

The Effects of Microfinance on Women's Empowerment in Zimbabwe

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Introduction

The feminization of development has shifted the indicators of success from concepts of welfare and efficiency to social justice and balance of power (Kabeer 2003, 2). The development community has praised microfinance institutions (MFIs) for providing comprehensive avenues toward these valued measures. They claim that targeting women with microcredit programs promotes their empowerment, which in turn has beneficial spillover effects on a developing nation's macroeconomy, including economic growth, the reduction of poverty, and improved governance (Malhotra et al. 2002, 3). The main objective of microcredit is to create self-employment opportunities for the underemployed and unemployed poor by supporting their microenterprises, which serves as an alternative to wage labor (Afrin 2008, 171). Before more resources are devoted to microcredit programs, however, we must develop a complete understanding of the ramifications these programs have on clients and their communities by measuring their effects.

The leading MFI, the Grameen Bank in Bangladesh, asserts, "Women invest their loans properly and utilize income for the welfare of the members of the family," explaining microcredit's success (Chowdhury 2008). While some studies support these claims, others have found that in some countries, men control the loans taken out by their female relatives, although the women bear the liability for repayment (Goetz and Sen Gupta 1996). Fuwa et al. (2006) warns that women may even be at a *loss* if intrahousehold allocation adjusts against their favor following the provision of microcredit. They, as do others, call for further empirical investigation at the individual level—even if household indicators improve, women may not be empowered during the process.

The term ‘empowerment,’ the lynchpin of MFIs’ acclaim, is not sufficiently defined. Malhotra et al. (2002, 3) argues, “The term has been used more often to advocate for certain types of policies and intervention strategies than to analyze them.” MFIs tend to argue that microcredit empowers women, which validates their decision to target women; however, this argument may veil their true motivation—that women tend to be more compliant with their rules and procedures than men, which has nothing to do with the program’s impact (Chowdhury 2008, 5). Some researchers claim that the Grameen bank has given preference to women, not because it empowers them, but because the bank experienced far greater loan recovery rates with women than men in the 1980s (Chowdhury 2008 6). Kabeer (1999, 3) has developed the most commonly used definition for empowerment as: “the expansion in people’s ability to make strategic life choices in a context where this ability was previously denied to them.” Other scholars also value concepts of holding institutions accountable, personal autonomy, self-reliance, and the control over resources in their definitions. Empowerment is a process that does not end at gender equality and social inclusion. Over the course of their lives, individuals acquire greater control over their economic and social outcomes.

Currently, most scholars agree that there are three essential components to empowerment: resources—catalysts of empowerment, to extend beyond simple indicators of acquisition; agency—“the idea of self-efficacy and the significance of the realization by individual women that they can be the agents of change in their own lives” (Kabeer 1999, 4); and achievements—the capacity to make decisions that will result in positive gains. All three can be measured in different ways and are indicators that an individual is experiencing the process of empowerment.

No major development body has developed a streamlined way of measuring changes in empowerment. Nor do microcredit organizations have a uniform way of tracking whether their

programs empower women. Participatory development tools such as microcredit must be deconstructed in order to figure out if they are *really* capable of altering household dynamics. In order to translate any theoretical initiatives stemming from scholarship into policy, comprehensive measurement must be developed, especially for those that claim scarce resources for specific segments of the population (Kabeer 1999, 2).

Using the Assessing the Impact of Microenterprise Services (AIMS) Zimbabwe dataset collected by Management Systems International (MFI) and funded by the United States Agency of International Development (USAID), I seek to examine empirically whether or not microfinance improves selected indicators that reflect the three domains of women's empowerment—resources, agency, and achievement. I hypothesize that the sample means of variables chosen to represent resources, agency, and achievement will be higher and significantly different for microcredit clients than the means of the variables for non-clients. Second, I hypothesize that clients will display an improvement in these indicators over the course of the study, whereas non-clients will not.

First I will conduct a literature review that defines resources, agency and empowerment, explains how they have been measured in previous studies, and examines their relevance to MFI programming. The review will then examine literature that accompanies the AIMS dataset; I will discuss the AIMS project's context, purpose, methodology and relevant findings. Next, I will discuss my data and methodology concerning my t-test and ANCOVA analysis. Lastly, I will review my analysis, first covering t-test analysis and second ANCOVA analysis. The t-test section is broken into three subsections—resources, agency, and achievement. I begin each by defining their variables and arguing their relevance. I then state my hypothesis for each variable and discuss the results. In the ANCOVA section I will look at each analysis and discuss any

significant findings. Lastly, I will describe the results of AIMS ANCOVA tests analogous to mine.

Literature Review

Current literature argues that MFIs have significant positive effects on a developing economy's efficiency and progress by ushering women into the economic mainstream. Scholars have complained, however, that the literature fails to discuss how a woman's decision to partake in welfare enhancing activities that microcredit supports is determined by her individual perceptions of herself and the balance of power in her household, which have yet to be unpacked (Basu 2006). If microcredit truly supports these activities, MFI participants will exhibit measurable increases in empowerment, a concept that must be clearly defined before any empirical research is conducted.

The literature on empowerment identifies at least three core components—resources, agency, and achievement. Delineation between the three components is often hazy and all three must be measured in a manner that reflects the parameters of their definitions. The link between empowerment and microcredit is repeatedly emphasized by MFIs; however, the empirical methods required to measure microcredit's empowering effects are complex and datasets that measure the appropriate variables are scarce (Asim 2008, 1). Thus, there has not been comprehensive research that distinctly explores each of these three components. Many studies have created indices of empowerment that combine, resources, agency, and achievement, without defining focusing on each separately.

Resources include access to goods and capital that facilitate empowerment. Examples are land, salaried employment, education, and credit (Kabeer 1999, 14). Women use these resources

to broaden their decision-making capabilities and achieve personal success. Microcredit affords women a chance to accumulate resources that facilitate economic success and empowerment.

Osmani (2007, 710), for example, found that microcredit significantly improved the level of land and non-land assets holdings of female MFI participants that they have purchased themselves in Bangladesh. The study also revealed that these resources were correlated with improvements in agency, which is discussed below. When measured, however, resources must be separated from choice (Kabeer 1999, 14). Once measured, researchers may then determine how resources relate to the other components of empowerment—choice and achievement (Kabeer 1999, 14).

Microcredit is a resource itself that is allocated to help women generate additional resources; this result must be measured to ensure that microfinance is achieving its desired outcome (Malhotra et al. 1996, 643)

Agency is the idea of “self-efficacy and the significance of the realization by individual women that they can be the agents of change in their own lives” (Malhotra et al. 2002, 8).

Basically, it incorporates anything that results in the formulation of strategic choices that affect important life outcomes (Malhotra et al. 2002, 9). In empirical studies, agency is operationalized as decision-making, expressed through bargaining, negotiation, manipulation, resistance, reflection, and analysis (Kabeer 1999, 3). All measures of agency analyze decisions of varying importance and incorporate the amount of “say” a woman has in the decision-making process (Kabeer 1999, 18). They involve directly asking a woman how much input she had in making particular household decisions. Because the strategic nature of the decision in question varies, researchers may either measure relative changes in agency by examining one decision at a time or construct an index capturing a woman’s role in decision-making concerning a myriad of household issues by assigning weights to important decisions in order to calculate their impact

on overall household decision-making. The decisions examined to measure agency include: the number of children in a household, the amount of education each member receives, if/how much women work, the household budget, and the amount of health care purchased (Kabeer 1999, 17).

MFIs directly improve a woman's agency in two separate ways—the provision of financial resources that broaden her decision-making capabilities and the participation experience that widens her social network. Both raise her esteem in their own eyes, as well as in the eyes of their family members, which results in the expansion of her ability to make decisions (Osmani 2007, 697).

Microcredit allocated for either household or microenterprise use expands a woman's economic opportunities. Hashemi et al. (1996, 645) find that 66% of participants of the BRAC in Bangladesh initiated economic activities that they previously had never partaken in before receiving microcredit. Considering that only 20% of the control group of women who have not participated MFI programming engaged in economic opportunities to support their families, this is a substantial improvement in agency (Hashemi et al. 1996, 645). Microcredit has opened the door to these opportunities, but as aforementioned, the social aspect of MFI participation may be enough to improve client's agency and sometime more important than the financial aspects.

Osmani (2007, 697) writes that the exposure to the outside world facilitated by MFIs offer women “the self-confidence and courage they need in order to exercise more power within the household.” Kabeer (2001) found that microcredit borrowers experienced a greater sense of self-worth, which increased their voice in household decision making, such as deciding to educate their daughters. These important improvements in self-esteem provide women motivation to pursue goals they would not have otherwise. Such psychological affects are indispensable to an MFI's ability to empower its clients, and scholars have developed methods to

accurately measure them. Pitt et al. (2003), for example, conducted a study that correlated the provision of microcredit with *prima face* questions that directly asked respondents their attitudes on gender roles in Bangladesh to measure of agency. *Prima face* questions do not use proxies to determine decision-making or agency; they prompt a respondent for a direct assessment of their feelings. They found that female microcredit increases the probability that a man will describe his wife as intelligent and that a woman will not view her husband as superior. Malhotra et al. (2002) calls for a greater use of *prima face* questions in order to measure the psychological factors that truly affect decision-making.

Local structures of inequality that women face are often seen as natural—ultimately, MFIs are held to build “agency” that help women challenge these structures of inequality through the provision of resources and social mobility (Malhotra et al. 2002, 11). This operates on two levels—men become accustomed to women making decisions for themselves, and women break away from self-subordinating decision-making and acquiescence to norms.

Achievements include traceable outcomes that represent the results of choice that reflect increases in women’s welfare (Mahmud 2003, 585). These indicators of success must correlate to measures of agency in order to show that the achievements are a result of changes in a woman’s self-esteem or household or societal role, which indicates she is experiencing empowerment. Measures of empowerment, therefore, must reflect the realization of welfare enhancing goals. They may include achievements in literacy, health, nutrition, mortality, or consumption (Mahmud 2003, 587). MFIs have the power to expand a woman’s access to resources and strengthen her decision-making capabilities, which ultimately assist her in achieving her goals. Mahmud (2003), using data from Bangladesh, finds that microcredit increases a women’s access to health care, indicating that she has reached immediate

achievement after partaking in MFI programming. A study by Mizan (1993) illustrates that the valued achievements vary drastically between studies: using data from the Grameen Bank in Bangladesh, Mizan determines that MFI participation increases women's employment and earned income. No matter what achievement is chosen to represent empowerment, it must reflect a positive outcome catalyzed by the indicators selected to represent resources and agency.

Resources, agency, and achievements, to clarify, are all indicators of empowerment—they all benefit welfare in different ways, yet all are essential to an individual's development. Before selecting variables from the AIMS Zimbabwe dataset that measure these components of the empowerment process, I will examine the context of the AIMS study, which will enable me to determine what proxies would best represent resources, agency and achievement. In order to best understand how these concepts apply to the data, I will examine outcomes of previous studies that use the AIMS Zimbabwe dataset.

The overall purpose of the AIMS study was “to determine the nature, extent, distribution of impacts resulting from participation in a microfinance program (Barnes et al. 2001, 2).¹ The Zimbabwe study was comprised of two household surveys, the first in 1997, and the second in 1999 during the same month using the same sample. The MFI under examination was the Zambuko Trust. It began in 1992 and was the first self-sustaining MFI in Zimbabwe (Barnes et al. 2001, 2). Its main service is lending; however, the Trust also offers business management training and business management advice. To allow for comprehensive statistical analysis, the survey included a control group of non-clients randomly selected from survey's three geographic areas, Greater Harare, Bulawayo, and Mutare. The non-clients met all the eligibility requirements to be a Zambuko client, which including owning a microenterprise. They were matched with the

¹The Zimbabwe study was one of three studies of the AIMS project. The others covered Milbanco in Lima, Peru and the SEWA Bank in Ahmedabad, India. Various manuals and studies accompanied the AIMS dataset. The main text by Barnes et al. (2001) offers detailed explanations of the study's purpose, context, and methodology.

client group according to gender and microenterprise sector. Microenterprises were defined as “very small informally organized business activities undertaken by low income people with fewer than ten employees (Barnes et al. 2001, 3). Using these two groups, the AIMS researchers hypothesized that participation in the Zambuko program would be associated with improved economic welfare, enterprise growth, and increased empowerment of clients (Barnes et al. 2001, 3).

The economic and social climate during the study was rather volatile. Since Zimbabwe achieved independence in 1980, it struggled with the deconstruction of a protectionist economy and felt the stresses of structural adjustment. This included the introduction of health and school fees to reduce public expenditures, the elimination of subsidies to state owned enterprises through privatization, the deregulation of price controls, and the abolition of wage regulation (Barnes et al. 2001, 5). The painful macro-level adjustments were unfortunately accompanied with drought and high inflation (Barnes et al. 2001, 6). From 1995 to 1999 GDP growth fluctuated, but remained largely positive, ranging from -0.6 % to 8.7% (Barnes et al. 2001, 7). Per capita GDP growth ranged from -4.0% to .06% (Barnes et al. 2001, 7). Table II-I below, which was reproduced from Barnes et al. (2001), shows the macroeconomic data during these years:

Inflation, measured by consumer price index (CPI), rose 32% one year after the 1997 survey (Barnes et al. 2001, 7). By the 1999 survey, CPI was 70% higher than it was during the 1997 survey (Barnes et al. 2001, 7).

In 1999, the population of Zimbabwe fell between 11.3 million and 11.9 million (Barnes et al. 2001, 8). Tragically, HIV/AIDS infections have placed enormous stress on the nation. 1.5 million adults and children were infected by the end of 1999 (Barnes et al. 2001, 8). Deaths due to AIDS were estimated to be 130,000 in 1997, and 160,000 in 1999 (Barnes et al. 2001, 8). Population growth was 3.1% between 1980 and 1995; however, due to the AIDS epidemic, population growth fell to 2% in 1999 (Barnes et al. 2001, 8).

The study period was also marked by massive migration flows to urban centers and a lack of employment, which led to a 30 percent increase in the number of micro and small enterprises between 1992 and 1998 (Barnes et al. 2001, 11). The number of people employed in microenterprises also increased by 52% in this period (Barnes et al. 2001, 11). There were other changes regarding microenterprises worth noting—between 1991 and 1998, the percentage of microenterprises involved in manufacturing dropped from 72% to 42%, those involved in trade rose from approximately 23% to 45%, and those involved in the service sector increased slightly, but remained under 5% (Barnes et al. 2001, 11-12). This left most microenterprises selling farm products or used clothes. Also, between 1991 and 1998, the percentage of microenterprises owned by women fell from 74% to 58% (Barnes et al. 2001, 11). Although the presence of microenterprises is strong in Zimbabwe, most generate profits that are below minimum for workers in Zimbabwe and many shut down (Barnes et al. 2001, 12).

Although times were difficult during the AIMS study, its researchers hypothesized that MFI participation would offer clients “a better position from which to deal with the future

through more pro-active behavior in dealing with the future and increased confidence [and] an increase in self-esteem and in respect from others” (Barnes et al. 2001, 8). Using the AIMS Zimbabwe data from 1997 and 1999, Barnes and Keogh (1999, 51) found that MFI clients were more likely to save money on a regular basis than non-clients. Furthermore, they found that repeat married clients were significantly more likely than new clients to borrow microcredit without consulting with another family member (Barnes and Keogh 1999 52). Barnes et al., (2001, 123) have concluded that microcredit permits women to diversify or change the activities of their microenterprises, which in turn has a positive effect on their self-esteem and self-confidence. They have also concluded that intrahousehold resource allocation shifts in their favor when their income, in proportion to their husbands, rises with the assistance of microcredit, offering them greater command over the household’s financial decisions (Barnes et al., 123).

Data and Methodology

The AIMS dataset assessing the impact of Zambuko’s Microenterprise Program in Zimbabwe presents survey data on the individual, household, and microenterprise level during two sample years, 1997 and 1999. Respondents were surveyed from three separate regions: Greater Harare, Mutare, and Bulawayo. 691 individuals were surveyed in 1997 and 579 of the same individuals were surveyed in 1999. The inclusion of two sample periods is valuable, as it allows for the detection of change after clients had access to microcredit for at least 24 months. Furthermore, it is fortunate that the data includes a control group of non-client respondents. All financial variables are measured in Zimbabwe dollars and adjusted for inflation. The survey included a control group of non-clients randomly selected from survey’s three geographic areas, Greater Harare, Bulawayo, and Mutare. The non-clients met all the eligibility requirements to be

a Zambuko client, which including owning a microenterprise. They were matched with the client group according to gender and microenterprise sector.

Most variables in the dataset are presented in a single data file; however, certain key variables of interest are found in separate data files; these variables are Gross Monthly Enterprise Income, Household Improvements, and Household Assets. Given the complex structure of the datasets, it proved too difficult in the time available to merge them into a single file. (These variables, therefore, will only be used in the first part of my analysis, the analysis of differences, and not my ANCOVA analysis.)

The analysis will investigate differences between client and non-clients within each sample year, differences among clients between 1997 and 1999, and differences among non-clients in 1997 and 1999 using t-tests with a 95% confidence level. I will first perform a descriptive analysis of the variables that capture the three dimensions of empowerment discussed above – resources, agency, and achievements. The list of variables used to represent each of these domains is in Box 1 below:

| Box 1: Variables | | |
|--|--|--|
| Resources | Agency | Achievements |
| Monthly Enterprise Income | Do your household members respect your contribution? | Has the respondent started a new enterprise in the past 24 months? |
| Microcredit | Do you feel well positioned for the future? | \$ spent on household improvements |
| Assets | Have you attended business management training? | |
| Is 1997 Enterprise Still in Operation? | Are you a member of a church group? | |
| | Are you a member of a women's group? | |

Since my main interest is women's empowerment, analysis will focus on female respondents except for the following variables: monthly enterprise income, household improvements, and assets. The breakdown of client status by gender within the sample is captured in Table 1 and Table 2 below.

| Table 1: Cross-tabulation of Gender and Participation in Zambuko Trust in 1997 | | | |
|--|---------|-------------|-------|
| 1997 Survey | Clients | Non-clients | Total |
| Male | 67 | 53 | 120 |
| Female | 326 | 245 | 571 |
| Total | 393 | 298 | 691 |

| Table 2: Cross-tabulation of Gender and Participation in Zambuko Trust in 19979 | | | |
|---|---------|-------------|-------|
| 1999 Survey | Clients | Non-Clients | Total |
| male | 54 | 47 | 101 |
| female | 284 | 194 | 478 |
| Total | 338 | 241 | 579 |

Participation is defined as a respondent's client status with the Zambuko Trust. If a respondent is a client, he or she responds "C." If the respondent is not a client of the Zambuko Trust, he or she responds "N." Gender is defined as 1 for male and 2 for female. From Table 1, we can see that there were 67 male clients and 326 female clients in 1997. In 1999, there were 54 male clients and 284 non-clients, as some respondents were unreachable for the second survey.

Following the analysis of the descriptive statistics, I perform an Analysis of Covariance (ANCOVA) to test for covariance between the dependent variables representing empowerment (indicators of agency and achievement) and several independent variables. Microcredit is my key independent variable of interest. It is defined as a respondent's total microcredit from the Zambuko Trust, the Zimbabwe Women's Finance Trust, SEDCO, and all similar MFIs combined. In order to account for the total effects of microfinance as a resource, it is necessary to include all sources of microcredit, not only that from the Zambuko Trust, even though it is the central MFI under examination in the study. Microcredit was constructed in order to investigate the association microcredit has with changes in resource, agency and achievement indicators of

empowerment. The other control variables include age, education level, “Has the respondent attended management training?” and “Is the 1997 enterprise still in operation?”² These values will be taken exclusively from the 1999 sample, as clients have all been exposed to microcredit for at least 24 months. (In 1997, all clients have already signed with Zambuko Trust; however, the duration of their borrowing history varies.)

² Monthly enterprise income, household improvements, and assets are important variables that ought to be included in my ANCOVA analysis; however, they were located in separate files and inaccessible. I recognize this as a limitation to my study.

Analysis

Resources

The following variables have been chosen to represent women's access to resources. Monthly Enterprise Income is defined as monthly profit in Zimbabwe dollars adjusted for inflation. It was chosen because Zambuko microcredit was allocated exclusively to assist clients' microenterprise operations, which generate revenue, a resource that potentially can expand a woman's agency. Microcredit was allocated solely to fund respondents' microenterprises and not their household operations. Changes in this variable over time may account for changes in empowerment. If clients display an improvement in this variable and non-clients do not, the psychological encouragement offered by MFIs may explain the increase.

"Assets" is defined as the total value of a household's seven main purchases by any household member in the past 24 months plus the value of all household electronics, appliances, and transport items used primarily for domestic (not enterprise) use in Zimbabwe dollars adjusted for inflation. The "Assets" variable was chosen because it is a resource that eases household operations, offering women a choice to pursue additional welfare enhancing opportunities. Improvements in Assets may correlate with improvements in the agency indicators. It is necessary to determine whether the mean value of Assets improved for clients over the period of the study, indicating that microcredit may have a positive effect on resources.

The next variable that represents access to resources is whether the 1997 enterprise is still in operation. This is defined as a dummy variable that marks whether or not the respondent's 1997 microenterprise was still operating in 1999. Respondents answered 1 if the enterprise was still operating, 2 if someone else was running it, and 3 if it shut down. This dummy variable was included because it indicates a viable microenterprise that could be earning money for the respondent. Also, it is important to investigate whether more clients were able to keep their enterprise running under their ownership than non-clients over the period of study. Table 3 below details the analysis of variables chosen to represent resources.

Table 3: Resource Variables

| Resources | | | | | | |
|--|------------------------|--------------------------|---------------|--------------------------|--------------------------|---------------|
| Variable | 1997 | | | 1999 | | |
| | Clients | Non-clients | T-test | Clients | Non-clients | T-test |
| Monthly Enterprise Income* | 2959.613 (4704.761) | 2260.572 (3939.392) | T>t 0.0319 | 6635.821 (13288.690) | 6047.163 (13800.230) | T>t 0.3113 |
| Microcredit | 1195.104 (0.000) | 3912.032 (0.000) | T<t 0.0000 | 2596.491 (4306.512) | 30.303 (362.018) | T>t 0.0000 |
| Assets* | 8232.551 (8975.710) | 5842.644 (7235.348) | T>t 0.0004 | 19342.020 (21086.640) | 14208.350 (18637.760) | T>t 0.0016 |
| Is 1997 Enterprise Still in Operation? | | | | 1.420 (0.832) | 1.387 (0.839) | T>t 0.3154 |
| Variable | Clients | | | Non-Clients | | |
| | 1997 | 1999 | T-test | 1997 | 1999 | T-test |
| Monthly Enterprise Income* | 2959.613 (4704.761) | 6635.821 (13288.690) | T<t 0.0000 | 2260.572 (3939.392) | 6047.163 (13800.230) | T<t 0.0000 |
| Microcredit | 1195.104 (3912.032) | 2605.634 (4311.342) | T<t 0.0000 | | | |
| Assets* | 8232.551 (8975.710) | 19342.020 (21086.640) | T<t 0.0004 | 5842.644 (7235.348) | 14208.350 (18637.760) | T<t 0.0000 |

* Male respondents are not separated from sample.

Monthly Enterprise Income

I expect the client mean in 1999 to be significantly larger than the non-client mean, indicating that monthly enterprise income was larger for clients than non-clients after clients had received microcredit for at least 24 months. My reasoning is that microcredit will enable respondents to invest and expand the operations of their microenterprises over this period. T-tests only partially confirm my prediction. They show that the mean client Monthly Enterprise Income was significantly higher than the non-client mean in 1997, but not in 1999, after clients had access to microcredit for 24 months. Thus, we fail to reject the null hypothesis that there is no difference between client and non-client means in 1999. This may be an indication that clients experienced short-term success after initially receiving microcredit; however, were unable to sustain improved profit in the long-term.

Second, I anticipate that the client mean in 1997 will be significantly less than client mean in 1999, indicating that client mean has risen over this period. I also predict that there will be no difference between the 1997 and 1999 non-client means, indicating that conditions have not changed for non-clients because their enterprises did not receive the extra investment. The client mean in 1999 was significantly greater than the client mean in 1997, meaning we reject the null hypothesis that there is no difference between client and non-client means. We cannot conclude that the increase amongst clients is an effect of microenterprise—the non-client mean has risen significantly between the two years as well. Further statistical modeling is necessary in order to determine if microcredit correlates with greater Monthly Enterprise Income.

Assets

I anticipate that the client mean Assets value in 1999 will be higher than the non-client mean Assets value in 1999 because the enterprise profit generated by microcredit will enable respondents to purchase more Assets. Client respondents' Assets mean value was significantly greater than non-client Assets value in both years. Therefore, we reject the null hypothesis that there is no difference between client and non-client means. Since the null hypothesis was rejected for both years, and clients had larger total asset values before all respondents had microcredit for at least 24 months, further statistical analysis must be used to determine if microcredit is associated with these increases.

Second, I predict that the client mean, and not the non-client mean, will be significantly less in 1997 than in 1999, indicating that clients exhibited a higher value of Assets following the provision of microcredit for at least 24 months. The t-tests in Table 3 show that we reject the null hypothesis that there is no difference between the 1997 and 1999 means for both clients and non-clients. Both means were significantly higher in 1999 than they were in 1997, indicating that non-client asset bases improved over the 24-month duration of the study as well. Perhaps the increase in the non-client Assets value is attributed to the business experience they gained between the two survey periods. As discussed in my literature review, Zimbabweans are continually relying more on their microenterprises, as labor opportunities are increasingly scarce. My analysis of Monthly Enterprise Income shows that non-clients have seen an increase in monthly enterprise profit, which directly funds their domestic asset base. Further statistical analysis is necessary to determine if microcredit is associated with increases in asset value.

Is 1997 Enterprise Still in Operation?

I anticipate that more clients than non-clients in 1999 will have maintained ownership of their microenterprise and kept it running, which would be indicated by the client group exhibiting significantly smaller mean response than non-clients. T-test analysis in Table 3 fails to reject the null hypothesis that there is no difference between client and non-client means, meaning neither clients nor non-clients were more likely to keep their enterprises running over the 24-month period. Perhaps the loan sizes distributed by Zambuko were not large enough to sustain failing business and hold them above their shutdown points.

Agency

The variables chosen to represent agency indicate either the psychological components that enhance agency or the access to an opportunity that broadens a woman's networking and social capital, which ultimately increases her choice, as she has more creative opportunities to pursue economic activities by way of knowing more people. These variables directly ask women psychological questions about gender relationships and their self-esteem within the social context of the sample. Changes in a woman's perceived role of herself can be taken as representative of the process of agency and empowerment. Another strong representation of agency is greater voice and participation in the household and community. Certain variables in the data set capture community-level participation. If a woman were able to participate in community organizations, she would not only have access to more opportunities by way of associating with more people, but would have greater voice in community affairs that affect her household.

“Are you a member of a church group and Are you a member of a women’s organization?” measure community participation. These are dummy variables with values of 1 for ‘yes’ and 2 for ‘no’. The support and contacts these groups offer also broaden a women’s scope of decisions.

A third indicator of agency is the variable “Do household members respect your contribution?” This is defined as a dummy variable that takes the value of 1 for ‘yes’ and 2 for ‘no’. It is a measure of agency because it captures, *prima face* whether a women feels respected, which strongly affects her self-perception and potentially her ability to participate in key decisions. It has been chosen because it is a direct representation of a psychological determinant of agency that Malhotra et al. (2002) call for.

The next indicator I chose for agency is the variable “Do you feel well positioned for the future? It is defined as a dummy variable that takes the value of 1 for ‘yes’ and 2 for ‘no’. It is a measure of agency because it captures *prima face*, whether a woman has a positive outlook concerning her available opportunities. It has been chosen because it is a measure of a woman’s hopefulness, which greatly affects her perception of the choices available to her.

The last indicator I chose to represent agency is “Have you attended business management training?” Like the previous variables, it is defined as a dummy variable with a value of 1 for ‘yes’ and 2 for ‘no’. The Zambuko Trust offered business management training to its clients. It has been chosen because the human capital offered by these training courses expose women to an array of entrepreneurial decision-making that formerly they did not know were available; thus, attendance indicates an expansion of agency. Furthermore, it bestows women with skills to enhance their microenterprise

operations, and if MFI clients, it would help them optimize their use credit. Table 4 details the *prima face* and community participation indicators discussed in this paper.

Table 4: Agency Variables

| Agency | | | | | | |
|--|------------------|------------------|---------------|-----------------------|----------------------|---------------|
| Variable | 1997 | | | 1999 | | |
| | Clients | Non-clients | T-test | Clients | Non-clients | T-test |
| Do household members respect your contribution? | 1.013 (0.136) | 1.026 (0.206) | T<t 0.1848 | 1.183 (0.715) | 1.254 (0.792) | T<t 0.1551 |
| Do you feel well positioned for the future? | 1.213 (0.410) | 1.274 (0.447) | T<t 0.0468 | 1.161 (0.368) | 1.204 (0.404) | T<t 0.1135 |
| Have you attended business management training? | | | | 1.269841 0.4474425 | 1.22666 0.4577377 | T>t 0.4902 |
| Variable | Clients | | | Non-Clients | | |
| | 1997 | 1999 | T-test | 1997 | 1999 | T-test |
| Do your household members respect your contribution? | 1.013 (0.136) | 1.183 (0.715) | T<t 0.0000 | 1.026 (0.206) | 1.254 (0.792) | T<t 0.0000 |
| Do you feel well positioned for the future? | 1.213 (0.410) | 1.161 (0.368) | T>t 0.0510 | 1.274 (0.447) | 1.204 (0.404) | T>t 0.0470 |
| Are you a member of a Church Group? | 1.890 (0.314) | 1.902 (0.298) | T<t 0.3215 | | | |
| Are you a member of a Women's Organization? | 1.929 (0.256) | 1.947 (0.225) | T<t 0.2012 | | | |

Do your household members respect your contribution?

I anticipate that the client mean response in 1999 will be lower than the non-client mean response in 1999, indicating that significantly more women feel respected and receive the agency that is associated with respect after clients have been exposed to microcredit for at least 24 months. Within both years, there was no significant difference between client and non-client means according to the t-test; therefore we do not reject the null hypotheses that there is no difference between client and non-client means.

Second, I expect that the client mean response will be significantly lower in 1997 than 1999, indicating that women felt more respect after receiving microcredit for at least 24 months, whereas non-clients will exhibit no difference in their responses. Within both the client and non-client groups, however, the 1997 means were significantly less than the 1999 means, indicating that women felt less respect after the first survey. There are many reasons that might explain why this is the case. My primary concern is that the design of the question may not be optimal. Perhaps an ordinal scale response would have better captured changes in a woman's perception of the respect she receives. The vast majority of all respondents replied yes, which may not have been the case if there were intermediate choices. Most likely there are cultural explanations behind this outcome that were not captured by the quantities nature of the dataset. External influences may also account for the significant decrease in respect—inflation was rampant during the period of study and per capita GDP on the decline.

Do you feel well positioned for the future?

I foresee the mean client response in 1999 being significantly lower than the mean non-client response in 1999, indicating that more clients will feel well positioned for the future after experiencing the benefits of microcredit for at least 24 months. It is interesting to note that the 1997 client mean is significantly less than the 1999 non-client mean, meaning that fewer women felt well positioned after the 24-month period between the first and second surveys. In 1999, however, we cannot reject the null hypothesis that there was no significant difference between client and non-client mean responses. Perhaps, even after 24 months after the allocation of microcredit, clients have not yet

experienced or internalized its benefits. A longer time interval (greater than two years) between surveys may show a significant difference between MFI client and non-client responses.

Second, I expect that the 1999 client mean response will be significantly lower than the 1997 client mean response, indicating that clients felt better positioned for the future by the end of study. The 1997 client mean was greater than the 1999 client mean; however, t-test analysis just missed the 95% confidence level with a p-value of 0.0510. If this finding were significant, then clients would have felt better positioned for the future after experiencing the effects of microcredit for at least 24 months and the null hypothesis that there is no difference between the 1997 and 1999 client responses would have been rejected. Many other factors could have affected this variable other than; for instance acquiring a new salaried job or opening a new microenterprise. The fact that the control group of non-clients *did* see a significant improvement in mean responses from 1997 to 1999 suggest that there is some other variable that is affecting respondents' outlook on the future.

Have you attended business management training?

I would expect to see more clients than non-clients participating in business management training, so the mean client response in 1999 should be less than the mean non-client response. I included this variable because business training may help clients improve their skills in their business as well as boost their confidence and trust in their abilities. Yet, T-test analysis shows that significantly more non-clients attended training sessions than clients, rejecting the null hypothesis that there is no difference between

client and non-client responses. In light of this finding, it would be interesting to see the relative effect this variable has on empowerment indicators as compared to microfinance in further statistical analysis.

Are you a member of a church group?

This question was only asked in the 1997 survey. Therefore, we do not have ample evidence to determine whether participation/voice increased after the provision of microcredit using this variable; however, it is possible to determine whether or not those who have already demonstrated this agency were more likely to have been MFI clients. I expect, therefore, that clients exhibit a smaller mean response than non-clients in 1999. T-test analysis in Table 4 determines that there is no significant difference between client and non-client means in 1997. Perhaps church is not the correct venue from which we can extrapolate community participation. The cultural context of worship in Zimbabwe may be considered a more passive activity and not a site that facilitates the propagation one's voice in the community.

Are you a member of a women's group?

This is our second indicator of community participation and was only asked in the 1997 survey as well. I expect, therefore, that clients exhibit a smaller mean response than non-clients in 1999. As with the community participation indicator above, t-test analysis in Table 4 determines that there is no significant difference between client and non-client means in 1997.

Achievement

The two variables chosen to represent achievements are traceable accomplishments that could have been aided by the provision of microcredit. Therefore, I would expect that clients would display stronger responses than non-clients. Has the respondent started a new enterprise in the past 24 months is a dummy variable that records 1 for 'yes' and 2 for 'no'. This variable was chosen because it is representative of the achievement of entrepreneurship through the creation of a new microenterprise. My second variable is money spent on household improvements. This is defined as the Zimbabwe dollar amount adjusted for inflation spent on materials, supplies, labor, and contractors for the construction of a separate rental unit, adding rooms to an existing rooms, installing water, electricity, and telecommunications connections, telephone deposits, among all other improvements, including works in progress. This variable has been chosen because it reflects the realization of goals that improve one's living standard; the agency and resources provided by microcredit is expected to motivate women to accomplish this goal. T-test analysis of the two achievement indicators is included in Table 5 below:

Table 5: Achievement Variables

| Achievements | | | | | | |
|--|-------------------------|-------------------------|---------------|-------------------------|-------------------------|---------------|
| Variable | 1997 | | | 1999 | | |
| | Clients | Non-clients | T-test | Clients | Non-clients | T-test |
| Has the respondent started a new enterprise in the past 24 months? | | | | 1.758 (0.429) | 1.835 (0.372) | T<t 0.0229 |
| \$ spent on household improvements* | 1889.737 (11463.610) | 1088.763 (6241.092) | T>t 0.1624 | 5461.538 (20653.190) | 6552.229 (31211.380) | T<t 0.3066 |
| Variable | Clients | | | Non-Clients | | |
| | 1997 | 1999 | T-test | 1997 | 1999 | T-test |
| \$ spent on household improvements* | 1889.737 (11463.610) | 5461.538 (20653.190) | T<t 0.0028 | 1088.763 (6241.092) | 6552.229 (31211.380) | T<t 0.0040 |

* Male respondents are not separated from sample.

Has the respondent started a new enterprise in the past 24 months?

I predict that the mean client response in 1999 is less than the mean non-client response in 1999, indicating that more clients have started a new enterprise after experiencing the effects of microcredit for at least 24 months. T-test analysis in Table 5 shows that the client mean was significantly less than the non-client mean, indicating that more female clients created new enterprises (after receiving microcredit for at least 24 months) than non-clients over the same period. Further statistical modeling is necessary in order to determine if this significant difference was affected by the provision of microcredit.

Money Spent on Household Improvements

I anticipate that the client mean response regarding expenditures on household improvements in 1999 will be significantly greater than the non-client mean response in

1999. T-test analysis in Table 5 tells us that we cannot reject the null hypothesis that there is no difference between mean client and non-client responses in 1999. The lack of difference may be attributed to client's expenditure patterns. We know that clients have experienced an increase in average monthly enterprise profit—perhaps this money was invested into enterprise assets, a variable not examined in this paper. I acknowledge that not including enterprise assets proves a limitation in my analysis.

Second, I predict that we will fail to reject the null hypothesis that there is no difference between the non-client mean responses in 1997 and the non-client mean response in 1999, and that the client mean will be significantly greater in 1997 than in 1999, as they have been assisted by microcredit. For both clients and non-clients, T-test analysis rejects the null hypothesis for the alternative hypothesis that the 1999 values are greater. The significant increase in both groups may be correlated with increases in labor income and/or enterprise income.

ANCOVA Analysis

In this section I will attempt to investigate whether there is significant covariance between selected resource, agency, and achievement indicators. I have chosen to use “Have you created a New Enterprise in the Past 24 months?” “Do your household members respect your contribution?” and “Do you feel well positioned for the future?” as my dependent variables. I have chosen the first because it is a powerful achievement variable that may capture the effect microfinance has on entrepreneurship. Microcredit should not only be examined for its ability to sustain existing businesses, but creating new ones. The latter variables were chosen because they *prima face*, capture a woman's

agency. Many scholars have lauded microfinance for its psychological encouragement. Significant correlations between these variables and microcredit would support that claim. I have chosen to execute ANCOVA analysis to compare my results with that of Barnes et al. (2001) and Dunn and Arbuckle (2001) who have run ANCOVA analysis using AIMS data from Zimbabwe and Peru. ANCOVA analysis isolates the effect an independent factor has on the dependent variable, while controlling for the effects other factors or covariates. This is a first step in testing my hypothesis that microfinance will improve the selected indicators. I acknowledge that more sophisticated statistical analysis is beyond my scope and encourage further investigation into the AIMS dataset using more advanced econometric modeling.

All of my ANCOVAs will include Microcredit, as to determine whether or not microcredit affects the outcome of my empowerment indicators, controlling for other factors that may also affect empowerment indicators such as relevant demographic characteristics. My ANCOVA analysis is depicted in the following tables.

| Table 6: ANCOVA: Have you created a New Enterprise in the Past 24 months? | | | | | |
|---|-------------|--|-------------|------|--------|
| Number of obs = 77 Root MSE = .394966 | | R-squared = 0.8979 Adj R-squared = 0.2237 | | | |
| Source | Partial SS | df | MS | F | Prob>F |
| Model | 13.7127448 | 66 | 0.207768861 | 1.33 | 0.3256 |
| Age | 6.28690311 | 33 | 0.190512215 | 1.22 | 0.3868 |
| Education Level | 1.84387095 | 10 | 0.184387095 | 1.18 | 0.3983 |
| Management Training | 1.16586686 | 1 | 1.16586686 | 7.47 | 0.0211 |
| Is '97 Enterprise Still in Operation | 0.659203287 | 3 | 0.219734429 | 1.41 | 0.2971 |
| Microcredit | 2.89065196 | 19 | 0.152139577 | 0.98 | 0.5407 |
| Residual | 1.55998246 | 10 | 0.155998246 | | |
| Total | 15.2727273 | 76 | 0.200956938 | | |

Table 7: ANCOVA: Do Household Members Respect Your Contribution?

| Number of obs = 470 Root MSE = .706715 | | R-squared = 0.2690 Adj R-squared = 0.0906 | | | |
|---|-------------|--|-------------|------|--------|
| Source | Partial SS | df | MS | F | Prob>F |
| Model | 69.2748231 | 92 | 0.752987208 | 1.51 | 0.0043 |
| Age | 57.3036366 | 53 | 1.08120069 | 2.16 | 0.0000 |
| Education Level | 7.17953787 | 13 | 0.552272144 | 1.11 | 0.3522 |
| Microcredit | 8.73579681 | 26 | 0.335992185 | 0.67 | 0.8886 |
| Residual | 188.291134 | 377 | 0.49944598 | | |
| Total | 257.565957 | 469 | 0.549181146 | | |
| Table 8: ANCOVA: Do you feel well positioned for the future? | | | | | |
| Number of obs = 77 Root MSE = .261567 | | R-squared = .8881 Adj R-squared = .3458 | | | |
| Source | Partial SS | df | MS | F | Prob>F |
| Model | 7.05862513 | 63 | 0.112041669 | 1.54 | 0.1637 |
| Age | 3.7722991 | 33 | 0.114312094 | 1.67 | 0.1624 |
| Education Level | 0.106003702 | 10 | 0.01060037 | 0.15 | 0.9972 |
| Management Training | 0.111717052 | 1 | 0.111717052 | 1.63 | 0.2237 |
| Microcredit | 2.32891891 | 19 | 0.122574679 | 1.79 | 0.1427 |
| Residual | 0.889426822 | 13 | 0.068417448 | | |
| Total | 7.94805195 | 76 | 0.104579631 | | |

The AIMS surveyors have included demographic variables that they believe “influence participation and the impacts of participation, as well as income earning potential and human resource capacity” (Barnes et al. 2001, 31-32). Among these, I have included two as control variables and they are discussed below.³

Age

This variable is defined as a respondent’s age. Older respondents have had more experience, which may affect their outlook on the future. This may also translate to a greater level of resourcefulness, which would improve utilization of loans, enterprise income and success in the labor force. Moreover, older women may receive more respect

³ The other demographic variables include household size, marital status, and “are you the head of household?” I felt that marital status and household size were irrelevant because I want to investigate whether microcredit empowers women no matter their association with other individuals. I left out “Are you head of household” because I was apprehensive of the question’s subjectivity.

from their community and household, giving them additional agency, from a source other than microcredit that younger women have not yet received.

Education Level

This is a very important control variable that may account for changes in empowerment indicators. It is defined as the number of years the respondent attended school, beginning at grade school. A more educated person faces more opportunities economically, socially, and psychologically (Khandker 1998, 11). Education provides a strong source of agency that affects a person's decision to borrow as well as the outcome of her borrowing (Khandker 1998, 41).

Table 6 presents the ANCOVA analysis for the achievement variable "Have you created a new enterprise in the past 24 months?" The independent variables include Age, Education level, "Have you attended business management training?" and "Is the 1997 enterprise still in operation". I included "Have you attended business management training?" since that variable may be a factor in the creation of new business enterprises. "Is the 1997 enterprise still in operation" was included because the existence of a business may be associated with the creation of a new enterprise as its source a capital. It may also indicate the ability of an entrepreneur to create and sustain businesses.

Unfortunately, none of my independent variables have significant F-statistics from which we can draw significant analysis of covariance. Few clients have answered the question "Have you attended management training?" which has severely limited the number of observations, detracting from the econometric model's significance. Also, the

gap between client's reception of the loan and assessment may not have been long enough to see significant effects.

Table 7 presents the ANCOVA analysis for the variable "Do household members respect your contribution?" The independent variables include Age, Education level and Microcredit. The only independent variable with a significant F-statistic is age. There is a strong association between age and feelings of respect; however, the F-statistic for Microcredit was insignificant, telling us that microcredit has no significant affect on agency according to this indicator. The significance of Age tells us that older women are more likely to receive respect than younger women. Perhaps culturally, as women get older, they are shown more support.

Table 8 shows the ANCOVA analysis for the variable "Do you feel well positioned for the future?" The independent variables include Age, Education level, "Have you attended management training?" and Microcredit. "Have you attended business management training?" was included in order to test whether the non-economic services of MFIs are more effective in improving empowerment than microcredit. Unfortunately, none of my independent variables have significant F-statistics from which we can draw an analysis of covariance.

Many factors may account for the insignificance of my models. A severe limitation was the inaccessibility of financial variables (Monthly Enterprise Income, Household Improvements, and Household Assets). Perhaps if they were accessible for ANCOVA analysis, my models would have bared more significance. Harsh environmental factors, including drought, HIV/AIDS infection, and severe inflation may also have inhibited microcredit's empowering effects. Additionally, a minimum of two

years exposure to microcredit might have been too short, as the effects might not be felt until later.

In order to gain more insight on the effects of microcredit, I will include and discuss ANCOVAs featured with the Zimbabwe and Peru AIMS datasets. The statistical analysis is more advanced and used variables that I have not featured in my analysis. It is also important to note that the AIMS researches have included all respondents, not just female respondents; however, they have included gender as an independent variable.

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decompressor
are needed to see this picture.

Table 21, reproduced from Barnes et al. (2001) is an ANCOVA analysis of monthly net enterprise revenue. I've included it because I was unable to run an ANCOVA of my variable, Monthly Enterprise Income. (I acknowledge that the Barnes et al. variable represents revenue, not profit, but I believe that for discussion purposes it holds relevant because I did not have the opportunity to run an ANCOVA on a resource

variable). Barnes et al. decided to breakdown the sample into groups that I had not: continuing clients, which is defined as clients that had borrowed microcredit in 1997 and still continued to borrow in 1999; and departing clients, which is defined as clients that had borrowed microcredit in 1997, but ceased to borrow in 1999. The independent variables in this model are statistically insignificant, except for gender. Therefore, we cannot conclude from this model that microcredit had a significant effect on monthly enterprise revenue.

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Table I-2 borrowed from Dunn and Arbuckle's (2001) analysis of the AIMS Lima, Peru dataset is presents an ANCOVA analysis of an agency variable that is analogous to my variable, Do you feel respect for your contribution? Much like my variable, it measures self-esteem and respect in relation to a household member's contribution. As you can see from Table I-2, no independent variable has statistical significance in this model either—we cannot conclude that microcredit has led to improvements in agency using this indicator.

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Table I-4 borrowed from Dunn and Arbuckle (2001) as well is an ANCOVA analysis of an agency variable that is analogous to my variable Do you feel well positioned for the future? This ANCOVA includes both male and female respondents unlike mine. The ANCOVA shows that there is significant covariance between microcredit and orientation toward the future; however, gender is insignificant. Therefore, we cannot conclude that microcredit has an impact on women's empowerment via the improvement of agency.

Although many of my t-test predictions were incorrect and my ANCOVA analysis proved insignificant, a two-stage regression model would be necessary in order to determine whether or not microcredit affects the empowerment indicators I have selected. Such assessment is imperative for every MFI in every location. The clients and environments in each vary significantly. Microcredit has been proven to enhance indicators of empowerment in certain regions—it is those regions where MFI operations must proliferate.

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