Microcredit and Its Impact on Developing Areas

by

Ben Huang

Thesis submitted in partial fulfillment of the

requirements for the Degree of

Bachelor of Arts with

Honours in Economics

Acadia University

April, 2020

This thesis by Ben Huang

is accepted in its present form by the

Department of Economics

as satisfying the thesis requirements for the degree of

Bachelor of Arts with Honours

Approved by the Thesis Supervisor

_____ _____

Andrew Davis Date

Approved by the Head of the Department

_____ _____

Burc Kayahan Date

Approved by the Honours Committee

_____ _____

Joseph Hayes Date

Acknowledgements

I would like to thank my supervisor Dr. Andrew Davis for being a remarkable source of insight and advice. His consistent guidance helped me throughout my economics journey. Without his support, it would be impossible for me to finish this thesis. In addition, I want to thank Dr. Burc Kayahan for his encouraging me to major in economics. His passion inspires me in economics and beyond. Finally, I am grateful for all professors and staff at Acadia; they helped me in many ways on the path where I am now.

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Abstract

Microcredit became one of the most prominent tools for poverty elimination in the 1990s. However, there are doubts as to whether microcredit can really generate positive effects in developing regions. This thesis is an extension of the meta-analysis examining this question from Chliova et al. (2015). By synthesizing 59 quantitative findings, this research uses regression analysis to find whether research conditions affect the effect size of microcredit interventions in developing areas. My results show that higher corruption levels, lower economic status, rural areas and microcredit organizations operating without the support of government are associated with larger effect sizes in developing areas. Microcredit generally has greater effect in more challenging conditions.

Chapter 1: Introduction

Well before the rise of modern microcredit programs, there existed microloan institutions in Europe which aimed to provide small loans to individuals and families for both commercial and welfare purposes. Some of these microloan institutions failed while some developed into commercial banks (Hollis & Sweetman, 1998).

Modern microcredit organizations, generally identified by their major goals of poverty elimination and economic stimulus, became popular in the 1980s to 1990s (Bateman, 2010). These organizations provide small loans and saving accounts to the poor, aiming to help them overcome shortages of resources and improve aspects of life such as financial well-being, female empowerment, education, etc. The first modern microcredit organization is widely acknowledged as Grameen Bank, which was founded in Bangladesh in 1983. In the 2000s, microcredit was used in many developing countries as a tool to alleviate poverty (Bateman, 2010).

The primary function of modern microcredit is to provide microloans to the poor. By providing small loans to individuals or families, microcredit institutions provide an option to cushion negative shocks. This can potentially improve household welfare. Further, microcredit in developing areas might work as an economic stimulator, promoting entrepreneurial innovation and other economic activities. Based on these ideas, the world witnessed a substantial increase in microcredit organizations in developing areas in the 1990s intending to achieve the UN's poverty alleviation goal (Bateman, 2010).

The discussion about the effects of microcredit is fiercely debated in the scholarly literature. Some argue that microcredit has an adverse impact on the poor, pushing them into a debt trap. Some, however, argue that microcredit promotes the general welfare of individuals and families. As examples of the divide, Li et al. (2011) conclude that consumption and income have increased during periods of microloan availability in their research conducted in rural China. Conversely, according to research conducted by Abhijit Banerjee (2012), the effect on equality seems unclear, but entrepreneurship activities increased during his microcredit experiment.

Therefore, despite the massive amount of work done on microcredit, there remains inconsistent opinions concerning its true effects. The main criticisms rely on the methodology of field research and on whether the poor can really benefit from the program. Studies on microcredit depend on data from microcredit organizations, but researchers may doubt data quality, such as questioning the self-reporting system of data collection (Tewksbury & Gagné, 1997). Many researchers also find that it is difficult to extend loans to the real poor; even though they find positive outcomes, a large number of microcredit members do not actually suffer from poverty (Li et al., 2011).

Faced with this uncertainty, I am trying to understand what determines the true effect of microcredit in developing areas. Research on developing areas can be challenging because of their special constraints such as time, locations, political systems, etc. In my research, I estimate a series of regressions on this subject based on the meta-analysis of microcredit field studies by Chliova et al. (2015), who collate the measured effects of microcredit across a large number of field studies. However, the research conditions vary across different studies. Within each individual study,

researchers can only conclude based on their own results but not external factors leading to their results. For example, someone conducting research in a country struggling with corruption cannot examine the influence of corruption, since they have no data from a less corrupt but otherwise equivalent country.

I am examining the outcomes of a variety of microcredit studies with different research conditions: locations, if the government participated, corruption scores, economic status, and also which outcomes the study measured such as financial well-being, venture growth, nutrition, education, and gender equality. I start with the underlying papers in the dataset by Chliova et al. (2015), using their measure of microcredit effect size. I then determine the research conditions and which outcomes were measured for each study. After that, I regress the reported effect sizes against the research conditions to see whether research conditions explain the inconsistent findings of the microcredit literature.

Results from the regressions show that, first, corruption scores are negatively related to effect size, meaning that the more corrupt the country, the larger the effect size; second, economic status is negatively related to effect size, meaning lower GDP per capita in the country is correlated with a larger effect size; third, microcredit experiments in rural areas without the support of government have a larger effect size; last, I cannot draw strong conclusions dealing with different outcomes of those studies (financial well-being, nutrition, education, female empowerment) either because the outcome measure does not make a difference or I do not have a sufficiently large sample size to detect the effects.

This paper is divided into 6 sections. Beyond this introduction, I present the literature on microcredit, including discussions about history of microcredit, prevalent microcredit programs, government participation, research methodologies in microcredit such as field research and meta-analysis, and lastly discuss the validity of microcredit research and criticism of microcredit. Following the literature review is the data section, which summarizes my data collection. I then present my regression analysis and explain the results, followed by a discussion of my analysis' limitations and conclusion.

Chapter 2: Literature Review

In this section, I review key literature providing insights into microcredit issues that I will discuss later. The history of microcredit is vital for our understanding of modern microcredit organizations. I then explore the main microcredit programs in the world and summarize the literature's reflections on and criticisms of microcredit.

2.1 History

In the 19th century, there were already microcredit organizations in England and Germany (Hollis & Sweetman, 1998). Microcredit organizations were established to provide small loans to the local community. According to Hollis & Sweetman (1998), microcredit structure plays a role in determining the long-term effect of microcredit. From their research, being self-sufficient and not relying on outside funds are the most important factors in defining the long-term effect of microcredit. Microcredit can be run by governments, NGOs, and individual funds. Usually, microcredit organizations rely on charitable funding and other outside sources to provide loans to their clients. Hollis & Sweetman (1998) argue that microcredit organizations that can last for a relatively long period of time require clients to deposit money in these organizations and work as a small bank. Relying solely on outside funds to run operations will lead to unsustainable results.

The modern microcredit organization is widely recognized as starting with Grameen Bank in Bangladesh (Bateman, 2010). Grameen Bank was officially formed in 1983 by Professor Yunus Muhammad in Bangladesh with the basic purpose of lending to poor people, especially women, to help them escape from exploitation by other

money lenders (Muhammad, 2004). Before the official establishment, Professor Yunus Muhammad personally made loans to the poor. This experiment had success and drew the attention of a growing audience, which ultimately led to the establishment of Grameen Bank in Bangladesh (Muhammad, 2004). After the success of microcredit in Bangladesh, UN highlighted microcredit in their Millennium Summit with their Millennium Development Goals in 2000; there was subsequently a rise in microcredit organizations operating in poor developing countries with the belief that microcredit can achieve the UN's goal of halving world poverty by 2015 (Muhammad, 2004). From 1990-2000, it was a golden period for microcredit to flourish.

However, doubts towards microcredit and its effectiveness became prevalent in the 21st century. With more researchers examining microcredit, issues such as the potential for indebtedness (Niels & Lensink, 2007) and the ambiguity of measures of health, education, and infrastructure (Banerjee & Jackson, 2017) have risen. Banerjee & Jackson (2017) argue that with the extension of microcredit to the poor population, the situations of the poor actually deteriorated. Because of the pressure of loan repayment, poor people suffered even more. Even though the poor have access to microcredit, the loans do not lead to income-generating activities so that people simply increase their indebtedness (Al-shami et al., 2018). Meanwhile, estimating the true impact of microcredit is difficult due to measurement issues. Niels & Lensink (2007) argue that the effectiveness of microcredit cannot be accurately measured because of intrinsic flaws in field experiments and difficulties of adopting high-quality methodology in developing regions. They also argue that the competitiveness of microcredit

organizations will decrease the social welfare of microcredit due to high interest rates and less lending to the core poor.

Overall, the discussion of the effectiveness of microcredit is still split: some argue for a positive outcome; some argue for a negative outcome. There is no conclusive decision about the effectiveness of microcredit.

2.2 Microcredit Programs

After the rise of the popularity of microcredit, microcredit programs boomed all over the world. There are two broad categories of microcredit programs: individual microcredit loans and group lending loans.

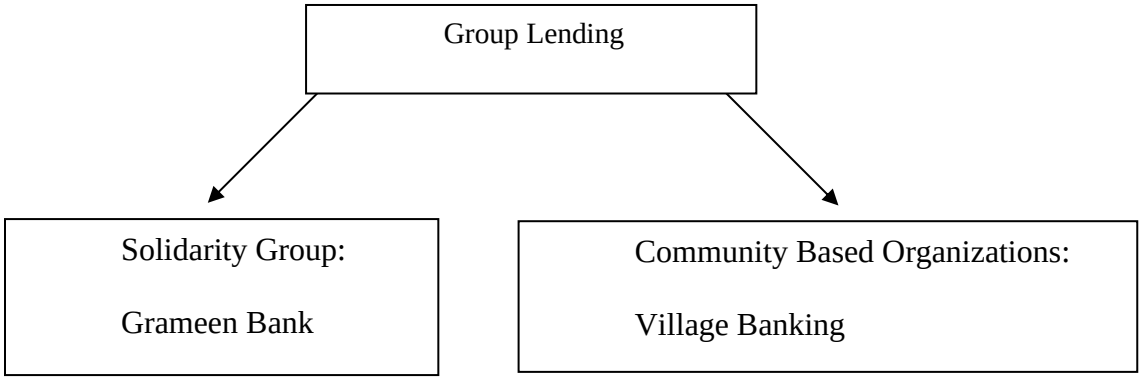
Individual microcredit programs work the same way as commercial banks, and most loans provided in this way are from commercial institutions (Yang & Stanley, 2012). As with a normal bank loan, the participant will have their credit history and financial status checked and there will usually be a collateral or co-signer requirement. After the credit history check, institutions will consider whether to grant a loan or not (Yang & Stanley, 2012). Brandt (2012) argues that this type of microcredit is usually in urban areas targeted at populations who are not the poorest of the poor.

Group lending is a type of loan offered to a group of borrowers who are responsible for each other's loans in the group (Yang & Stanley, 2012). These loans usually require borrowers to rely on each other for loan repayment and other responsibilities.

Group lending can be divided into two categories as well. One way of group lending is community-based. Community-based group lending has a goal of independence, which requires group members to be self-sufficient in funding (Brandt et

al., 2012). In addition, these loans "encourage the development of the internal financial management capacity of the group, so that the group can act as its own mini-bank" (Brandt et al., 2012). Another type of group lending is the solidarity group. This type of lending does not require independence and provides loans consistently to their clients over a period of time regardless of clients' situation (Brandt et al., 2012).

Figure 1: Classification of Group Lending



Source: Brandt et al. (2012)

Village banking is an example of community-based group lending. These microcredit organizations rely on outside funds from government or NGOs at first to obtain the ability to lend and loans will be given to community members. After a period of time, when there is capital accumulation and member saving, the outside fund will exit and leave the village bank to operate sustainably as a normal bank (Brandt et al., 2012). Saving is a requirement to obtain a loan from a village bank and members of a village bank need to continue saving during the loan cycle. The objective of these loans is to promote the sustainability of microcredit organizations and commercialize microcredit organizations (Brandt et al., 2012). As collective saving grows, there is no need for outside funding to help the community.

Grameen Bank is a typical example of solidarity group lending. Besides lending to the poor, Grameen Bank has strong social requirements. Under these requirements, members receiving microcredit will need to make a commitment to their children's education and health, and also have a well-planned schedule for agricultural activities (Brandt et al., 2012). In each group, there will be a leader to guide loans and who is responsible for the repayment of loans. The responsibilities are collective. If one defaults on the loan, others in the group will need to cover the loss, or nobody in the group will receive further loans (Brandt et al., 2012).

Besides these types of loans, there is a special class aimed at women under the goal of female empowerment (Yang & Stanley, 2012). In many developing areas, women are significantly oppressed. Women tend to be the first to suffer from a lack of food and women are responsible for taking care of children when their husbands leave the household (Yang & Stanley, 2012). Another social goal of female empowerment is to prevent HIV spread. In developing areas, women are vulnerable to HIV infections. "Girls aged 15-24 are more than three times as likely to be infected compared to their male peers" (Erulkar & Chong, 2005). In countries where women are more financially vulnerable, they tend to suffer from a higher risk of HIV infection (Yang & Stanley, 2012). Microcredit organizations that have a goal of female empowerment provide specialized loans to women.

The majority of microcredit programs are group lending, which requires collective actions to achieve both financial and social goals. Group members will be responsible for each members' loan, especially for solidarity group lending, where any individual default will lead to outcomes for other members as well. Individual loans,

however, are primarily targeted to women for the promotion of children's health and education. By providing specialized loans to women, individual microcredit programs are dependent on outside funds from government and NGOs.

2.3 Government Participation

Microcredit programs can be divided into those supported by government participation and those that are not. The programs with government participation are generally dependent on government funds and tend to have a worse repayment rate. Programs without government participation tend to have better results in the improvement of well-being (Jordi et al., 2012).

Government-funded microcredit organizations are heavily reliant on government funds and might be used as a political instrument (Jordi et al., 2012). For example, regarding the difficulties of repayment, the government may cover any default and use the resulting goodwill for political intentions. Jordi et al. (2012) argue that the supply of government credit to cover repayment will lead to the reluctance of loan-takers to repay loans and also "undermine the culture of repayment."

Microcredit organizations without government support usually depend on outside sources and NGOs. These organizations will have profit goals in addition to social goals. Chowdhury (2014) believes that financial sustainability will constrain microcredit extension to its neediest population. NGO workers in microcredit areas act mostly as "money collection agents" and push the repayment process (Chowdhury, 2014). These organizations seasonally reschedule interest rates and repayment processes to ensure the program is sustainable. The drawback of this pattern is that the repayment

pressure will lead to worse scenarios for the poor. However, microcredit organizations will collapse if they cannot maintain sustainability, and then loans will be compromised.

Beyond funding, the government still matters for the resilience of microcredit organizations. A good regulatory environment is a fertile field for microcredit. Gerard & Johnston (2019) argue that government support is necessary for microcredit organizations to grow steadily given their need for a stable policy environment. Government subsidies and high-quality administration benefit the long-term development of microcredit organizations (Gerard & Johnston, 2019). In addition, technical support from the government is related to the development of microcredit (Mariyono, 2019). Advanced technology received from the government for local microcredit organizations results in higher sustainability among rural farming industries (Mariyono, 2019).

The government is still a factor to be considered even if a microcredit organization is not government-backed. Studies indicate the drawbacks of both patterns, but the government is vital to a political and economic environment conducive to microcredit organizations. Hence, though government supported microcredit organizations show worse results (Jordi et al., 2012), the government must be included in the analysis of microcredit.

2.4 Microcredit Field Experiment

Microcredit research is mostly done via field experiments to evaluate the effect and impact of different programs. Researchers tend to set up microcredit funds in developing areas, or they will use the data from existing microcredit organizations in

these areas to examine the effects of microcredit programs. A brief summary of this literature is provided below.

Amin et al. (1999) examined whether microcredit can reach the poor and vulnerable in Northern Bangladesh. They suggested that microcredit was largely successful in reaching the poor population. The probability that a microcredit member is lower than the poverty line is significantly higher than a randomly picked household in the village.

Li et al. (2011) researched rural China empirically and examined changes before and after a microcredit implementation. They found that there is an increase in welfare measures, such as income and consumption. However, Li et al. (2011) believe that the selection of a poor group might be difficult. People who have access to microcredit are not the real poor. The majority of people who have access to microloans in their study cannot be identified as the truly poor. Therefore, it might be the case that only people who have social resources can benefit from microcredit programs. Li et al. (2011) thus doubt the social potential (poverty alleviation) of microcredit organizations in rural China.

Kumar (2017) researched Self-Help Groups (SHG) in India, a homogeneous group of ten to twenty members, who receive microcredit from the bank without any collateral. He found that through nurturing entrepreneurial activities, which many studies have proven effective regarding the impacts of microcredit, microcredit can have promising results by enabling sustainable self-employment and other job opportunities among poor families, which he believes is a result of financial inclusion to extend equality to the poor.

Al-shami (2018) researched the impact of microcredit on female empowerment in Malaysia. His results show a positive impact on women's income. Further, after the income increase, women make more decisions concerning their families' daily expenditure, children's school, health expenditure, etc.

Most field experiments seem to show a positive result in general. The drawbacks of field research for microcredit is that they rely on data from microcredit organizations but the data collected can be manipulated by these organizations, which might lead to a biased result (Edmondson & McManus, 2007). It is important to establish reliable and innovative measures to conduct and evaluate field research; settings in developing areas vary from country to country, relying on existing theories might not be able to explain field experiment results in these areas (Duflo, 2006).

2.5 Meta-analysis of Microcredit

As there is still uncertainty about whether microcredit can play a role in changing the situation of the poor, other methods have been introduced by scholars to examine the effectiveness of microcredit. Meta-analysis uses different studies on the same issue to reflect on the outcomes of a body of research by combining results. By aggregating different trials and experiments, an overall view of the contribution of microcredit can be estimated.

Bassani (2013) conducted a meta-analysis examining the relationship between financial incentives such as microcredit and the improvement of children's health coverage in local communities. Financial incentives might be expected to have an effect on the promotion of children's health coverage, but there is no sufficient evidence to support that conclusion (Bassani et al., 2013).

According to Kamsem & Sombat (2015), there is an increase in the efficiency of production. They compared three groups: agricultural, village, and production-oriented saving groups. There is an 94% increase in agricultural production, which is the largest result across these groups. In terms of organizational structures, they recommend that growing self-reliance to manage the fund and provide loans instead of dependence on outsourcing funding is positively related to production efficiency. Overall, the result is positive.

Chliova et al. (2015) conducted a comprehensive meta-analysis on the outcomes of microcredit and examined how the contexts of development can influence the effectiveness of microcredit. Their results show a positive impact on development outcomes and they find that microcredit organizations in more challenging contexts tend to have a greater impact.

Reichert (2018) believes that there is always a trade-off between microcredit and its social goals, such as female and financial empowerment. In terms of the sustainability of microcredit organizations and their actual help to the poor, Reichert (2018) argues that social goals are frequently sacrificed to the sustainability of microcredit organizations. With commercialized loans, microcredit hardly reaches the real poor population and indebts people who take the loan. More importantly, the influence of microcredit on female empowerment is not significant. He insists that with more debt pressure on the poor and without significant results, microcredit will not be effective in solving poverty.

Researchers conducting meta-analyses seem to counter the effectiveness of individual microcredit trials and create doubts in the methodology used in field research.

This literature raises questions of small sample size, the typical self-reporting systems of microcredit, and also the subjective perspectives from microcredit organizations rather than loan takers (Duvendack et al., 2014).

2.6 Issues in Field Research

Duvendack et al. (2014) provide an assessment of methodological quality across studies about female empowerment in the context of microcredit. They find that the evidence that can support a positive impact is limited, and also find that small effect sizes play an important role in constraining the validity of field research.

Field experiments are also criticized by scholars for their inconsistency (Edmondson & McManus, 2007). Field research heavily relies on a researcher's observations and data collection; Edmondson & McManus (2007) argue that field researchers can possibly overlook the quality of their data and can ignore the importance of effective techniques for data collection and analysis, which will lead to "inconsistencies between their aims and their methods" (Edmondson & McManus, 2007).

Meanwhile, Tewksbury & Gagné (1997) argue that observations from field experiments are possibly contaminated with ethical dilemmas and practical difficulties. Field experiments generally require self-reports from organizations or participants, but the validity and reliability of these reports can be questioned. In this case, field experiments need to be done rigorously and examined by experienced researchers to have a convincing result. Field experiments cannot identify the validity of information and are also struggling to guarantee the quality of their methodology (Edmondson & McManus, 2007).

According to Duflo (2006), conventional field research methods might not be perfectly applicable to developing areas where special situations arise. Field research generates behavioral changes corresponding to certain rewards or a specific research design. People have more incentives if there is a reward, and the research design of different rewards would cause inconsistency in the data because the response of different people to different rewards varies. Well-designed field research is dependent on specific conditions in developing areas instead of conventional theories (Duflo, 2006).

2.7 Validity of Microcredit Research

Understanding research validity is crucial to determine whether a study's results are likely to convey accurate information that can generalize outside the study. Since the majority of research in microcredit uses field experiments, several validity problems are regularly encountered. First, as previously discussed, the internal validity of data is questionable. Causal relationships in microcredit studies are drawn from data retrieved from microcredit organizations, but data might be manipulated by organizations (Edmondson & McManus, 2007). The internal validity of research will be biased because of biased data collection.

In addition, the external validity of microcredit research can be debated. According to Angelucci et al. (2015), the external validity of lending models regarding microcredit is uncertain. They find no theory or evidence showing that a given lending model will have different results in different settings. Varying demographics have no determinative power to alter research results (Angelucci et al., 2015).

Furthermore, Schram (2005) argues that tension between internal validity and external validity will be more important in field experiments. Experiments in developing areas are complex by nature; paying attention to feedback from both theories and experiments in the process of field research is central to keep researchers on track (Schram, 2005).

2.8 Criticism of Microcredit

There were many successful stories of microcredit in the 1990s. After the 2000s, much criticism arose regarding the true effect of microcredit. There are three main concerns: First, whether the measure of microcredit's social goals is valid; second, whether the poor population is accurately targeted is questionable; third, microcredit might be harmful to the poorest of the poor (Yang & Stanley, 2012).

First, there is always a tradeoff between the sustainability of microcredit organizations and social goals. Microcredit organizations tend to focus on their financial outcomes before testing social goals (Yang & Stanley, 2012). Financial goals and social goals are often in conflict. The repayment of loans is an important measure of a successful microcredit program. However, the focus on repayment leads to ignorance of whether microcredit plays its role in benefiting loan-takers (Yang & Stanley, 2012). Often, people take a loan to provide money for basic life needs rather than investing to increase income and pull the family out of poverty. For the poor who are suffering from lack of food, it is less likely they can use the loan for productive activities, and repayment of loans may increase the likelihood of debt cycles, in which more harm is caused (Yang & Stanley, 2012). Stewart et al. (2012) believe that it is vital for the cautious examination of the effect of microcredit because it can cause both harm and

good. Lack of a good monitoring system for microcredit's social goals is a common source of criticism (Yang & Stanley, 2012).

Some scholars have conducted studies to examine the use of loans. Banerjee et al. (2015) find that "30% to start a business, 22% to buy a durable for household consumption, 30% to repay an existing loan, 15% were used on durable consumption, and 15% to buy non-durables for household consumption." Most of the loans are used to meet consumption needs for the poor. In this case, an increase in income and employability is less likely to occur. Meanwhile, 30% of people use loans to repay loans resulting in a cycle of debt and increasing their indebtedness (Yang & Stanley, 2012).

Second, the truly poor population seems not to have an opportunity to access microcredit. Lending to very poor populations is risky because repayment is not guaranteed when they still need money to meet daily basic life needs. The poorest population is unlikely to achieve any social goals when they need to take loans to meet the basic needs of life (Yang & Stanley, 2012), which is generally found in the field. "Only 12% of the poor households in rural areas participated in the program in 2004. Meanwhile, up to 67.1% of the participants were nonpoor households" (Cuong, 2008). Another reason why the poorest population is not getting loans is that the classification of the poor population is dependent on government data (Yang & Stanley, 2012). For government-funded microcredit organizations, fewer funds will be given to microcredit organizations if they suffer from bad repayment rates. When classifying microcredit and the poor population, those government-related measures tend to skip people who are in real need and choose those who stand a better chance of repayment (Yang & Stanley, 2012).

Third, microcredit may be harmful to the poorest of the poor and result in polarization among the poor (Yang & Stanley, 2012). Microcredit can work to decrease the gap between the rich and the poor, but it can also increase the gap inside the poor population. As indicated above, microcredit does not target the real poor population, and even if it does, it will lead to further indebtedness for the real poor. Among the poor, people who can invest in other activities outside basic needs can benefit from loans, but people who still need loans to meet basic needs will not benefit at all and may enter into a debt cycle. Yang & Stanley (2012) argue that as loan sizes increase, the repayment burden on the real poor gets higher. The real poor cannot afford the repayment burden because they use loans to cover basic needs. Additionally, some programs drop members in favour of new members up to cover repayments. As a result, there will be polarization between the poorest poor and the richest poor (Yang & Stanley, 2012). This way, microcredit brings further inequality to society. The social goals of microcredit in this pattern are not realistic.

In sum, criticism toward microcredit focuses on the negative impact on the real poor in developing areas. The real poor population suffers from a lack of basic needs, and they are often discriminated against as clients of microcredit because of their inability to repay loans. In addition, the real poor are difficult targets in terms of achieving social goals as desired by microcredit organizations. Both lead to the failure of microcredit to have a good effect on promoting living standards of the poor.

Chapter 3: Data

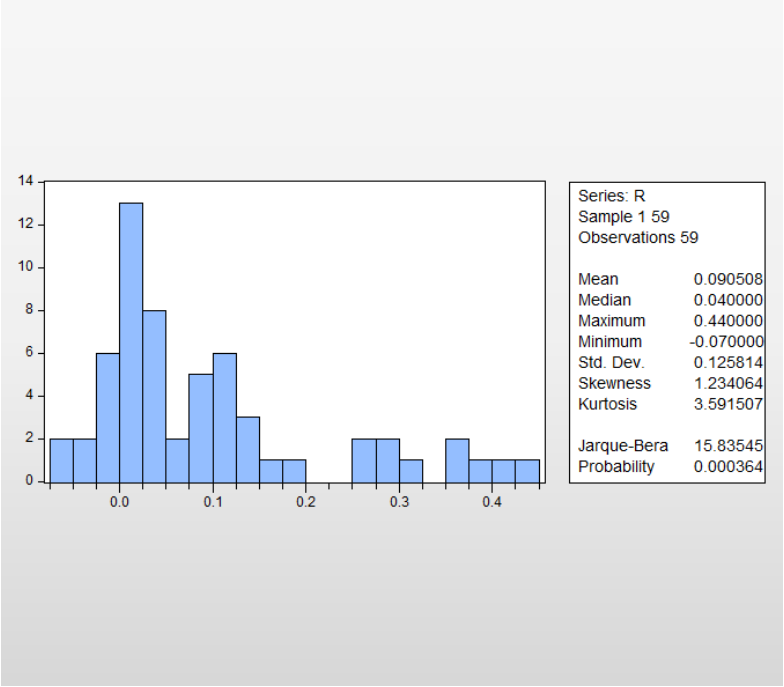
My data collection is based on 59 quantitative results included in Chliova et al. (2015). Chliova et al. (2015) is a meta-analysis that synthesized 500 outcomes of empirical microcredit research and examined how the measured effect sizes of microcredit interventions across these studies depended on the outcome measured in each study, classifying studies across categories including various financial (venture survival, venture growth, venture profitability, financial well-being) and non-financial (empowerment, education, health and nutrition) characteristics. This paper uses their measure of outcomes regarding the effects of microcredit. In addition, I will examine the research conditions in each underlying paper and determine whether any of these research conditions potentially played a role in affecting the outcomes reported in the paper. In particular, the four conditions I am investigating are:

1. Whether the microcredit organization in the studies was situated in a rural location.
2. Whether the microcredit organizations in the studies had governmental support.
3. The corruption scores of the countries when the study was conducted.
4. The GDP per capita of the countries when the study was conducted.

All research papers that I use are obtained from the data table of Chliova et al. (2015); I use the indicated name and date to search for the paper in multiple academic databases. An example of their data table is posted in my Appendix C. For each research

paper selected from the underlying Chliova et al. (2015) analysis, I record the above characteristics, with the details of this process provided below. This data is combined with Chliova et al's "r", the partial correlation coefficient, which they calculate as the measured effect size of microcredit resulting from each study. The reason to choose "r" as the reflection of outcomes is that both they and I must standardize different outcomes with a unified measure to have a comparable quantitative measure of each study. Via regression, I can examine which factors above can affect "r," the effect of microcredit.

Chart 1: Histogram of Effect Size



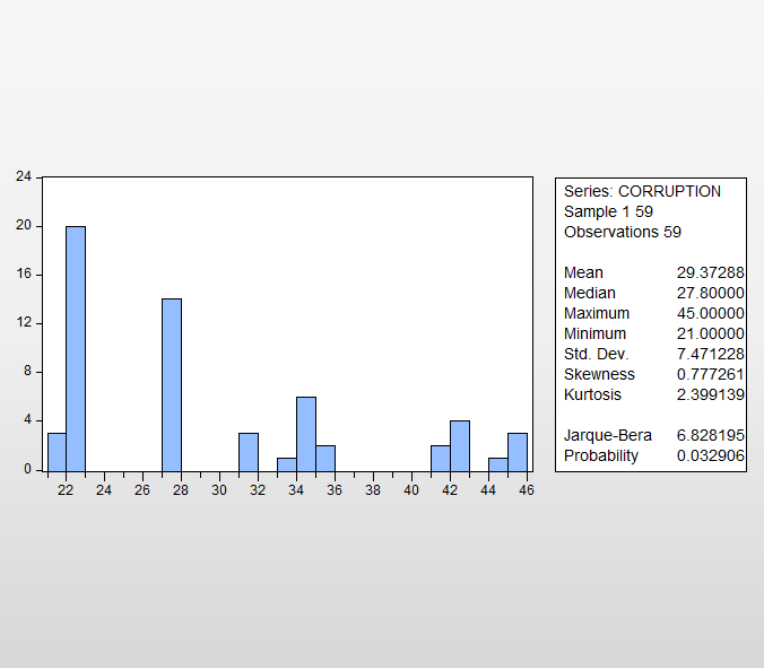
"r" is a measure of the bivariate partial correlation coefficient and represents the effect sizes of microcredit for studies analyzed in this thesis. "r" values are obtained from the data appendix of Chliova et al. (2015). The effect sizes indicated by the partial correlation coefficient, "r", are generally transformed from a t-statistic in the main regression test from each paper where meta-analysis has been conducted. Correlation

coefficients can be generated from a t-statistic (or correspondingly a p-value) using the formula below:

$$R^2 = \frac{t^2}{t^2 + DF}$$

From *Chart 1*, the observed effect sizes are distributed mostly around 0. From the chart, the mean of the distribution is 0.09 and the median of the distribution is 0.04. The effect size of microcredit in these developing countries is generally small.

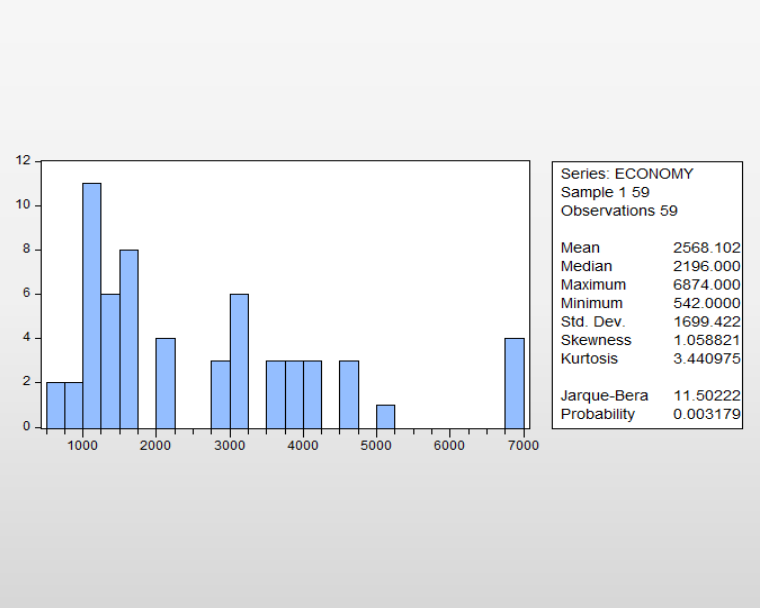
Chart 2: Histogram of Corruption Score



Corruption scores for different countries in the studies are measured by data from Transparency International, which provides scores to countries around the world by year in its Corruption Perceptions Index. The Corruption Perceptions Index ranks countries by expert assessments and opinion surveys. The higher the scores, the lower the corruption levels of the specific country. I match the year of microcredit implementation to the year of the corruption score index. In situations where authors of

these studies do not offer detailed years of collection for their experiment data, I choose to use 1995 since the year distribution is from 1990 to 2000 and corruption scores are not available for some countries in some years. I will discuss this compromise later in the concerns section. The high scores spread over 70-100; the low scores can be as low as single digits. For example, Canada's corruption score in 2001 is 89 while Bangladesh's score is 4. From *Chart 2*, the corruption scores of different countries are widely spread on the lower end of the scores, which means a higher level of corruption.

Chart 3: Histogram of Economic Status



The economic status of each country in the studies is measured by data from the IMF on GDP per capita by country and by year. I match the year of microcredit implementation to the year of GDP per capita. In situations where authors of these studies do not offer detailed years for their experiment data, I again choose 1995 as the representative year. GDP per capita for developed countries is around 20000 US dollars in the 1990s. From *Chart 3*, most countries in the data have GDP per capita around 1000 US dollars, which is very low compared with most countries in the world.

The location of studies is measured by what the authors state about where they conducted the research. In my dataset of 59 quantitative results, 50 microcredit organizations are in rural areas while 9 of them are in urban areas. This was determined by reading each paper individually.

Whether microcredit organizations are supported by government participation is measured by if the authors mention governmental support and subsidies. If these conditions are not mentioned, or if the authors claim that the microcredit organizations from which they obtain data from are independent of government, then these studies are considered as the ones without government support. In my dataset of 59 quantitative results, 22 microcredit organizations are operating with government support while 37 of them are operating without. Similarly, this variable is constructed paper by paper by individual reading.

The complete dataset for the study is presented in Appendix A.

Chart 4: Correlogram of Corruption Score and Effect Size

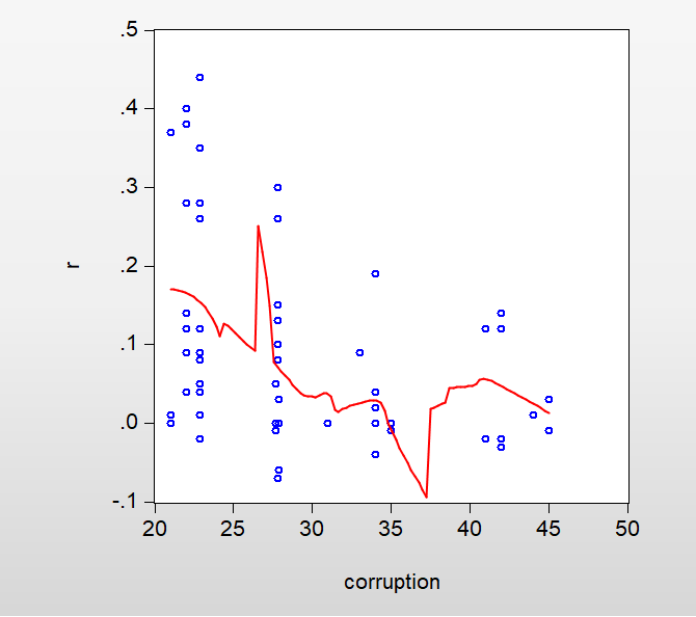
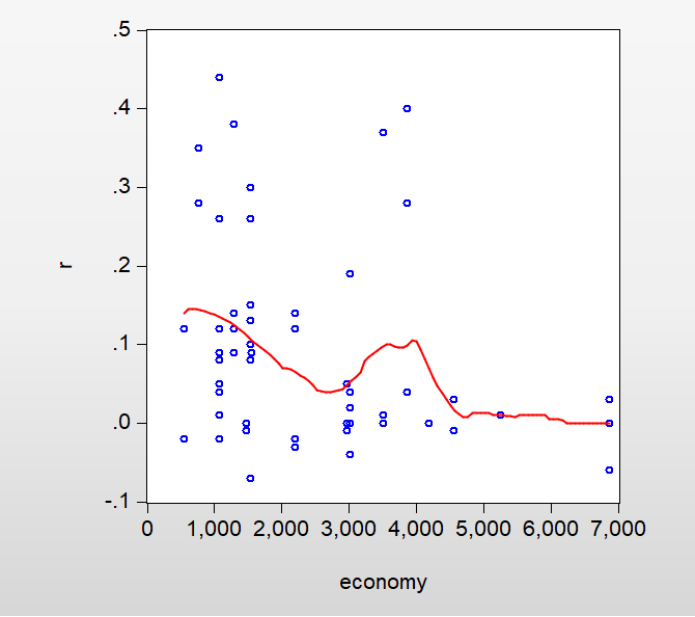


Chart 5: Correlogram of Economic Status and Effect Size



I use correlograms to show the basic correlation between corruption scores and effect size and the correlation between economic status and effect size. A correlogram is a reflection on data correlations; every dot in the diagram shows one study where the

data point relates the area's corruption score and effect size or the country's GDP per capita and effect size. I use a kernel fit to estimate their correlation indicated by the red line. From *Chart 6* and *7*, it can be shown that the red line is mostly downward sloping but sometimes upward sloping regarding different levels of corruption scores or GDP per capita. Overall, the correlation is generally negative for both correlograms.

Summary statistics show that the average effect size of microcredit interventions is close to zero. Corruption scores are low, implying higher corruption levels; GDP per capita values are small. The effect size seems to have an inverse relationship with the corruption scores and economic status.

Hence, the average effect of microcredit in developing areas is essentially small. In these countries where microcredit organizations operate, corruption is high and GDP per capita is low, which might be associated with a larger effect size. I examine this relationship further with a regression analysis presented in the following section.

Chapter 4: Methodology

As discussed, the regression will be based on results from Chliova et al. (2015). The dependent variable of this regression will be "r," the effect size, as reported in their paper. The independent variables will be various research conditions. Because of the small sample size, I estimate two versions of my regression. The first one includes essential research conditions: whether the study occurs in a rural location, whether government participated, economic status measured by GDP per capita, and corruption scores. The second one includes these research conditions, three location variables on where the microcredit research is conducted: Africa, South America, South East Asia, and five dummy variables representing the type of effect being measured in the underlying study: financial well-being, health, education, female empowerment and venture growth. However, given the small sample size, sacrificing the degrees of freedom necessary to examine these outcome measures is material. The regression specifications in this study are given below:

Equation 1: Without Characteristic Outcome Variables

$$r_{it} = C + \beta_1\, rural_i + \beta_2\, gov_i + \beta_3\, log\,(GDP_{it}) + \beta_4\, corruption\ score_{it} + \varepsilon_{it}$$

Equation 2: With Characteristic Outcome Variables

$$r_{it} = C + \beta_1\, rural_i + \beta_2\, gov_i + \beta_3\, log\,(GDP_{it}) + \beta_4\, corruption\ score_{it} + \beta_5\, health_i + \beta_6\, education_i + \beta_7\, female\ empowerment_i + \beta_8\, venture\ growth_i + \beta_9\, South\_America_i + \beta_{10}\, South\_East\_Asia_i + \varepsilon_{it}$$

The purpose of the regressions is to examine whether the effect size is related to specific research conditions, then identifying which research condition impact the effect of microcredit in developing areas.

Result 1: Regression without Characteristic Outcome Variables

Dependent Variable: R
Method: Least Squares
Date: 04/20/20 Time: 10:20
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.542715	0.182416	2.975148	0.0044
RURAL	0.009372	0.045137	0.207633	0.8363
CORRUPTION	-0.004614	0.002621	-1.760453	0.0840
LOG(ECONOMY)	-0.041221	0.023872	-1.726783	0.0899
GOV	-0.025867	0.041455	-0.623979	0.5353

R-squared	0.207128	Mean dependent var	0.090508
Adjusted R-squared	0.148396	S.D. dependent var	0.125814
S.E. of regression	0.116104	Akaike info criterion	-1.387727
Sum squared resid	0.727924	Schwarz criterion	-1.211665
Log likelihood	45.93796	Hannan-Quinn criter.	-1.319000
F-statistic	3.526700	Durbin-Watson stat	1.963940
Prob(F-statistic)	0.012518		

Result 2: Regression with Characteristic Outcome Variables

Dependent Variable: R
Method: Least Squares
Date: 04/20/20 Time: 10:20
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.591473	0.216101	2.737027	0.0087
RURAL	-0.007338	0.048872	-0.150140	0.8813
CORRUPTION	-0.005910	0.003333	-1.773150	0.0825
LOG(ECONOMY)	-0.039258	0.024650	-1.592585	0.1178
GOV	-0.025225	0.042225	-0.597397	0.5531
HEALTH	0.033015	0.056171	0.587757	0.5595
VENTURE_GROWTH	0.050935	0.055791	0.912962	0.3658
WOMEN_EMPOWERMENT	0.089331	0.058268	1.533100	0.1318
EDUCATION	0.012925	0.052506	0.246161	0.8066
SOUTH_AMERICA	-0.052556	0.050766	-1.035272	0.3057
SOUTH_EAST_ASIA	-0.066885	0.044602	-1.499597	0.1403

R-squared	0.283995	Mean dependent var	0.090508
Adjusted R-squared	0.134828	S.D. dependent var	0.125814
S.E. of regression	0.117025	Akaike info criterion	-1.286313
Sum squared resid	0.657353	Schwarz criterion	-0.898976
Log likelihood	48.94625	Hannan-Quinn criter.	-1.135113
F-statistic	1.903868	Durbin-Watson stat	2.211069
Prob(F-statistic)	0.067806		

From *Result 1*, the coefficient on operating rurally is positive and the coefficient on government support is negative. On average, microcredit implementation in rural areas has a 0.009 larger effect size than in urban areas, ceteris paribus. Microcredit organizations operating with government support have a 0.025 smaller effect size on average than the ones without, ceteris paribus. Therefore, my results indicate that studies conducted in rural areas without government support will have a larger effect size. It is plausible that rural areas are more in need of microcredit, and government support might damage the social purpose of microcredit and be associated with political gain. The coefficient of corruption (measured by corruption scores) is negative and the coefficient of income (measured by GDP per capita) is negative. If corruption scores in the country increase by 1 point, the effect size will decrease by 0.004 on average, ceteris paribus. If GDP per capita in the country increases by 1%, the effect size will decrease by 0.04 on average, ceteris paribus. Thus, with higher corruption scores (i.e. the less corrupt the country), the smaller the effect size will be. With higher economic status (i.e. the larger the GDP per capita), the smaller the effect size will be. My speculation is that countries which are less corrupt will have a better welfare system, so microcredit will be less useful in solving social problems. In addition, with higher GDP per capita, governments can provide more funds to people in need which reduces the value of microcredit.

I do not interpret characteristic outcome coefficients in *Result 2* because all characteristic outcome coefficients in *Result 2* are insignificant, possibly due to the small sample size. In addition, the adjusted R-squared decreases from 0.14 in *Result 1* to 0.13 in *Result 2*. I choose to use *Result 1* as my main findings since it is still valuable to look at each point estimate in *Result 1* for their potential economic meanings with the

regression overall being significant at the 5% level of significance as indicated by the F-statistic. I do not attribute meaning to the constant in *Result 1* because the corruption scores and GDP per capita cannot be 0.

For a numerical example from the dataset, India has a corruption score of 27.8 and GDP per capita of 1529 US dollars in 1995, and the microcredit organization is operating in urban areas with government support; the predicted "r" between microcredit and education from Chliova et al. (2015) is -0.07. However, Bangladesh has a corruption score of 22.9 and GDP per capita of 1074 in 1995, and the microcredit organization is operating in rural areas without government support; the predicted "r" between microcredit and education is 0.01. In conclusion, the more severe the situation, the larger the effect size of microcredit.

I have also tried regressions without logarithmic values of GDP per capita but the coefficient values lose statistical significance, possibly because of an inferior functional form fit. Meanwhile, for possible improvement of my regression results, I have tried taking mean values of corruption scores and GDP per capita for time periods when microcredit is implemented in developing areas but the significance of the characteristic outcome coefficients is still weak because the variation in corruption scores and GDP per capita is small across years. Therefore, I stick to the regression results above and I put all other regression results in Appendix B.

Chapter 5: Concerns

My research is faced with many limitations. The two major ones are the small sample size and mismatched timings for corruption scores and economic status. First, there is insufficient detail in the main paper discussing the measurement of effect size and research conditions. Chliova et al. (2015) only reports the name of the authors and predicted effect size "r" in their data table. A large number of their reported quantitative results cannot be found in their reference list or standard academic databases. Consequently, the quantitative findings that I can use shrink considerably, which is the root cause of my small sample size issue. In addition, it is not entirely certain the papers that I do locate are the same ones or same drafts as used in Chliova et al. (2015). Second, I use Transparency International and IMF to match corruption scores and economic data with the paper. These two sources are both reported on a yearly basis. But some papers do not clearly reflect specific times when the research was conducted or refer to multiple years. In all these cases, I choose 1995 for all studies conducted in the 1990s unless they have a specified year in the paper. This mismatch might not correctly report the countries' situations when these studies are conducted.

Furthermore, the variation within independent variables in the data can be small. First, I do not have a large sample size. More importantly, though, I match year of GDP per capita and corruption scores to the year when microcredit is operating, many effect sizes, "r", are corresponding to the same GDP per capita and corruption scores because the years of the studies are almost the same in all studies in Chliova et al. (2015). I also

try to use mean values for periods of time to match corruption and economic data with the studies being used; however, the variation in corruption scores and GDP per capita on a yearly basis is too small to present a better result.

Chapter 6: Conclusion

Microcredit's popularity in the 1990s explains some parts of its value. There is a large body of studies advocating the benefits of microcredit in developing areas. Many scholars believe that microcredit improves living standards because microcredit fills in the gap between the poor and financial services. However, generally in the 2000s the literature moved against the positive results claimed by microcredit in the 1990s. Most criticisms are centered on the creation of endless debt cycles and moral punishments that harm poor communities.

My research tries to answer the question of why the effect of microcredit can be so different in different studies. Each microcredit study is conducted under specific conditions. Some might be conducted in rural areas; some might be conducted in an extremely poor country. Different research conditions will have an influence on what the effect size eventually looks like.

My results show that corruption, economic status, government support, and being located in rural areas seem to have an impact on effect size. Despite the limitations of my research, these are meaningful findings. The effect of microcredit loans seems to be relatively larger in rural areas, areas with higher corruption levels, areas with lower per capita economic status, and when microcredit programs do not involve government participation. Larger effect sizes are correlated with more challenging conditions. For further studies, I believe there is a need for larger datasets, which may provide sufficient information to obtain a conclusive result.

Appendix A: Overview of Studies for Dataset

r	Aspect of Impact	Title	Author
0.03	financial well-being	The impact of group lending in Northeast Thailand	Coleman, Brett E.
-0.06	education	The impact of group lending in Northeast Thailand	Coleman, Brett E.
0	health	The impact of group lending in Northeast Thailand	Coleman, Brett E.
0.03	venture growth	The impact of group lending in Northeast Thailand	Coleman, Brett E.
-0.01	female empowerment	The impacts of microcredit: a case study from Peru	Dunn, Elizabeth Arbuckle Jr., J. Gordon
0.03	financial well-being	The impacts of microcredit: a case study from Peru	Dunn, Elizabeth Arbuckle Jr., J. Gordon
0.03	venture growth	The impacts of microcredit: a case study from Peru	Dunn, Elizabeth Arbuckle Jr., J. Gordon
0.14	education	Microfinance program clients and impact: an assessment of zambuko trust, Zimbabwe	Barnes, Carolyn Keogh, Erica Nemarundwe, Nontokozo
-0.03	female empowerment	Microfinance program clients and impact: an assessment of zambuko trust, Zimbabwe	Barnes, Carolyn Keogh, Erica Nemarundwe, Nontokozo
0.12	financial well-being	Microfinance program clients and impact: an assessment of zambuko trust, Zimbabwe	Barnes, Carolyn Keogh, Erica Nemarundwe, Nontokozo
-0.02	venture growth	Microfinance program clients and impact: an assessment of zambuko trust, Zimbabwe	Barnes, Carolyn Keogh, Erica Nemarundwe, Nontokozo
0.26	health	Promoting health knowledge through micro-credit programmes: experience of BRAC in Bangladesh	Hadi, Abdullahel

-0.02	health	Is microfinance a 'magic bullet' for women's empowerment? analysis of findings from South Asia	Kabir, Naila

-0.07	education	Managing resources, activities, and risk in urban India: the impact of sewa bank	Chen, Martha A. Snodgrass, Donald
0.13	female empowerment	Managing resources, activities, and risk in urban India: the impact of sewa bank	Chen, Martha A. Snodgrass, Donald
0.1	financial well-being	Managing resources, activities, and risk in urban India: the impact of sewa bank	Chen, Martha A. Snodgrass, Donald
0.08	venture growth	Managing resources, activities, and risk in urban India: the impact of sewa bank	Chen, Martha A. Snodgrass, Donald
0	financial well-being	Inequality and the polarizing impact of microcredit: evidence from Zambia's copperbelt	Copestake, James
-0.01	health	Inequality and the polarizing impact of microcredit: evidence from Zambia's copperbelt	Copestake, James
0.44	female empowerment	Rural credit programs and women’s empowerment in Bangladesh	Hashemi, Syed M. Schuler, Sidney Ruth Riley, Ann P.
0.12	health	Rural credit programs and women’s empowerment in Bangladesh	Hashemi, Syed M. Schuler, Sidney Ruth Riley, Ann P.
0.28	education	Credit for alleviation of rural poverty: the Grameen Bank in Bangladesh.	Hossain, Mahabub
0.35	venture growth	Credit for alleviation of rural poverty: the Grameen Bank in Bangladesh.	Hossain, Mahabub
0.08	venture growth	Is microfinance a 'magic bullet' for women's empowerment?	Kabir, Naila

		analysis of findings from South Asia	
0.01	education	The impact of group -based credit programs on poor households in Bangladesh: does the gender of participants matter?	Pitt, Mark M. Khandker, Shahidur R.

0.04	financial well-being	The impact of group -based credit programs on poor households in Bangladesh: does the gender of participants matter?	Pitt, Mark M. Khandker, Shahidur R.
0.05	health	The impact of group -based credit programs on poor households in Bangladesh: does the gender of participants matter?	Pitt, Mark M. Khandker, Shahidur R.
0.04	venture growth	The impact of group -based credit programs on poor households in Bangladesh: does the gender of participants matter?	Pitt, Mark M. Khandker, Shahidur R.
0.02	education	Impact of credit with education on mothers and their young children's nutrition: CRECER credit with education program in Bolivia	Mknelly, Barbara Dunford, Christopher
0.19	female empowerment	Impact of credit with education on mothers and their young children's nutrition: CRECER credit with education program in Bolivia	Mknelly, Barbara Dunford, Christopher
0.04	health	Impact of credit with education on mothers and their young children's nutrition: CRECER credit with education program in Bolivia	Mknelly, Barbara Dunford, Christopher
0.28	education	Microfinance and poverty reduction in rural Nigeria	Aideyan, Osaore

0.04	financial well-being	Microfinance and poverty reduction in rural Nigeria	Aideyan, Osaore
0.4	health	Microfinance and poverty reduction in rural Nigeria	Aideyan, Osaore
0.14	education	Village savings and loan associations: experience from Zanzibar	Anyango, Ezra Esipisu, Ezekiel Opoku, Lydia Johnson, Susan Malkamaki, Markku Musoke, Chris

0.12	financial well-being	Village savings and loan associations: experience from Zanzibar	Anyango, Ezra Esipisu, Ezekiel Opoku, Lydia Johnson, Susan Malkamaki, Markku Musoke, Chris
0.38	health	Village savings and loan associations: experience from Zanzibar	Anyango, Ezra Esipisu, Ezekiel Opoku, Lydia Johnson, Susan Malkamaki, Markku Musoke, Chris
0.09	venture growth	Village savings and loan associations: experience from Zanzibar	Anyango, Ezra Esipisu, Ezekiel Opoku, Lydia Johnson, Susan Malkamaki, Markku Musoke, Chris
0.01	education	Child labor response to household participation in credit schemes and household income	Casabonne, Ursula
0	education	Alleviating poverty through microfinance: village banking outcomes in Central America	Hiatt, Shon R. Woodworth, Warner P.
0	female empowerment	Alleviating poverty through microfinance: village banking outcomes in Central America	Hiatt, Shon R. Woodworth, Warner P.
0	health	Alleviating poverty through microfinance: village	Hiatt, Shon R. Woodworth, Warner P.

		banking outcomes in Central America	
0	education	Impact of microfinance on rural households in the Philippines	Kondo, Toshio Orbeta, Aniceto Dingcong, Clarence Infantado, Christine
-0.01	health	Impact of microfinance on rural households in the Philippines	Kondo, Toshio Orbeta, Aniceto Dingcong, Clarence Infantado, Christine
0.05	venture growth	Impact of microfinance on rural households in the Philippines	Kondo, Toshio Orbeta, Aniceto Dingcong, Clarence Infantado, Christine
-0.04	education	Impact of microfinance on schooling: evidence from poor rural households in Bolivia	Maldonado, Jorge H. González-Vega, Claudio
0	female empowerment	Impact of microfinance on schooling: evidence from poor rural households in Bolivia	Maldonado, Jorge H. González-Vega, Claudio
0	venture growth	Impact of microfinance on schooling: evidence from poor rural households in Bolivia	Maldonado, Jorge H. González-Vega, Claudio
0.09	education	Microfinance and its impact on selected districts in eastern region of Ghana	Nanor, Michael Ayertey
0.09	education	Microfinance and poverty reduction: evidence from a village study in Bangladesh	Nawaz, Shah
0.12	education	Impact of microfinance of IBBL on the rural poor's livelihood in Bangladesh: an empirical study	Mizanur Rahman, M. Ahmad, Fariduddin
0	education	Microfinance and the millennium development goals in Pakistan: impact	Setboonsarng, Sununtar Parpiev, Ziyodullo

		assessment using propensity score matching	
0.01	female empowerment	Microfinance and the millennium development goals in Pakistan: impact assessment using propensity score matching	Setboonsarng, Sununtar Parpiev, Ziyodullo
0.37	venture growth	Microfinance and the millennium development goals in Pakistan: impact assessment using propensity score matching	Setboonsarng, Sununtar Parpiev, Ziyodullo
-0.02	education	Agricultural microcredit and household vulnerability in rural Malawi	Shimamura, Yasuharu Lastarria-cornhiel, Susana
0.12	venture growth	Agricultural microcredit and household vulnerability in rural Malawi	Shimamura, Yasuharu Lastarria-cornhiel, Susana
0.15	female empowerment	The impact of lending to women on household vulnerability and women's empowerment: evidence from India	Garikipati, Supriya
0.26	education	The impact of lending to women on household vulnerability and women's empowerment: evidence from India	Garikipati, Supriya
0.3	female empowerment	The impact of lending to women on household vulnerability and women's empowerment: evidence from India	Garikipati, Supriya

Appendix B: Other Regression Results

Dependent Variable: R
Method: Least Squares
Date: 03/23/20 Time: 16:55
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.268132	0.079226	3.384385	0.0013
RURAL	0.008680	0.044901	0.193310	0.8474
CORRUPTION	-0.004379	0.002628	-1.666066	0.1015
ECONOMY	-1.72E-05	9.22E-06	-1.869039	0.0670
GOV	-0.032391	0.041341	-0.783502	0.4368

R-squared	0.214182	Mean dependent var	0.090508
Adjusted R-squared	0.155973	S.D. dependent var	0.125814
S.E. of regression	0.115586	Akaike info criterion	-1.396664
Sum squared resid	0.721448	Schwarz criterion	-1.220602
Log likelihood	46.20160	Hannan-Quinn criter.	-1.327937
F-statistic	3.679549	Durbin-Watson stat	1.980626
Prob(F-statistic)	0.010118		

Dependent Variable: R
Method: Least Squares
Date: 03/30/20 Time: 19:23
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.315235	0.123788	2.546563	0.0141
RURAL	-0.005968	0.049173	-0.121375	0.9039
CORRUPTION	-0.005574	0.003378	-1.650201	0.1054
ECONOMY	-1.42E-05	9.72E-06	-1.465546	0.1493
GOV	-0.031146	0.042547	-0.732049	0.4677
HEALTH	0.032584	0.056419	0.577548	0.5663
VENTURE_GROWTH	0.051332	0.056039	0.915998	0.3642
WOMEN_EMPOWERMENT	0.083542	0.058840	1.419811	0.1621
EDUCATION	0.011870	0.052841	0.224642	0.8232
SOUTH_AMERICA	-0.048437	0.051713	-0.936648	0.3536
SOUTH_EAST_ASIA	-0.058484	0.045328	-1.290235	0.2032

R-squared	0.278448	Mean dependent var	0.090508
Adjusted R-squared	0.128125	S.D. dependent var	0.125814
S.E. of regression	0.117477	Akaike info criterion	-1.278596
Sum squared resid	0.662445	Schwarz criterion	-0.891259
Log likelihood	48.71858	Hannan-Quinn criter.	-1.127395
F-statistic	1.852332	Durbin-Watson stat	2.172065
Prob(F-statistic)	0.076387		

Dependent Variable: R
Method: Least Squares
Date: 04/20/20 Time: 14:25
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.565873	0.183868	3.077604	0.0033
RURAL	0.007290	0.044401	0.164196	0.8702
CORRUPTION	-0.005188	0.002393	-2.167828	0.0346
LOG(ECONOMY)	-0.042238	0.024440	-1.728252	0.0897
GOV	-0.023214	0.038935	-0.596233	0.5535

R-squared	0.233148	Mean dependent var	0.090508
Adjusted R-squared	0.176344	S.D. dependent var	0.125814
S.E. of regression	0.114183	Akaike info criterion	-1.421096
Sum squared resid	0.704035	Schwarz criterion	-1.245033
Log likelihood	46.92232	Hannan-Quinn criter.	-1.352368
F-statistic	4.104433	Durbin-Watson stat	2.037754
Prob(F-statistic)	0.005627		

Dependent Variable: R
Method: Least Squares
Date: 04/20/20 Time: 14:18
Sample: 1 59
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.577423	0.208195	2.773467	0.0079
RURAL	-0.005558	0.048093	-0.115562	0.9085
CORRUPTION	-0.005534	0.002667	-2.075094	0.0434
LOG(ECONOMY)	-0.040180	0.025414	-1.580970	0.1205
GOV	-0.025699	0.040481	-0.634824	0.5286
HEALTH	0.035568	0.055039	0.646226	0.5212
VENTURE_GROWTH	0.054944	0.055027	0.998507	0.3230
WOMEN_EMPOWERMENT	0.088251	0.057440	1.536396	0.1310
EDUCATION	0.012994	0.051742	0.251136	0.8028
SOUTH_AMERICA	-0.055393	0.049335	-1.122794	0.2671
SOUTH_EAST_ASIA	-0.055021	0.041319	-1.331621	0.1893

R-squared	0.304100	Mean dependent var	0.090508
Adjusted R-squared	0.159120	S.D. dependent var	0.125814
S.E. of regression	0.115370	Akaike info criterion	-1.314793
Sum squared resid	0.638896	Schwarz criterion	-0.927456
Log likelihood	49.78640	Hannan-Quinn criter.	-1.163592
F-statistic	2.097538	Durbin-Watson stat	2.276411
Prob(F-statistic)	0.043136		

Appendix C: Data Table Example

Table A.1 *(continued)*

Education

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Nanor (2008)		710	0.09	0.04
Nawaz (2010)		176	0.09	0.11
Pronyk et al. (2006)		843	0.02	0.03
Rahman & Ahmad (2010)		994	0.12	0.02
Setboonsarng & Parpiev (2008)		2881	0.00	0.02
Shimamura & Lastarria-Cornhiel (2010)		248	−0.02	0.08
Todd (2000)		242	0.15	0.09

Empowerment of women

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Amin & Pebley (1994)	Sample 1	250	0.25	0.09
Amin & Pebley (1994)	Sample 2	250	0.22	0.09
Amin et al. (1995)		3443	0.22	0.02
Amin et al. (1998)		2364	0.15	0.02
Barnes et al. (2001a)		453	−0.03	0.09
Chen and Snodgrass (2001)		600	0.13	0.10
Dunn and Arbuckle (2001)		480	−0.10	0.15
Fofana (2009), Fofana (2011)		394	0.14	0.04
Garikipati (2008)		291	0.15	0.09
Haque et al. (2011)		50	0.19	0.09
Hashemi et al. (1996), Schuler and Hashemi (1994)	Sample 1	626	0.44	0.06
Hashemi et al. (1996), Schuler and Hashemi (1995)	Sample 2	599	0.64	0.05
Hiatt & Woodworth (2006)		318	0.00	0.07
Holvoet (2005)		597	0.30	0.08
Maldonado & Gonzalez-Vega (2008)		135	0.00	0.09
MkNelly and Dunford (1998)		200	0.05	0.09
MkNelly and Dunford (1999)		157	0.19	0.13
Nwanesi (2006)		83	0.47	0.18
Osmani (2007)		84	0.62	0.09
Pronyk et al. (2006)		843	0.16	0.07
Puhazhendi & Badatya (2002)		115	0.59	0.08
Raftus (1998)		120	0.01	0.11
Rahman et al. (2009), Rahman (2010)		571	0.35	0.14
Setboonsarng & Parpiev (2008)		2881	0.01	0.02
Sharif (2004)		483	0.12	0.05
Zeller et al. (2001)		221	0.22	0.10

Financial well-being

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Abera (2010)		326	0.08	0.06
Aideyan (2009)		281	0.04	0.06
Al-Mamun et al. (2011)	Sample 1	151	0.50	0.06
Al-Mamun et al. (2011)	Sample 2	182	0.48	0.05
Amin et al. (1998)		2364	0.15	0.02
Anyango et al. (2007), Brannen (2010)		279	0.12	0.07
Bali Swain & Wallentin (2009)		961	0.14	0.03
Bali Swain et al. (2008)		89	0.20	0.13
Barnes et al. (2001a)		453	0.12	0.06
Barnes et al. (2001b)		965	0.19	0.08
Benson et al. (2011)		54	0.01	0.06
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), Pitt et al. (2003), Pitt (2000)		1073	0.04	0.04
Buckley (1996)		120	0.36	0.22
Chan & Ghani (2011)		72	0.38	0.17
Chen and Snodgrass (2001)		600	0.10	0.04
Chowdhury et al. (2005)		909	0.47	0.05
Coleman (1999)		294	0.03	0.06
Copestake et al. (2005)		500	0.00	0.06
Deininger and Liu (2009)		2406	0.04	0.02
DeLoach and Lamanna (2009)		3316	0.05	0.02
Dunn and Arbuckle (2001)		480	0.03	0.03
Dunn (2005)		2015	0.09	0.06
Edgcomb & Garber (1998)		143	0.03	0.10
Enterprising Solutions Global Consulting (2004)	Sample 1	346	0.06	0.08
Enterprising Solutions Global Consulting (2004)	Sample 2	542	−0.04	0.06
Enterprising Solutions Global Consulting (2004)	Sample 3	471	0.16	0.08

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