowerment of women. The results of these regressions are reported in Figures 5-8.

<Insert Figure 5 Around Here>

As was found using the monetary indicators above, statistical analysis yields little evidence of positive impact of the program overall on education: the probability of children in client households being enrolled school is no higher than for non-participating households and absentee rates are no lower. In fact, there is some evidence that both educational expenditures per child and the probability of the children being enrolled in school may be *lower* for client households than for non-participants, as indicated by the statistically significant *negative* coefficients reported in Figure 5. One might speculate that households participating in the program may be more likely to include children in the household's income generating activities, perhaps leading indirectly to a reduction in school enrollment, but this would require further research.

For health care as well, the analysis of social indicators confirms the findings for monetary indicators above. Both access and participation have a strong positive impact on the probability of getting treatment for illnesses, and the likelihood that treatment is

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from a trained professional. These results are particularly strong in the case of children's illnesses: columns 6 and 7 of Figure 5 have highly statistically significant positive coefficient estimates on indicators of both access to and participation in the program. Participants who had taken more loan cycles were also more likely to be able to pay for their medical care from household assets or savings, as indicated in column 5.

<Insert Figure 6 Around Here>

The impact of the program on indicators of women's health is not as high as that on general or children's illnesses, although participation in the program does lead to higher likelihood of tetanus vaccination during pregnancy. Lending to groups formed by NGO partners, however, does positively impact women's health. Pregnant women in the households of borrowers in NGO-formed groups were more likely to have consulted a trained medical professional during their pregnancy, as indicated by the statistically significantly positive coefficient estimates in column 2 of Figure 6. Since the microcredit program would not be expected to directly impact indicators of women's health, these effects may come from exchanges of information when borrowers gather for their monthly group meetings, or from non-financial services provided to the groups formed by NGO partners.

<Insert Figures 7 & 8 Around Here>

As indicated in Figures 7 and 8, the program has a strong positive impact on women's empowerment, and these impacts are even higher when the borrower was a woman. In client households, women's opinions are more likely to be taken into consideration on a range of issues including child-rearing (children's schooling, marriages and discipline) social issues such as the woman's decision to work outside the home or her involvement in community and political activities, and household financial decisions such as whether to construct or repair the family home, the sale and purchase of livestock and decisions on whether to borrow money. Women in client households also reported less frequent arguments with male household members and more financial independence as indicated by their ability to get a small amount of cash in an emergency from their own assets.

c) Income Generating Activities

Tables 9-11 report the impact of the program on income-generating activities run by the household – animal raising, microenterprises and agricultural activities.

<Insert Figure 9 Around Here>

As indicated in figure 9, participation in the microfinance program leads to more inputs into animal raising. Households who had taken more loan cycles or borrowed more in total report more males and females in the household working on animal raising, and more inputs into and higher assets (value of livestock) of their animal raising activities. However, the results of these greater inputs do not yet show up as an impact on sales or profits – we find no statistically significant coefficient estimates on the treatment variables in columns 5 and 6.

<Insert Figure 10 Around Here>

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Table 10 reports the impact of the program on household microenterprises. The first variable examined was a dummy variable for whether or not the household operates a microenterprise. There was such a strong correlation with participation in the microfinance program and operation of a microenterprise that it was not possible to conduct meaningful statistical tests on the relationship between the two – participation in the program almost perfectly predicts the incidence of running a microenterprise. Among those households who both participate in the microfinance program and run microenterprises, those with greater participation in the program report more women in the household working on those microenterprises and more monthly inputs into their business. The impact of the program on household-run microenterprises was especially positive in urban areas, where positive impacts were found not only on inputs such as the number of outside hires, but also on statistically significantly higher sales and profits.

<Insert Figure 11 Around Here>

The largest impacts on income-generating activities are found in agriculture (see Figure 11). Both access to and participation in the program have strong positive impacts on all variables tested – assets, inputs and sales. Households with longer access to the program, or who had participated more, reported higher assets in terms of amount of land cultivated, a higher value of farm equipment assets, higher inputs such as the number of male and female household members working on the household farm, as well as more hired workers, higher hours of tractor use and higher use of fertilizers and pesticides. It is difficult to measure agricultural profits directly, but the value of sales to third parties (crop yields not consumed by the household itself) serves as a proxy. This variable as well shows a highly statistically significant impact from program participation, as indicated by the highly statistically significant coefficient estimates in row 10 of Figure 11.

2. Impacts on the Poorest of the Poor

Figures 12-14 present the results of the estimation of equation (5), which looks at the impact of the program on the very poorest borrowers who were in the bottom quintile of the sample as measured by monthly caloric intake per capita. This group corresponds to households consuming less than one-half the official calorie-based poverty line.

a) Poverty Indicators – Consumption/Expenditure

<Insert Figure 12 Around Here>

Figure 12 reports the regression results on monetary indicators of poverty. As would be expected, the poorest of the poor have lower overall levels of not only monthly food consumption per capita, but also non-food expenditures and educational expenditures, as indicated by the statistically significantly negative coefficient estimates on the dummy variable for the core poor group. Looking at the coefficient estimates on the treatment variables, we again find the program does not impact most consumption-expenditure measures – almost all coefficient estimates in Table 4 are insignificantly different from 0. There is, however, evidence that participation in the program has a positive impact on educational expenditures for the very poor, as indicated by the statistically significant

positive coefficient estimate in column 4. The more loan cycles that very poor clients have taken, the higher the household's annual educational expenditures per child.

b) Poverty Indicators – Social Indicators

The next set of regressions, reported in Figure 13, look at the impacts for the poorest of the poor on social indicators of poverty: non-monetary indicators of education and health.

<Insert Figure 13 Around Here>

Again, the program is found to have special impacts on children's education for the poorest borrowers. The previous finding that the probability of the children being enrolled in school may be *lower* for client households than for non-participants is reversed for the very poorest borrowers. Although children in the poorest households are less likely to be enrolled in school overall, for those core poor who participate in the microfinance program, the longer they have participated in the program, the more likely children in the household are to be enrolled in school.

Children in the poorest households also reap health benefits. As reported above, the program positively impacts indicators of children's health for all borrowers, but the poorest borrowers also benefit from higher likelihood of vaccination, as indicated by the statistically significantly positive coefficient in column 6 of Figure 13. Thus, although children in the poorest households are less likely to be vaccinated overall, the likelihood of children receiving vaccinations increases the longer those households have access to or participate in the microfinance program.

c) Income Generating Activities

Figure 14 reports the impact of the program on income-generating activities run by the poorest households: animal raising, microenterprises and agricultural activities.

<Insert Figure 14 Around Here>

Confirming the findings above, participation in the microfinance program has the biggest impacts on rural agricultural activities. There is no evidence of higher sales and profits for households engaged in animal raising or microenterprises, but strong positive impacts are found for sales of agricultural products, and those impacts are even larger for the poorest clients. .

VII.   Conclusions

The empirical analysis here demonstrates that access to and participation in Khushhali Bank's microcredit program has positive impacts on both monetary and social indicators of welfare, as well as on employment and income generating activities.

The microloans are apparently not being used for consumption purposes, as no impact is found on either food or non-food non-durable consumption. But there is evidence that the program enables the poor households that it serves to increase expenditure on health care, making those households more likely to seek medical treatment for their health problems and more likely to seek trained professionals to provide that treatment. These impacts are especially strong in the case of children's illnesses. Women in

households of borrowers in NGO-formed groups were also more likely to seek medical consultations and to receive vaccinations during their pregnancies.

The program also increases the empowerment of women – the degree to which women's decisions are taken into account in areas such as child-rearing, participation in community or political activities, and financial matters. The impact is especially strong on measures of social and financial empowerment, such as the ability of women to get small amounts of cash when necessary from their own assets. The impact of the program on empowerment is even stronger when the borrower in the household is a female client.

The highest aggregate impacts of the program on income generating activities are to agriculture, where almost all outcome variables – assets, inputs and sales – were higher for those who had more access to or participation in the program. In addition, employment is generated in all sectors either by enabling the start-up of household enterprises, household members' ability to provide more of their labor hours to those enterprises, or more hiring of labor from outside the family. Urban lending in particular yields significant positive impact on income generation from family-run microenterprises: those borrowers demonstrate significantly higher sales and profits from their microenterprises than do non-participants.

Most encouraging is the finding that even the very poorest of the poor – those subsisting on less than half the official poverty line, or the bottom quintile of the sample – benefit greatly from the program. The poorest borrowers benefit from increased educational expenditures and higher likelihood of enrollment in school for their children, higher likelihood of vaccination against childhood illnesses and even higher sales of agricultural products compared to other borrowers.

These findings hold promise for the millions of poor households in Pakistan. If Khushhali Bank is able to maintain its current path toward full financial self-sufficiency, client households will continue to have access to microfinancial services and receive these benefits into the foreseeable future, regardless of the whims of donors and limits on the resources they can provide.

Hopefully, the benefits of this program will spread beyond Pakistan. The case of Khushhali Bank shows that given a supportive regulatory environment, it is possible for commercial microfinance banks to meet a "double bottom line" of simultaneously pursuing profits and a humanitarian social mission. Perhaps other countries can follow the example of Pakistan in promoting the development of a sustainable microfinance sector that improves the welfare of the poor.

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Tables and Figures

Table 1. Outreach Indicators for MF Providers in Pakistan

PEER GROUP	OUTREACH INDICATORS			
	Number of active borrowers	Number of active women borrowers	Gross loan portfolio (PKR)	% of women borrowers to total active borrowers
A. Financial Institutions (offering microfinance as separate product)				
1. The BOK	9,056	816	258,864,299	9.01
2. Orix Leasing	2,280	1,988	50,029,976	87.19
Subtotal	**11,336**	**2,804**	**308,894,275**	**24.74** (average)
B. Specialized MFIs				
1. Kashf	67,552	67,552	479,101,234	100.0
2. ASASAH	4,588	3,848	23,756,328	83.87
Subtotal	**72,140**	**71,400**	**502,857,562**	**98.97** (average)
C. Rural Support Program				
1. NRSP	88,401	20,362	829,407,585	23.03
2. PRSP	54,555	19,487	351,372,123	35.72
3. SRSP	5,077	313	29,286,303	6.17
4. TRDP	8,421	5,773	73,533,725	68.55
Subtotal	**156,454**	**45,935**	**1,283,599,736**	**29.36** (average)
D. NGO's				
1. DAMEN	6,980	6,980	31,552,972	100.00
2. SUNGI	1,108	42	4,825,038	3.79
3. SAFWCO	3,569	1,761	16,821,629	49.34
4. Taraqee	18,194	13,526	150,418,923	74.34
5. OPP	3,895	180	45,086,404	4.62
Subtotal	**33,746**	**22,489**	**248,704,966**	**66.64** (average)
Grand Total (A+B+C+D)	**273,676**	**142,628**	**2,344,056,539**	**52.12**

Source: Pakistan Microfinance Network "Performance Indicators Report 2004"

Figure 2: Sample Distribution by Province

Province	Freq.	Percent	Cum.
Punjab	802	27.8	27.8
Sindh	976	33.9	61.7
NWFP	495	17.2	78.9
Baluchistan	345	12.0	90.9
AJ Kashmir	263	9.1	100.0
Total	2,881	100.0	

Figure 3: Sample Distribution by District

District	Freq.	Percent	Cum.
Urban (Quetta, Karachi, Lahore, part of Kohat)	736	25.6	25.6
Rahimyar Khan	253	8.8	34.3
Dera Ghazi Khan	340	11.8	46.1
Jacobabad	320	11.1	57.2
Nawabshah	263	9.1	66.4
Loralai	211	7.3	73.7
Muzzaffarabad	263	9.1	82.8
Dera Ismali Khan	252	8.8	91.6
Kohat	243	8.4	100.0
Total	2,881	100.0	

Figure 4: Indicators of Poverty: Consumption-Expenditure

	1	2	3	4
	OLS Monthly Expenditure per Capita - Food	OLS Monthly Expenditure per Capita - Non-Food	OLS Monthly Expenditure per Capita - Health Care	OLS Annual Expenditure on Education per child
Accessed Loans	52.14	-25.2	40.7	-4.8
	[37.63]	[94.96]	[20.20]**	[59.69]
Months Microcredit Available	0.2	-2.9	0.66	0.25
	[0.83]	[2.10]	[0.45]	[1.32]
Months since First Borrowed	0.78	-0.41	0.74	0.89
	[0.91]	[2.28]	[0.49]	[1.44]
Total Amount of Loans	0	0	0	0
	[0.00]	[0.00]	[0.00]	[0.00]
Number of Loan Cycles	-1.61	-18.57	5.72	-35.27
	[13.62]	[34.36]	[7.31]	[21.65]
Observations	2859	2859	2859	2881
R-squared	0.16	0.05	0.01	0.19
F-statistics	39.13	5.86	1.49	22.95

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 5: Social Indicators of Poverty: Education and Health

	1	2	3	4	5	6	7	8
	LOGIT	OLS	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT
	Education: Probability Children Enrolled in School	Education: Days Children Absent from School	Health: Probability seek medical treatment if ill	Health: Probability medical treatment from trained professional	Health: Able to pay for medical treatment from own assets	Health: Probability seek medical treatment if child ill	Health: Probability medical treatment from trained professional if child ill	Probability children vaccinated
Accessed Loans	-0.21	-1.06	-0.01	0.00	-0.15	0.45	0.45	0.14
	[0.18]	[1.71]	[0.16]	[0.15]	[0.15]	[0.19]**	[0.19]**	[0.20]
Odds Ratio	0.81		1.07	1.06	0.94	1.47	1.44	0.98
Months Microcredit Available	-0.01	-0.03	0.00	0.00	0.00	0.01	0.01	0.00
	[0.00]*	[0.04]	[0.00]	[0.00]	[0.00]	[0.00]**	[0.00]**	[0.00]
Odds Ratio	0.99		1.00	1.00	1.00	1.01	1.01	0.99
Months since First Borrowed	-0.01	-0.05	0.00	0.00	0.00	0.01	0.01	0.00
	[0.00]**	[0.04]	[0.00]	[0.00]	[0.00]	[0.00]**	[0.00]**	[0.00]
Odds Ratio	0.99		1.00	1.00	1.00	1.01	1.01	1.00
Total Amount of Loans	-0.20	-0.63	0.00	0.00	0.00	0.00	0.00	0.00
	[0.06]***	[0.62]	[0.00]	[0.00]	[0.00]	[0.00]***	[0.00]**	[0.00]
Odds Ratio	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Number of Loan Cycles	0.00	0.00	0.14	0.12	0.15	0.20	0.15	0.04
	[0.00]**	[0.00]	[0.07]**	[0.06]*	[0.06]**	[0.07]***	[0.07]**	[0.08]
Odds Ratio	0.82		1.13	1.13	1.14	1.23	1.18	1.00
Observations	2881	2881	2881	2881	2881	2881	2881	2881
R-squared[1]	0.26	0.07	0.08	0.06	0.06	0.28	0.26	0.40
F-statistics[2]	1025.08	7.96	300.25	214.90	238.96	1044.25	977.82	1613.10

Standard errors in brackets
1/ Pseudo R-squared for logit regressions
2/ Chi- square statistics for logit regressions
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 6: Social Indicators of Poverty: Women's Health: Differential Effects from Lending to NGO Groups

	1	2	3	4	5
	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT
	Probability consulted someone during pregnancy	Probability consulted traned professional during pregnancy	Probability of tetanus vaccine during pregnancy	Probability child delivered in a medical facility	Probability childbirth attended by trained professional
Accessed Loans	0.19	-0.03	0.32	-0.11	-0.14
	[0.18]	[0.18]	[0.20]	[0.18]	[0.17]
Odds Ratio	1.21	0.97	1.38	0.89	0.87
NGO*Accessed Loans	**-0.07**	**0.54**	**0.56**	**-0.22**	**0.10**
	[0.26]	**[0.26]****	**[0.26]****	**[0.29]**	**[0.26]**
Odds Ratio	0.93	1.71	1.76	0.80	1.10
Months Microcredit Available	0.00	-0.01	0.00	0.00	0.00
	[0.00]	[0.00]**	[0.00]	[0.00]	[0.00]
Odds Ratio	1.00	0.99	1.00	1.00	1.00
NGO*Months Microcredit Available	**0.00**	**0.01**	**0.01**	**-0.01**	**0.01**
	[0.01]	**[0.01]**	**[0.01]**	**[0.01]**	**[0.01]**
Odds Ratio	1.00	1.01	1.01	0.99	1.01
Months since First Borrowed	0.01	0.00	0.01	0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Odds Ratio	1.01	1.00	1.01	1.00	1.00
NGO*Months since First Borrowed	**0.00**	**0.03**	**0.04**	**-0.01**	**0.01**
	[0.02]	**[0.01]****	**[0.01]*****	**[0.02]**	**[0.02]**
Odds Ratio	1.00	1.03	1.04	0.99	1.01
Total Amount of Loans	0.00	0.00	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Odds Ratio	1.00	1.00	1.00	1.00	1.00
NGO*Total Amount of Loans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	[0.00]	**[0.00]**	**[0.00]***	**[0.00]**	**[0.00]**
Odds Ratio	1.00	1.00	1.00	1.00	1.00
Number of Loan Cycles	0.08	0.07	0.18	-0.03	0.07
	[0.07]	[0.07]	[0.07]***	[0.07]	[0.06]
Odds Ratio	1.09	1.08	1.19	0.97	1.07
NGO*Number of Loan Cycles	**-0.21**	**0.22**	**0.41**	**0.05**	**0.04**
	[0.18]	**[0.18]**	**[0.18]****	**[0.19]**	**[0.18]**
Odds Ratio	0.81	1.25	1.50	1.05	1.05
Observations	2881	2881	2881	2881	2881
Pseudo R-squared	0.23	0.22	0.20	0.14	0.22
Chi2-statistics	907.97	770.37	628.93	447.84	862.56

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 7: Social Indicators of Poverty: Women's Empowerment: Childrearing, Arguments

Woman's opinion taken into consideration in household decisions on….

	1	2	3	4	5	6	7
	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT
	Child's schooling	Child's marriage	Child's medical care	Child's discipline	Whether to have another child	Type of contraception to use	Arguments Daily
Female Khushhali Bank Client (0/1)	**0.22**	**0.45**	**0.33**	**0.17**	**-0.01**	**-0.01**	**0.52**
	[0.30]	[0.34]	[0.29]	[0.29]	[0.51]	[0.48]	[0.62]
Odds Ratio	1.25	1.57	1.39	1.19	0.99	0.99	1.69
Accessed Loans	0.49	0.64	0.17	0.05	0.62	0.46	-0.46
	[0.20]**	[0.24]***	[0.20]	[0.20]	[0.33]*	[0.32]	[0.49]
Odds Ratio	1.63	1.90	1.19	1.05	1.86	1.59	0.63
Female*Accessed Loans	**0.13**	**-0.18**	**0.19**	**0.41**	**0.40**	**0.28**	**-1.42**
	[0.33]	[0.36]	[0.32]	[0.31]	[0.53]	[0.51]	[0.76]*
Odds Ratio	1.14	0.83	1.21	1.50	1.49	1.32	0.24
Months Microcredit Available	0.01	0.01	0.00	-0.01	0.00	0.00	-0.01
	[0.00]***	[0.00]	[0.00]	[0.00]	[0.01]	[0.01]	[0.01]
Odds Ratio	1.01	1.01	1.00	0.99	1.00	1.00	0.99
Female*Months Microcredit Available	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.02**	**-0.02**
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]**	[0.01]**	[0.02]
Odds Ratio	1.00	1.00	1.01	1.01	1.02	1.02	0.98
Months since First Borrowed	0.01	0.01	0.00	-0.01	0.00	0.00	-0.02
	[0.00]*	[0.01]	[0.00]	[0.00]	[0.01]	[0.01]	[0.01]
Odds Ratio	1.01	1.00	1.00	0.99	1.00	1.00	0.98
Female*Months since First Borrowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.02**	**-0.01**
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]*	[0.01]**	[0.02]
Odds Ratio	1.00	1.00	1.00	1.00	1.02	1.02	0.99
Total Amount of Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Odds Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Female*Total Amount of Loans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	[0.00]	[0.00]	[0.00]**	[0.00]**	[0.00]	[0.00]	[0.00]
Odds Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Loan Cycles	0.12	0.04	0.01	-0.11	0.14	0.11	-0.67
	[0.07]	[0.08]	[0.07]	[0.07]	[0.09]	[0.09]	[0.39]*
Odds Ratio	1.12	1.05	1.01	0.90	1.14	1.11	0.51
Female*Number of Loan Cycles	**-0.05**	**0.13**	**0.15**	**0.19**	**-0.13**	**-0.09**	**0.55**
	[0.11]	[0.12]	[0.11]	[0.11]*	[0.15]	[0.15]	[0.53]
Odds Ratio	0.95	1.14	1.16	1.21	0.88	0.92	1.73
Observations	2881.0	2881.0	2881.0	2881.0	2881.0	2881.0	2881.0
Pseudo R-squared	0.06	0.05	0.05	0.05	0.06	0.07	0.07
Chi2-statistics	241.7	166.1	205.2	218.0	149.8	162.1	46.9

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 8: Social Indicators of Poverty: Women's Empowerment: Social Empowerment, Financial Empowerment

Woman's opinion taken into consideration in household decisions on….

	1	2	3	4	5	6	7	8
	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT	LOGIT
	Woman's participation in community-political activities	Woman's decision to work outside home	Social visits to woman's family	Social visits to man's family	Social visits to friends-neighbors	Repair-Construction of house	Sale-Purchase of livestock	Borrowing money
Female Khushhali Bank Client (0/1)	**-1.16**	**-0.60**	**0.19**	**0.09**	**-0.08**	**0.36**	**-0.12**	**0.96**
	[1.08]	[0.60]	[0.29]	[0.30]	[0.29]	[0.40]	[0.57]	[0.38]**
Odds Ratio	0.31	0.55	1.21	1.10	0.92	1.43	0.88	2.62
Accessed Loans	0.19	0.25	0.43	0.48	0.30	0.62	0.84	0.67
	[0.42]	[0.33]	[0.20]**	[0.20]**	[0.19]	[0.28]**	[0.32]***	[0.28]**
Odds Ratio	1.21	1.29	1.54	1.62	1.35	1.85	2.31	1.95
Female*Accessed Loans	**1.94**	**1.25**	**-0.01**	**0.06**	**0.31**	**0.05**	**0.80**	**-0.07**
	[1.10]*	[0.63]**	[0.32]	[0.32]	[0.32]	[0.43]	[0.59]	[0.40]
Odds Ratio	6.96	3.47	0.99	1.06	1.36	1.05	2.22	0.93
Months Microcredit Available	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
	[0.01]	[0.01]	[0.00]**	[0.00]**	[0.00]	[0.01]	[0.01]**	[0.01]**
Odds Ratio	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01
Female*Months Microcredit Available	**0.02**	**0.03**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**
	[0.01]*	[0.01]**	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Odds Ratio	1.02	1.03	1.01	1.01	1.01	1.00	1.00	1.00
Months since First Borrowed	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	[0.01]	[0.01]	[0.00]***	[0.00]***	[0.00]	[0.01]*	[0.01]**	[0.01]*
Odds Ratio	1.01	1.01	1.01	1.02	1.01	1.01	1.01	1.01
Female*Months since First Borrowed	**0.02**	**0.02**	**-0.01**	**-0.01**	**0.00**	**-0.01**	**0.00**	**-0.01**
	[0.01]	[0.01]*	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Odds Ratio	1.02	1.02	0.99	0.99	1.00	0.99	1.00	0.99
Total Amount of Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]*	[0.00]	[0.00]	[0.00]**	[0.00]***	[0.00]**
Odds Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Female*Total Amount of Loans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Odds Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Loan Cycles	0.18	0.04	0.11	0.10	0.10	0.14	0.20	0.17
	[0.11]	[0.10]	[0.07]*	[0.07]	[0.07]	[0.08]*	[0.08]***	[0.07]**
Odds Ratio	1.20	1.04	1.12	1.10	1.10	1.15	1.23	1.18
Female*Number of Loan Cycles	**0.03**	**-0.04**	**0.02**	**0.08**	**0.06**	**-0.11**	**-0.02**	**-0.13**
	[0.17]	[0.16]	[0.11]	[0.11]	[0.11]	[0.12]	[0.12]	[0.12]
Odds Ratio	1.03	0.96	1.02	1.08	1.06	0.89	0.98	0.88
Observations	2881	2881	2881	2881	2881	2881	2881	2881
Pseudo R-squared	0.09	0.05	0.04	0.04	0.04	0.05	0.12	0.09
Chi2-statistics	141.2	107.1	140.0	169.0	175.2	147.1	329.5	293.7

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 9: Income Generating Activities: Animal Raising

	1	2	3	4	5	6
	OLS	OLS	OLS	OLS	OLS	OLS
	Assets-Value of Livestock	Annual Inputs	Number of males in household working on Animal Raising	Number of Females in household working on Animal Raising	Sales of Livestock and Products	Profits (reported)
Accessed Loans	-5,837.54	1,258.87	0.07	0.07	39,248.24	37,989.37
	[4,891.05]	[1,227.46]	[0.06]	[0.06]	[52,020.57]	[51,904.88]
Months Microcredit Available	-123	16.11	0	0	989.24	973.13
	[108.13]	[27.14]	[0.00]	[0.00]	[1,149.98]	[1,147.42]
Months since First Borrowed	4.19	34.49	0	0	864.1	829.61
	[117.75]	[29.54]	[0.00]	[0.00]*	[1,252.07]	[1,249.29]
Total Amount of Loans	0.36	0.08	0	0	0.15	0.07
	[0.13]***	[0.03]***	[0.00]**	[0.00]*	[1.33]	[1.33]
Number of Loan Cycles	6,477.59	1,282.62	0.07	0.06	-1,005.03	-2,287.65
	[1,771.58]***	[444.96]***	[0.02]***	[0.02]***	[18,883.56]	[18,841.41]
Observations	2881	2881	2881	2881	2881	2881
R-squared	0.19	0.1	0.33	0.42	0.02	0.02

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 10: Income Generating Activities: Microenterprise

	1	2	3	4	5	6	7	8
	OLS	OLS	OLS	OLS	LOGIT	OLS	OLS	OLS
	Value of Assets	Monthly Inputs	Number of Males in household working on Microenterprise	Number of Females in household working on MicroEnterprise	Probability Hired Outside Labor (0/1)	Number of People Hired	Sales	Profits (reported)
Accessed Loans	-10,346.66	-4,897.95	-0.07	-0.12	0.29	-0.06	-9,926.26	-2,104.70
	[5,865.75]*	[25,294.12]	[0.05]	[0.03]***	[0.44]	[0.05]	[8,110.92]	[3,353.22]
Odds Ratio					1.33			
Urban*Accessed Loans	5,380.41	-8,193.88	0.14	0.01	0.17	0.10	49,282.35	14,862.33
	[6,647.84]	[28,666.61]	[0.06]**	[0.04]	[0.45]	[0.06]*	[9,192.36]***	[3,800.31]***
Odds Ratio					1.18			
Months Microcredit Available	-65.41	1,282.95	0.00	0.00	0.01	0.00	-78.97	-33.85
	[133.46]	[574.70]**	[0.00]	[0.00]**	[0.01]	[0.00]	[184.49]	[76.25]
Odds Ratio					1.01			
Urban*Months Microcredit Available	64.51	-849.15	0.00	0.00	0.00	0.00	1,148.93	365.63
	[166.50]	[717.00]	[0.00]**	[0.00]	[0.01]	[0.00]	[230.18]***	[95.13]***
Odds Ratio					1.00			
Months since First Borrowed	-167.18	1,140.09	0.00	0.00	0.00	0.00	-481.96	-110.18
	[138.37]	[596.20]*	[0.00]**	[0.00]***	[0.01]	[0.00]	[191.68]**	[79.21]
Odds Ratio					1.00			
Urban*Months since First Borrowed	-178.04	-1,142.90	0.00	0.00	-0.01	0.00	1,327.66	366.73
	[244.88]	[1,055.12]	[0.00]	[0.00]	[0.02]	[0.00]	[339.22]***	[140.17]***
Odds Ratio					0.99			
Total Amount of Loans	-0.04	-0.16	0.00	0.00	0.00	0.00	0.04	-0.04
	[0.14]	[0.62]	[0.00]	[0.00]***	[0.00]	[0.00]	[0.20]	[0.08]
Odds Ratio					1.00			
Urban*Total Amount of Loans	0.41	-0.51	0.00	0.00	0.00	0.00	2.83	0.89
	[0.51]	[2.19]	[0.00]**	[0.00]	[0.00]	[0.00]*	[0.70]***	[0.29]***
Odds Ratio					1.00			
Number of Loan Cycles	-425.20	-9,141.46	0.00	0.02	-0.14	-0.03	655.22	-1,018.53
	[2,046.02]	[8,817.81]	[0.02]	[0.01]*	[0.20]	[0.02]	[2,832.71]	[1,170.37]
Odds Ratio					0.87			
Urban*Number of Loan Cycles	4,797.24	-5,039.13	0.10	0.07	0.26	0.09	32,141.94	8,804.87
	[5,270.97]	[22,716.55]	[0.04]**	[0.03]**	[0.35]	[0.05]*	[7,297.67]***	[3,015.13]***
Odds Ratio					1.29			
Observations	2,881.00	2,881.00	2,881.00	2,881.00	2,881.00	2,881.00	2,881.00	2,881.00
R-squared[1]	0.06	0.02	0.11	0.07		0.02	0.08	0.08
F-statistics[2]	6.12	1.80	12.20	7.84	99.37	2.37	9.20	8.71

Standard errors in brackets
1/ Pseudo R-squared for logit regressions
2/ Chi- square statistics for logit regressions
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 11: Income Generating Activities: Agriculture

	1	2	3	4	5	6	7	8	9	10
	OLS	OLS	OLS	LOGIT	OLS	OLS	OLS	LOGIT	OLS	OLS
	Assets-Land Cultivated	Assets-Value of farm equipment	Inputs-Hours of tractor use	Inputs-Pesticide Use (0/1)	Inputs-Amount of pesticide use	Number of Males in household working on Agriculture	Number of Females in household working on Agriculture	Inputs-Probability Hired Labor Outside Labor (0/1)	Inputs-Number of Hired Labor	Sales to Third Parties
Accessed Loans	0.75	5650.04	0.82	-0.27	0.06	0.01	0.06	0.86	0.05	14929.48
	[2.91]	[4,532.97]	[3.02]	[0.18]	[0.08]	[0.06]	[0.06]	[0.62]	[0.03]	[5,237.91]***
Odds Ratio				0.76				2.36		
Months Microcredit Available	0.17	-30.65	0.13	0.01	0.01	0.00	0.00	0.02	0.00	69.74
	[0.06]***	[100.24]	[0.07]*	[0.00]	[0.00]***	[0.00]	[0.00]	[0.01]**	[0.00]*	[117.54]
Odds Ratio				1.01				1.02		
Months since First Borrowed	0.25	151.15	0.25	0.01	0.01	0.00	0.00	0.02	0.00	275.97
	[0.07]***	[109.09]	[0.07]***	[0.00]*	[0.00]***	[0.00]***	[0.00]	[0.01]**	[0.00]***	[127.87]**
Odds Ratio				1.01				1.02		
Total Amount of Loans	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73
	[0.00]***	[0.12]*	[0.00]***	[0.00]***	[0.00]***	[0.00]***	[0.00]***	[0.00]	[0.00]	[0.14]***
Odds Ratio				1.00				1.00		
Number of Loan Cycles	7.57	4921.70	7.20	0.51	0.30	0.10	0.14	0.21	0.03	11361.32
	[1.05]***	[1,643.18]***	[1.09]***	[0.07]***	[0.03]***	[0.02]***	[0.02]***	[0.12]*	[0.01]**	[1,918.13]***
Odds Ratio				1.66				1.24		
Observations	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881
R-squared[1]	0.1	0.07	0.11	0.21	0.17	0.3	0.23	0.17	0.02	0.11
F-statistics[2]	11.76	7.43	12.67	729.58	21.47	46.31	32.29	125.02	2.65	12.67

Notes: Standard errors in brackets
Odds ratio for logit estimation is reported below standard error
1/ Pseudo R-squared for logit regressions
2/ Chi- square statistics for logit regressions
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 12: Indicators of Poverty: Consumption-Expenditure: Impacts on the Core Poor

	1	2	3	4
	OLS	OLS	OLS	OLS
	Monthly Expenditure per Capita – Food	Monthly Expenditure per Capita – Non-Food	Monthly Expenditure per Capita – Health Care	Annual Expenditure on Education per child
Khushhaili Bank Client (0/1)	−25.05	97.55	−48.7	45.68
	[34.27]	[93.33]	[19.90]**	[58.73]
Core Poor	**−491.44**	**−198.42**	**6.45**	**−153.24**
	[29.08]*	**[79.19]**	**[16.89]**	**[50.03]***
Accessed Loans	48.79	−8.48	38.89	−34.39
	[36.13]	[98.38]	[20.98]*	[61.86]
Core Poor*Accessed Loans	**−16.71**	**−90.23**	**8.78**	**127.98**
	[43.73]	**[119.07]**	**[25.39]**	**[75.18]***
Months Microcredit Available	0.48	−2.59	0.61	−0.48
	[0.82]	[2.24]	[0.48]	[1.41]
Core Poor*Months Microcredit Available	**−0.05**	**−0.7**	**0.18**	**3**
	[1.11]	**[3.01]**	**[0.64]**	**[1.90]**
Months since First Borrowed	1.67	0.21	0.58	0.08
	[0.92]*	[2.51]	[0.53]	[1.58]
Core Poor*Months since First Borrowed	**−0.84**	**−1.11**	**0.51**	**3.23**
	[1.31]	**[3.57]**	**[0.76]**	**[2.26]**
Total Amount of Loans	0	0	0	0
	[0.00]	[0.00]	[0.00]	[0.00]*
Core Poor*Total Amount of Loans	**0**	**0**	**0**	**0**
	[0.00]	**[0.00]**	**[0.00]**	**[0.00]***
Number of Loan Cycles	19.45	−3.87	3.51	−60.79
	[15.06]	[41.01]	[8.75]	[25.85]**
Core Poor*Number of Loan Cycles	**−5.51**	**−13.32**	**4.16**	**64.77**
	[18.24]	**[49.67]**	**[10.60]**	**[31.35]***
Constant	1,197.83	1,055.61	112.29	215.59
	[36.13]***	[98.38]***	[20.98]***	[61.59]***
Observations	2859	2859	2859	2881
R-squared	0.29	0.06	0.02	0.19
F-statistics	39.13	5.86	1.49	22.95

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 13: Social Indicators of Poverty: Education and Health: Impacts on the Core Poor

	1	2	3	4	5	6
	Logit	OLS	Logit	Logit	Logit	Logit
	Education: Probability Children Enrolled in School	Education: Days Children Absent from School	Health: Probability seek medical treatment if child ill	Health: Probability medical treatment from trained professional if child ill	Probability take ORS to treat diarrhea	Probability children vaccinated
Khushhaili Bank Client (0/1)	0.41	1.66	−0.24	−0.21	0.16	−0.02
	[0.18]**	[1.68]	[0.18]	[0.18]	[0.24]	[0.20]
Odds Ratio	1.50		0.79	0.81	1.17	0.98
Core Poor	**−0.56**	**1.88**	**−0.07**	**−0.24**	**−0.09**	**−0.45**
	[0.15]*	**[1.43]**	**[0.16]**	**[0.16]**	**[0.20]**	**[0.18]**
Odds Ratio	0.57		0.94	0.78	0.91	0.64
Accessed Loans	−0.33	−0.71	0.39	0.36	−0.09	−0.02
	[0.19]*	[1.77]	[0.19]**	[0.19]**	[0.26]	[0.21]
Odds Ratio	0.72		1.47	1.44	0.92	0.98
Core Poor*Accessed Loans	**0.55**	**−1.50**	**0.28**	**0.35**	**0.59**	**0.78**
	[0.23]	**[2.15]**	**[0.23]**	**[0.23]**	**[0.29]**	**[0.26]***
Odds Ratio	1.74		1.32	1.42	1.81	2.18
Months Microcredit Available	−0.01	−0.02	0.01	0.01	0.00	−0.01
	[0.00]**	[0.04]	[0.00]*	[0.00]	[0.01]	[0.00]
Odds Ratio	0.99		1.01	1.01	1.00	0.99
Core Poor*Months Microcredit Available	**0.01**	**−0.03**	**0.00**	**0.01**	**0.01**	**0.02**
	[0.01]	**[0.05]**	**[0.01]**	**[0.01]**	**[0.01]**	**[0.01]***
Odds Ratio	1.01		1.00	1.01	1.01	1.02
Months since First Borrowed	−0.01	−0.05	0.01	0.01	0.00	0.00
	[0.00]***	[0.05]	[0.00]**	[0.00]*	[0.01]	[0.01]
Odds Ratio	0.99		1.01	1.01	1.00	1.00
Core Poor*Months since First Borrowed	**0.02**	**0.01**	**0.00**	**0.01**	**0.01**	**0.02**
	[0.01]	**[0.06]**	**[0.01]**	**[0.01]**	**[0.01]**	**[0.01]***
Odds Ratio	1.02		1.00	1.01	1.01	1.02
Total Amount of Loans	0.00	0.00	0.00	0.00	0.00	0.00
	[0.00]**	[0.00]	[0.00]***	[0.00]**	[0.00]	[0.00]
Odds Ratio	1.00		1.00	1.00	1.00	1.00
Core Poor*Total Amount of Loans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	[0.00]	**[0.00]**	**[0.00]**	**[0.00]**	**[0.00]**	**[0.00]**
Odds Ratio	1.00		1.00	1.00	1.00	1.00
Number of Loan Cycles	−0.25	−0.49	0.21	0.16	0.08	0.00
	[0.08]***	[0.74]	[0.08]***	[0.08]**	[0.09]	[0.09]
Odds Ratio	0.78		1.23	1.18	1.08	1.00
Core Poor*Number of Loan Cycles	**0.14**	**−0.42**	**−0.02**	**−0.04**	**0.01**	**0.14**
	[0.10]	**[0.90]**	**[0.10]**	**[0.10]**	**[0.11]**	**[0.12]**
Odds Ratio	1.15		0.98	0.96	1.01	1.16
Constant	−1.76	−5.62	−1.84	−1.83	−3.06	−1.63
	[0.20]***	[1.76]***	[0.20]***	[0.20]***	[0.27]***	[0.22]***
Observations	2881.00	2881.00	2881.00	2881.00	2881.00	2881.00
R-squared[1]	0.26	0.07	0.28	0.26	0.14	0.40
F-statistics[2]	1038.92	7.45	1044.25	977.82	269.13	1613.10

Notes: Standard errors in brackets
Odds ratio for logit estimation is reported below standard error
1/ Pseudo R-squared for logit regressions
2/ Chi- square statistics for logit regressions
* significant at 10%; ** significant at 5%; *** significant at 1%

	1	2	3	4	5
	OLS	OLS	OLS	OLS	OLS
	Animal Raising - Sales of Livestock and Products	Animal Raising - Profits (reported)	Microenterprise - Sales	Microenterprise - Profits (reported)	Agriculture - Sales to Third Parties
Khushhaili Bank Client (0/1)	-12197.81	-12881.22	11833.86	2082.19	15025.79
	[51,251.39]	[51,134.82]	[7,597.51]	[3,139.98]	[5,236.77]***
Core Poor	**67,671.51**	**71,414.62**	**-24,425.08**	**-7,952.08**	**-7,280.46**
	[43,654.67]	**[43,555.38]**	**[6,471.37]*****	**[2,674.56]*****	**[4,460.55]**
Accessed Loans	53644.93	52646.35	2522.01	1330.47	-6708.45
	[53,984.77]	[53,861.98]	[8,002.70]	[3,307.44]	[5,516.06]
Core Poor*Accessed Loans	**-62730.55**	**-63696.63**	**590.77**	**742.54**	**11806.8**
	[65,601.65]	**[65,452.43]**	**[9,724.79]**	**[4,019.16]**	**[6,703.05]***
Months Microcredit Available	1441.05	1432.29	261.24	59.64	-33.07
	[1,229.58]	[1,226.78]	[182.20]	[75.32]	[125.60]
Core Poor*Months Microcredit Available	**-1806.44**	**-1841.24**	**59.5**	**63.52**	**397.19**
	[1,660.98]	**[1,657.20]**	**[246.13]**	**[101.75]**	**[169.66]****
Months since First Borrowed	1702.31	1678.76	-298.13	-53.08	146.97
	[1,376.07]	[1,372.93]	[203.96]	[84.32]	[140.48]
Core Poor*Months since First Borrowed	**-3072.86**	**-3125.56**	**37.83**	**-28.47**	**456.93**
	[1,968.57]	**[1,964.08]**	**[291.77]**	**[120.63]**	**[200.97]****
Total Amount of Loans	0.85	0.77	0.12	-0.05	0.51
	[1.66]	[1.66]	[0.25]	[0.10]	[0.17]***
Core Poor*Total Amount of Loans	**-1.77**	**-1.79**	**-0.15**	**0.03**	**0.51**
	[2.19]	**[2.19]**	**[0.32]**	**[0.13]**	**[0.22]****
Number of Loan Cycles	6178.04	4913.85	229.94	-1643.76	8608.93
	[22,574.97]	[22,523.44]	[3,346.01]	[1,382.56]	[2,291.27]***
Core Poor*Number of Loan Cycles	**-19444.87**	**-19778.69**	**-26.45**	**875.03**	**6435.11**
	[27,376.01]	**[27,313.52]**	**[4,057.61]**	**[1,676.59]**	**[2,778.55]****
Constant	-25,555.27	-20,187.89	39,752.48	17,385.35	-28,981.67
	[53,748.54]	[53,626.28]	[7,967.68]***	[3,292.97]***	[5,491.92]***
Observations	2881	2881	2881	2881	2881
R-squared	0.02	0.02	0.08	0.08	0.11

Standard errors in brackets
* significant at 10% ** significant at 5% *** significant at 1%

Appendix 2. Summary Statistics

Appendix 2A. Summary Statistics - Dependent Variables

Variable Label	Obs	Mean	Std.Dev.	Min	Max
Consumption-Expenditure:					
Monthly consumption-expenditure per capita: Food	2859	863	555	0	8990
Monthly consumption-expenditure per capita: Non-Food					
	2859	772	1316	38	4969
Monthly medical expenditure per capita	2859	96	274	0	8333
Education:					
Probability children attending school	2881	0.44	0.44	0	1
School expenses per child	2881	630	897	0	11900
School expenses per girl	2881	172	377	0	7933
Days children absent from school	2881	6.25	24	0	550
Health:					
Spending on medical care	2881	6834	23841	0	900000
Probability seek medical treatment if ill	2881	0.60	0.48	0	1
Probability of medical treatment from trained practitioner if ill					
	2881	0.57	0.48	0	1
Ability to pay for medical treatment from own sources:					
	2881	0.52	0.49	0	1
Probability seek medical treatment if child ill	2881	0.60	0.49	0	1
Probability of medical treatment from trained practitioner if child ill					
	2881	0.58	0.49	0	1
Probability children vaccinated	2881	0.44	0.47	0	1
Probability consulted someone during pregnancy					
	2881	0.35	047	0	1
Probability consulted trained practitioner during pregnancy					
	2881	0.29	0.45	0	1
Probability of tetanus vaccine during pregnancy					
	2881	0.23	0.42	0	1
Probability child delivered in a medical facility					
	2881	0.23	0.42	0	1
Probability childbirth attended by trained professional					
	2881	0.38	0.48	0	1
Empowerment:					
Opinions taken into consideration "most of the time" or "always" regarding:					
Child's schooling	2881	0.58	0.49	0	1
Child's marriage	2881	0.39	0.48	0	1
Child's medical care	2881	0.64	0.47	0	1
Whether to have another child	2881	0.23	0.42	0	1
Type of contraception to use	2881	0.22	0.41	0	1
Woman's participation in community/political activities					
	2881	0.12	0.32	0	1
Woman's decision to work outside home	2881	0.18	0.39	0	1

	N	Mean	SD	Min	Max
Social visits to woman's family	2881	0.64	0.47	0	1
Social visits to man's family	2881	0.67	0.46	0	1
Social visits to friends/neighbors	2881	0.69	0.46	0	1
Repair/construction of house	2881	0.34	0.47	0	1
Sale/purchase of livestock	2881	0.27	0.44	0	1
Borrowing money	2881	0.36	0.48	0	1
Can get 500 rupees by selling own assets	2881	0.01	0.13	0	1
Probability ever argued with male hh member	2881	0.27	0.44	0	1
Frequency of arguments: daily	2881	0.02	0.15	0	1
Frequency of arguments: more than 2-3 times per week	2881	0.04	0.21	0	1
Incidence of domestic violence	2881	0.06	0.25	0	1

Microenterprise:

	N	Mean	SD	Min	Max
Have own microenterprise	2881	0.27	0.44	0	1
Value of capital assets	2881	17180	78757	0	1002200
Monthly inputs	2880	46855	190780	0	3384000
Number males working-HH microenterprise	2881	0.28	0.68	0	11
Number of females working-HH microenterprise	2881	0.09	0.41	0	5
Probability hired labor (0/1)	2881	0.03	0.17	0	1
Number of people hired	2881	0.08	0.71	0	15
Sales	2881	37437	109191	0	1024000
Profits-Reported	2881	13540	45040	0	700000

Livestock:

	N	Mean	SD	Min	Max
Assets - value of livestock	2881	39256	73610	0	1158800
Annual inputs for livestock	2881	6443	17555	0	513000
Number males working-HH livestock	2881	0.74	1.03	0	7
Number of females working-HH livestock	2881	0.88	1.12	0	8
Production/sales of livestock and products	2878	67931	278339	0	5549600
Profits-reported from livestock	2878	61498	273627	–513000	5485000

Agriculture:

	N	Mean	SD	Min	Max
Assets-land cultivated	2881	17.24	41.67	0	800
Assets-value of farm equipment	2881	10745	63604	0	939200
Inputs-hours of tractor use	2881	14.60	43.37	0	1006
Inputs-pesticide use (0/1)	2881	0.29	0.45	0	1
Inputs-amount of pesticide use	2881	0.60	1.11	0	16
Number males working-HH agriculture	2881	0.61	1.02	0	7
Number of females working-HH agriculture	2881	0.41	0.92	0	7
Inputs-probability hired labor (0/1)	2881	0.02	0.16	0	1
Inputs-number of hired labor	2881	0.06	0.42	0	7
Value of sales to third parties	2881	24453	76306	0	1345000

Appendix 2B. Summary Statistics - Individual Household Characteristics

Variable Label	Obs	Mean	Std.Dev.	Min	Max
Education of highest educated male (years)	2881	5.76	5.09	0	20
Literacy of male	2881	1.38	1.41	0	9
Numeracy of male	2881	1.68	1.45	0	9
Male age 16-21	2881	0.52	0.76	0	4
Male age 22-29	2881	0.51	0.76	0	5
Male age 30-39	2881	0.43	0.61	0	4
Male age 40-49	2881	0.31	0.48	0	3
Male age 50-59	2881	0.20	0.40	0	2
Male age over 60	2881	0.19	0.40	0	2
Total Number Males in HH	2881	2.18	1.38	0	11
Education of highest educated female (years)	2881	2.41	3.94	0	16
Literacy of female	2881	0.64	1.04	0	8
Numeracy of female	2881	0.82	1.15	0	8
Female age 16-21	2881	0.51	0.75	0	5
Female age 22-29	2881	0.47	0.68	0	4
Female age 30-39	2881	0.43	0.57	0	3
Female age 40-49	2881	0.30	0.47	0	3
Female age 50-59	2881	0.15	0.36	0	2
Female age over 60	2881	0.33	0.56	0	4
Total Number Females in HH	2881	3.78	1.93	0	14.5
Children age 0-4	2881	0.98	1.11	0	9
Children age 5-9	2881	1.19	1.23	0	8
Children age 10-15	2881	1.10	1.21	0	9
Generations Family in Village	2881	1.70	1.40	0	3
Number of relatives in village	2881	43.71	59.73	0	600
Household member holding office	2881	0.16	0.36	0	1

Appendix 2C: Definition of Treatment Variables

Measuring access:
1) "Accessed Loans": a dummy variable equal to 1 if the household has already accessed loans. This measure of access excludes the control group of new clients who have not yet accessed loans.

2) "Months Microcredit Available": a count of the number of months the microfinancial services have been available in a given village. For new clients who have not yet accessed loans and for non-participants, this treatment measure is equal to 0.

Measuring participation:
(3) "Months Since First Borrowed": the number of months elapsed since the household first borrowed

(4) "Total Amount of Loans": the total amount ever borrowed by the household

(5) "Number of Loan Cycles": a count of the number of loan cycles the household has borrowed. The first two measures of treatment, which only measure the impacts of access to microfinance, present the most unbiased results.