working paper 13 17

Lending to Women in Microfinance: Influence of Social Trust and National Culture

by Raj Aggarwal, John W. Goodell, and Lauren J. Selleck

FEDERAL RESERVE BANK OF CLEVELAND

Working Paper 13-17 November 2013

Lending to Women in Microfinance: Influence of Social Trust and National Culture

by Raj Aggarwal, John W. Goodell, and Lauren J. Selleck

The preference of microfinance institutions for women borrowers is generally attributed to two reasons: women borrowers are more trustworthy and have greater social impact. However, the role of social trust with regard to this gender preference has not been adequately investigated. Controlling for the social outreach goals of MFIs, we document that MFIs favor women more in low trust countries, suggesting that women are targeted to offset low social trust. We also examine how the nature of trust formation affects this relationship between gender targeting and trust. Our results should be of considerable interest to policy-makers and scholars.

Key words: Banking; Economic development; Financing; Access to finance; National culture; Social trust; Gender development; Gender discrimination

JEL codes: G21; A14; J30; J16; O16

Raj Aggarwal is at the University of Akron and can be reached at aggarwa@uakron.edu. John W. Goodell is at the University of Akron and can be reached at johngoo@uakron.edu. Lauren J. Selleck is at the University of Akron and can be reached at ellejay86@hotmail.com.

The authors are grateful to M. Hamadi, S. Johan, J. Mileski, J. Murray, T. Randøy, M. Rieger, D. Skala, U. Zander, C. Zhang, their colleagues, and participants in the 10th INFINITI Conference, Trinity College Dublin; the 2012 AIB Conference, Washington D.C.; and the 2012 FMA Annual Conference, Atlanta, for useful comments, but remain solely responsible for the contents. An earlier draft of this paper was first runner up for the 2012 Stockholm School of Economics/Women in the Academy of International Business award for increased gender awareness in international business research.

1. Introduction

In spite of the hundreds of millions of people lifted out of poverty in recent decades in the Chinese, Indian, and other rapidly growing economies, over 2.5 billion people are estimated to still live on less than $2 a day (Chen and Ravallion (2008)). While these and other somewhat less poor people represent a vast potential market (Prahalad (2006)), more than half of the world's population, especially the very poor, are without access to formal banking institutions (Beck, Demirguc-Kunt and Peria (2008)). Microfinance institutions (MFIs) are generally seen as an important mechanism designed to increase access to finance among the poor and for lifting people out of poverty. While there are still many unanswered questions about the efficacy of MFIs, they have proliferated in recent decades and interest in MFIs has also increased as the unbanked poor are seen as one of the largest and potentially most lucrative groups of potential consumers.

MFIs are similar to banks and traditional financial intermediaries. They intermediate funds between savers and borrowers. However, unlike traditional banking, MFIs generally do not depend in any significant way on consumer deposits. MFIs also differ from bank lending in other ways. For instance, microfinance involves small loans to the poor and relies on social networks and frequent repayments to reduce costs of monitoring and collection. Also unlike traditional banking, nearly all microfinance organizations exist to fulfill the dual objectives or "double bottom line" of assisting the poor while achieving sustainable financial performance. Further, while all financial intermediation must solve the usual problems of asymmetric information, moral hazard, and payment collection, these issues are especially distinctive among MFI clientele who are generally very poor and have limited experience and understanding of finance, are often uneducated, have weak legal and political rights, and have low and irregular incomes. Thus, MFI clientele are unlike banking clientele and face especially high levels of information asymmetry and given the incompleteness of contracts and the reliance on social, moral, and ethical practices, it is reasonable to expect that the focus and structure of microfinance institutions will differ from traditional financial intermediation and be influenced more by their national social, cultural, and economic environments.

Nevertheless, international differences in microfinance seem to be an understudied area even though such differences in microfinance institutions continue to be of considerable interest (e.g., Bruton, Khavul and Chavez (2011) and Mersland, Randøy and Strøm (2011)). For example, while MFIs have been successful in serving women borrowers, especially in some countries, little is known about international differences in the microfinance focus on women borrowers.[1] Further, while it may be reasonable to accept the experience of the Grameen Bank and other microfinance institutions that women have a much higher tendency to pay back uncollateralized microfinance loans, this reasoning has largely remained an untested conjecture. In this paper we focus on the question, why do MFIs focus on women borrowers and how can the international variation in this focus illuminate the nature of microfinance?

We contend that, as noted above, the MFI focus on women borrowers is influenced by environmental factors such as social trust. More specifically, we hypothesize that as women are perceived to be more trustworthy, there should be a negative association between social trust and the percent of women amongst MFI borrowers in a country. We also conjecture that women are better repayers not necessarily because of a higher ability to pay back loans but due to an enhanced willingness to pay back MFI loans. Using the theoretical framework of Doney, Cannon and Mullen (1998) associating the nature of social trust with national culture, we distinguish between countries where trust is primarily behavioral versus countries where trust is primarily economic - MFIs are likely to be more effective in countries where social trust is primarily behavioral.

In this paper we document that the MFI focus on women borrowers increases in lower trust countries. We suggest that this is so because the targeting of women borrowers is a substitute for lower levels of social trust. We further document that the negative association of social trust with a higher focus on women borrowers hold more strongly in countries where social trust is formed primarily behaviorally rather than economically.

In terms of our other (control) variables, we find a positive association of the percent of women borrowers with the extent to which the MFI targets the poor. We interpret this result as consistent with the

[1] For example, our sample of 1019 microfinance institutions has an average of 67% of female borrowers (Table 1).

social mission of microfinance institutions especially as this positive association is even stronger for microfinance institution that are nonprofit and those that target the lower end of the social economic spectrum. In addition, we find a negative association between the percent of female borrowers and the total number of borrowers, average loan size, and a Latin American location. These results are significant and robust to alternative estimation procedures.

The results presented in this paper help us better understand the nature of microfinance. For example, the methods used in microfinance lending seem to work better than traditional banking in countries where social trust is behavioral in nature (and the opposite is likely to be true in countries where social trust is economically based). While we leave it to others to explore more fully the other implications of our findings, the findings here should nevertheless be of great interest to policy makers and scholars interested not only in the design and operation of microfinance institutions, but also to those interested in gender, 'bottom of the pyramid' customers, economic development, and the role of culture in financial intermediation. In short, this research contributes by illuminating the nature of MFIs and the importance of the role of gender and culture in finance. More generally, we believe our robust results will be of considerable interest to scholars and policy makers interested in the role of women in microfinance and social development, and more generally to those interested in the role of gender differences in financial intermediation.

2. International variations in microfinance and gender

2.1 Nature of microfinance and its supply and demand

The channeling of funds from savers to investors, or financial intermediation, is a necessary function in all countries and is generally undertaken primarily through financial institutions and financial markets. Either financing channel must resolve the issues of asymmetric information, adverse selection, and agency costs involved in financing contracts that cover the monitoring and collection of funds provided by savers to investors. Given that all optimal contracts are incomplete in practice, the efficiency of overcoming these contracting costs depends not only on the economic, legal, ethical, social, and cultural environment, but also on the nature of the borrowers served (MFI borrowers are likely to be less

educated or knowledgeable about financial matters, and so they face greater asymmetric information and other transactions costs).

Microfinance is distinguished by its emphasis on small loans to the poor and to small businesses serving the poor that require frequent repayments. It is generally reflects a form of group-based lending where social relationships among the borrowers and frequent repayments are used to improve the monitoring of borrowers and the likelihood of repayment, and otherwise reduce the costs of intermediation. While all financial intermediation must solve the usual problems of asymmetric information, moral hazard, and loan collection, these issues are especially important among institutions that serve the poor who have limited means and experience or understanding of finance, have irregular and low incomes, are often uneducated, and have weak legal and political rights ((Armendariz and Morduch (2005); Collins, Morduch, Rutherford and Ruthven (2009); Garmaise and Natividad (2010); Karlan and Morduch (2009); Karlan and Zinman (2009); De Soto (2000); Webb, Tihanyi, Ireland and Sirmon (2009)).

The observed level of microfinance varies considerably from country to country and in any given country it can be expected to reflect both supply and demand for it. The supply of microfinance is facilitated by MFIs emerging to reduce the transaction costs of direct lending and borrowing among the many disaggregated savers and investors among the poor. Such reductions in the cost of financial intermediation can be an important contributor to the efficiency of an economy with better allocation of funds among competing users (Cull, Demirguc-Kunt and Morduch (2007); Greenwood, Sanchez and Wang (2010); Karlan and Zinman (2010) leading to increased rates of financial and economic development (Khandker (2005) Levine (2005)). The transaction costs between creditors and borrowers are usually measured by the cost spread between lending and borrowing rates, with these differences often divide into fixed and variables portions. The presence of fixed costs in financial intermediation means that creditors will be reluctant to issue smaller loans as the profitability of such loans will be inadequate to cover the associated fixed costs. This leads to limited access to finance among the poor especially by

traditional forms of financial intermediation. MFIs arose, first in Bangladesh and now globally, to fill this gap in the supply of credit to the poor.

While MFIs may have increased the available supply of credit to the poor, the actual equilibrium supply of such credit will also depend on the demand for credit among the poor. The poor have been shown to be price-sensitive and the demand for microfinance loans may be limited by the high interest costs of such loans (Karlan and Zinman (2008)). The demand for microfinance among the poor may also be limited, especially among smaller borrowers as such borrowers face costs in resolving asymmetric information. Such costs increase with the lack financial literacy, lack of social trust, and the costs of the required paperwork which may seem overly burdensome for these small and poor borrowers. Further, the demand for microfinance is also affected by factors that influence the need for borrowing among the poor. Such need for borrowing will likely increase with an increased predilection for entrepreneurship and a greater culture of risk-taking both of which may be precipitated by lack of employment or poor employment rights or a large informal economy. The need for borrowing among the poor is also likely to depend on gender relationships in the borrowing group. However, as noted earlier, very little is known about why there are international differences in microfinance in general and, to a lesser extent, even why there are international differences in the MFI focus on female borrowers.

However, these economic explanations for microfinance have been found to be inadequate and the success of microfinance remains somewhat of an economic mystery. Thus, there is the continuing search for behavioral explanations of the global success of microfinance. The informational advantages of relationship lending are well recognized in the banking literature and initial explanations for microfinance success focused on similar explanations (Petersen and Rajan Raghuram (1994)). Another stream of the early theoretical work on microfinance focused on social joint liability as the key to high loan recovery rates (Stiglitz (1990); Gomez and Santor (2001); Brau and Woller (2004)). According to this view social collateral works through reputational effects on group members in which repayment of loans is seen by group members as necessary to maintain their social standing in the community (Conning (1999)).

In Van Tassel (1999) a model and a one-period game are constructed to determine the optimal group lending contract under asymmetric information. He concludes that agents will always form groups with agents of the same type and that agents' types can be distinguished according to the rate at which they are willing to trade increased joint liability commitments for lower interest rates. Ghatak (1999)) concludes that group lending not only increases repayment rates and welfare via social collateral, but also due to peer selection by members of the lending group. Similarly, Mallick (2002) concludes that lenders using peer-monitoring systems can charge lower rates relative to conventional lenders and that at the same interest rate, the expected rate of repayment is higher with lower risk when using peer monitoring.

But while social joint liability remains a feature in the majority of microfinance loan contracts such joint liability is no longer seen as a primary or even an important explanation of the rational economics of microfinance, perhaps as there are costs as well as benefits associated with social joint liability (Armendariz and Morduch (2000)). Based on field work, recently some behavioral explanations have been offered. For example, Bauer, Chytilova and Morduch (2012) contend that women borrowers can benefit from the self-discipline provided by group meetings following loans from MFIs. Another such behavioral explanation is provided by Field and Pande (2008) who show that the frequent small amounts required to be paid back in microcredit decreases the default frequency. In spite of these social, and behavioral explanations, there does not seem to be adequate explanations of the international variations in the MFI focus on women borrowers.

2.2 Microfinance and women's access to capital

MFIs seem to be focused on women borrowers globally, with women accounting for nearly 74% of the 19.3 million of the world's poorest people now being served by microfinance institutions (Cheston and Kuhn (2002)). As Mohammed Yunus, founder of the seminal microfinance institution Grameen Bank, stated at a recent address to the Australian Business Chambers Forum in Melbourne "The men were over-confident. But anything the women earned, it went straight to the children. The women always wanted to build for the future. They were terrified they'd lose the money and then no one would trust

them again. But the men, they wanted to enjoy the money now.[2]" As stated on the website *grameencreativelab.com*, "Grameen discovered that women are more reliable in paying back."[3]

This MFI focus on women borrowers is confirmed more generally by scholarly research that notes that it is a generally accepted tenet of microfinance that providing poor women access to finance leads to the development of households and families (e.g., Goetz and Gupta (1996)). Morduch (1999) suggests that targeting women has been an important factor in the financial health of microfinance institutions (see also Armendariz and Morduch (2000)). D'Espallier, Guérin and Mersland (2011) show that more women clients are associated with lower portfolio-at-risk, lower write-offs, and lower credit-loss provisions for MFIs. Consistent with the dual goals of microfinance, additional reasons that have been typically been put forward for this preference for women borrowers are: 1) that women are more trustworthy and so are more likely to repay loans (Armendariz and Morduch (2005)); and 2) that loans to women have a greater impact on the poor as they are more likely to apply funds to the betterment of their families and children (Croson and Buchan (1999); Maclean (2010)).

While the supply of microfinance is likely more directed to women for the reasons described above, others have indirectly suggested that the demand for microfinance is also likely higher for women. For instance, Fletschner (2009) notes that women in developing countries are typically more restricted in their access to capital (see also Buvinic and Berger (1990)). Stevenson and St-Onge (2005) discuss the access of Tanzanian women entrepreneurs to credit, offering research on institutional and cultural constraints to credit access. Presenting case studies from Bangladesh, Morocco, and the Dominican Republic, Hofstetter (2008) examines the impact of customary law on women's ability to participate in microfinance. Hofstetter (2008) finds that although customs and laws can hinder microfinance ventures, microfinance programs can also act as catalysts of social change that affect such customs and laws and the status of women.

[2] Myriam Robin "Lending to women 'the best decision we ever made': Grameen Bank's Muhammad Yunus" W*omen's Agenda* Aug 21, 2012.
[3] from http://www.grameencreativelab.com accessed Oct 1 2012

Further, drawing on conclusions from a randomized field experiment in Sri Lanka, De Mel, McKenzie and Woodruff (2009) argue that women may be more constrained by finance than men. They find that microenterprise capital returns are much lower among women than among men and that the gender gap is not explained by differences in ability, risk aversion, or entrepreneurial attitudes. Bernstein and Seibel (2010) discuss the payment of loans through microfinance, particularly from women borrowers due to their trustworthiness to use funds for the well-being of their families. D'Espallier et al. (2011) utilize a statistical model to study gender-differences in microfinance repayment rates, finding that women clients are associated with lower portfolio-at-risk, lower write-offs, and lower credit-losses.

2.3 Microfinance, women and development

Gender differences in microfinance are particularly important as women play a very important part in economic development generally and particularly in the development of the very poor (Pitt and Khander (1998)). Dessy and Ewoudou (2006) present a game-theoretic model of activity choices, finding that for microfinance organizations to succeed in nurturing female empowerment, women's access to credit must be conditioned on their adoption of high-productivity activities in the informal economy. They argue that the development of such networks mitigates patriarchal practices that raise the costs of engaging in such activities. Guerin (2006) examines the complexity and diversity of women's informal financial practices using data from surveys conducted in Senegal, arguing that microfinance services must be combined with complementary measures that challenge the systemic causes of inequality. Lyngdoh and Pati (2010) investigate microfinance's empowerment of rural women in northeastern India and suggest that over time microfinance transforms the lives of female clients for the better. Undertaking a long-term study of women-targeted microfinance in Bolivia, Maclean (2010) asserts that development results through a combination of microfinance and "social capital"— the trust, norms, and networks that allow people to coordinate their actions and achieve their aims. All of these changes are consistent with women having increased ability to pay back microfinance loans.

Nevertheless, there still may be discrimination against women borrowers. Agier and Szafarz (2011) utilize a Brazilian microfinance institution database to assess gender discrimination in loan

allocation. The empirical results point to gender discrimination and that reducing information asymmetry through relationship brings no remedy to "the curse of the trustworthier sex." In another, similar study, Agier and Szafarz (2013) use the Brazilian microfinance database to investigate gender bias and disparate treatment among men and women borrowers, discovering no gender bias in loan denial, but an increasing gender gap in loan size that is disproportionate to the borrower's project scale. Beck, Behr and Madestam (2011), examining a dataset of first-time borrowers of a large microcredit lender in Albania, postulate that one factor affecting the future demand for credit is that borrowers pay higher interest rates when matched with an opposite-sex loan officer. On balance, such gender discrimination may even contribute towards the better MFI repayment experience with female borrowers.

In summary, there can be many reasons for the microfinance focus on women borrowers ranging from women borrowers greater trust-worthiness and reliability and their greater ability to use the loan proceeds for investments that are more likely to lead to economic growth, to their association with lower portfolio risk, lower write-offs, and lower credit-loss provisions. So far, it studies of MFI lending to women are focused on individual countries. It seems it is difficult or impossible to assess these individual country reasons and separate them from the effects of country social and cultural environments when examining MFIs in a given country. By examining cross-national MFI focus on women borrowers, such a study may provide fresh insights. Nevertheless, there seem to be no systematic studies of international variations in MFI focus on women borrowers and this study is designed to fill this gap.

3.3 Nature of social trust and microfinance

In this paper we investigate the effect of national culture and social trust on the percentage of women MFI borrowers taking a somewhat different approach. Doney et al. (1998) have explored the mechanisms of how national culture may affect the development of social trust. They note that trust can be formed by factors that influence the reliability of "prediction" and "intentionality" of human behavior. According to Doney et al. (1998), variability in a counterparty's performance is undesirable, and a relatively high value is placed on predictability in relationships. We consider prediction in our context as referring to the microfinance creditor's ability to forecast the repayment behavior of the borrower.

Doney et al. (1998) suggest that under conditions of high uncertainty avoidance, low masculinity and low power distance, trust is predominantly developed by processes of prediction based on intentionality. Forming trust through intentionality entails assuming that people value relationships based on mutual and comparable dependence and group affiliation. Prediction in the context of Doney et al. (1998) in the context of this paper refers to the microfinance creditor's ability to forecast the repayment behavior of the borrower. For MFIs, establishing trust through intentionality entails establishing the motivation and intention of borrowers to pay back their loans. Thus, trust building through intentionality corresponds with micro-creditors preferring women borrows. Such trust building through assumptions regarding intentions is also closely aligned with the social psychology literature such as Deutsch (1960) and Lewicki and Bunker (1995).

In contrast, Doney et al. (1998) suggest that in environments of low uncertainty avoidance, high masculinity and high power distance, creditor trust is more likely formed through a process of calculation and capability. Trust building by means of a capability process involves a creditor's willingness to trust based on an assessment of the borrower's ability to pay interest and repay the loan. Establishing trust through a calculative process involves an analysis of the extent that the benefits of cheating do not exceed the costs of being caught. The creditor infers that it would be contrary to the borrower's best interest to cheat; therefore the borrower can be trusted. As noted by Doney et al. (1998), this calculative view of trust formation is consistent with the economics literature, for instance with the theory of coordination within Transaction Cost Economics of Williamson (1985) (see also Akerlof (1970)); as well as with the International Business literature, for instance with regard to theories of mutual forbearance in the cooperation of joint ventures Buckley and Casson (2002).

As this brief discussion indicates, Doney et al. (1998) indicate that social trust can be formed in two ways. In some countries where culture is characterized by high uncertainty avoidance, low masculinity and low power distance, social trust is primarily behavioral with a large role for social pressure and repayment is influenced by the borrower's intentions and willingness to repay. In other countries where culture is characterized by low uncertainty avoidance, high masculinity and high power

distance, social trust is primarily economic and repayment depends more on the borrower's ability. Thus, we hypothesize that in countries where social trust is primarily behavioral, it is significant in explaining the focus on women borrowers while it is not significant in countries where social trust is primarily economic.

We contend here that it may be possible to obtain fresh insights by examining MFIs and their borrowers in a multi-national context. Further, we contend that understanding international variations in the extent to which MFIs target women borrowers can be important in understanding not only the nature of microfinance and how it may differ from traditional banking, but also for understanding the role of increased access to finance in reducing poverty and furthering economic development. The research design detailed in the next section is designed to achieve these goals and should help fill an important gap in the literature.

3. Methodology

3.1 Dependent variable

The dependent variable is the percent of MFI borrowers that are women (WOMEN). The percent of women borrowers is defined as the number of active women borrowers divided by the adjusted number of active borrowers. The period of study ranges from 1996 to 2010 depending on data availability and the age of the microfinance institution. This and other microfinance data were obtained from www.mixmarket.org[4], a database of social and financial performance information for more than 2,000 MFIs covering 92 million borrowers. Our sample, limited only by the availability of data for the variables used, includes over a thousand microfinance institutions in forty-three countries. Table 1 lists the countries in this study along with the average per country percentage of women amongst MFI borrowers. As Table 1 shows, there is substantial variation across countries with regard to the proportion of women

[4] Mix Market (MIX) is headquartered in Washington, D.C. and collects data on microfinance globally collaborating with global partners such as the Bill & Melinda Gates Foundation, Consultative Group to Assist the Poor (CGAP), Omidyar Network, The MasterCard Foundation, IFAD, Michael & Susan Dell Foundation, Citi Foundation, Ford Foundation, and Deutsche Bank. Its microfinance data is considered to be the most comprehensive available.

MFI borrowers. In many Asian countries, for instance Bangladesh and India, women are over 90% of the MFI clientele.

(please insert Table 1 about here)

3.2 Independent variables and hypotheses

In this section we describe the independent variables and, based on the discussion in the preceding section, we describe the hypotheses. The first independent variable we include is SOC_TRUST, which reflects the level of social trust in a society and is the percent responding "yes" to question whether most people can be trusted, taken from the University of Michigan data base on the World Values Survey. We hypothesize that microfinance institutions will focus more on targeting women voters in an environment of lower social trust.

H1: WOMEN and SOC_TRUST are negatively associated

As explained above we also test our contention regarding the importance of the nature of social trust formation (behavioral versus economic) on the MFI focus on women borrowers. Thus, we have:

H2: In countries where social trust is formed primarily behaviorally, there is greater focus by microfinance on women borrowers.

In our assessment we include a number of other independent explanatory and control variables. The next independent variable is the variable OUTREACH from mixmarket.org. OUTREACH is coded as "1" if the outreach is small according to mixmarket.org; "2" if the outreach is medium; and "3" if outreach is large. We hypothesize that the more outreach is associated with higher percentage of women borrowers. We include a dummy variable that is assigned "1" if mixmarket.org classifies the MFI as targeting the "low end" of the socio-economic spectrum and "0" otherwise (TARGET). We expect a positive association of TARGET with WOMEN. Targeting those of the lowest means is consistent with a focus on outreach and so will lead to a greater emphasis on women borrowers. Similarly we include a dummy variable (NONPROFIT) which is assigned a "1" if the MFI is a nonprofit organization according

to www.mixmarket.org[5]. This second set of hypotheses cover the impact of the nature of an MFI's goals and targets on their lending to women.

Additional independent control variables (also from mixmarket.org) include MFI characteristics such as MFI size measured by the number of borrowers (NUM_BORR). We use the natural log of this variable in our regressions (LN_NUM_BORR). We also include gross loans (GROSS_LOANS) as another measure of size. We include profit margin (MARGIN), return on assets (ROA), debt to equity (LEV), operational efficiency (OP_EFF), and average loan amount (AVG_LOAN) as measures of MFI efficiency. We also include a dummy variable that is assigned "1" if the MFI is in a Latin-American or Caribbean country and "0" otherwise (LATIN_AM). We do this because of the unique features of microfinance institutions in Latin America described by (Navajas and Tejerina (2006)).

The next section details the specific statistical research design to assess if these hypotheses hold. This research design plans to account for the nature of the data, any statistical problems, and possible endogeneity due to more than one reason for MFIs to prefer women borrowers.[6] It includes a number of robustness tests and this research design also distinguishes among countries where social trust is based on primarily economic concerns from other countries.

4. Results

4.1 Descriptive statistics

Table 2 summarizes the mean, standard deviation, coefficient of variation and the sources of the variables used in this study. It is interesting to note that in examining Column 3 of Table 2 (the coefficient of variation), MFI characteristics such as profit margin, return on assets, and the debt ratio, seem to have the widest variation. In contrast, the cultural and trust measures along with the percentage of women borrowers are some of the least variable of the measures used.

*(*please insert Table 2 about here)

[5] Perhaps surprisingly, there is little correlation between OUTREACH, TARGET and NONPROFIT for our sample.
[6] As has been noted by Reeb, Sakakibara and Mahmood (2012), endogeneity can be an important problem in international business research.

4.2 Regression results with Huber and White robust standard errors

Results of the Huber and White robust standard errors regressions are reported in Table 3. We include dummy variables for each country in order to account for fixed effects across countries.[7] Variance inflation factors are less than ten for all variables in all models. Model 1 of Table 3 uses the independent variables SOC_TRUST, OUTREACH, TARGET, MARGIN, ROA, LN_NUM_BORR, GROSS_LOANS, NONPROFIT and LATIN_AM. The results show that SOC_TRUST is significantly negative at 1%. This supports *H1* that there is a negative association of SOC_TRUST and WOMEN as microfinance institutions place more emphasis on women borrowers in environments of lower social trust.

Regarding the control variables, TARGET is positively significant at 1%, consistent with microfinance institutions targeting women borrowers when they focus more on the economically disadvantaged. LN_NUM_BORR is positively significant at 1% reflecting the fact that larger MFIs focus more on women borrowers. LATIN_AM is negatively significant at 1%, suggesting that being in Latin America is associated with a lower percentage of women borrowers. NONPROFIT is significantly positive at 1%. Following our interpretation our discussion in the preceding section we again consider that there will be a higher percentage of women borrowers for nonprofits as they have more of a social focus. These results are all consistent with our hypotheses.

(please insert Table 3 about here)

Model 2 adds LEV (which is not significant) to the variables in model 1. Once again, SOC_TRUST, and LATIN_AM are again negatively significant at 1%. TARGET and LN_NUM_BORR are again positively significant at 1%. Models 3 and 4 of Table 3 add sequentially to the independent variables of Model 3 OP_EFF and AVG_LOAN. Again, SOC_TRUST and LATIN_AM are again negatively significant at 1%. Again, LN_NUM_BORR, TARGET, and NONPROFIT are positively significant at the 1% level. AVG_LOAN is negatively significant.

4.3 Discussion of the regression results

[7] We account for possible correlations between country fixed effects and time invariant variables (such as national culture) in further tests in subsequent sections.

Our societal trust level variable (SOC_TRUST) is significant at 1% in all models of Table 3. This result strongly supports *H1* and suggests a negative relationship between societal trust and the targeting of women borrowers by microfinance institutions. This is consistent with women being perceived as more trustworthy and more creditworthy by microfinance institutions and is consistent with MFIs loaning to women perhaps as a compensation for lower levels of social trust. Regarding the economic significance of social trust, we find that a one percent increase in the percent of the population who think most people can be trusted is associated with a little less than a one-third percent decrease in the proportion of women in MFI borrowers.

In all of the models of Table 3, the variables TARGET and NONPROFIT are positively significant at 1%. The positive association of these two variables with the percent of female borrowers is strongly consistent with the fact that MFIs prefer women borrowers in order to fulfill their missions to serve the poor. However, interestingly, the degree of outreach is not significant (we note that there is little correlation between OUTREACH, TARGET and NONPROFIT for our sample). Further, AVG_LOAN is negatively significant at 1% in Table 3. This result is consistent with Agier and Szafarz (2011) who note that the combination of women being more reliable and receiving smaller loans reflects loan allocations being discriminatory against women.

Our independent variable for the total number of borrowers for each MFI is significantly positive across all models of Table 3. This result is consistent with the larger MFIs relying more on female borrowers. Interestingly, across the models of Table 3, our MFI variables for efficiency and debt MARGIN, OP_EFF and ROA are not significant indicating no support for hypotheses 4 and the notion that MFI efficiency is positively associated with the percent of women borrowers.

LATIN_AM is negatively significant at 1% across all five models of Table 3. This result indicates that the participation of women amongst MFI borrowers in Latin American nations is suppressed compared to the rest of the world. The reason for this association is not clear from the literature. This result is qualitatively consistent with Agier and Szafarz (2011) who suggest gender discrimination in Brazilian MFIs.

Overall, the results presented above appear dependable and well founded. We include thousands of MFI/year observations over more than a thousand different MFIs for forty-five countries. The F-tests for all models are highly significant and the R-squares for our Huber and White robust standard error modeling are relatively high at approximately 50% for all models in Table 3.

5. Culture and trust in determining MFI percent women borrowers

5.1 National culture and the development of trust

As discussed in the section on related prior literature, the nature of microfinance and its predilection to target women borrowers is also likely to depend on the cultural environment. For example, given the incompleteness of all contracts in practice, values and norms reflected in culture are likely to heavily influence loan repayment possibilities. Indeed, there is now mounting evidence of the impact of culture in international studies of financial issues such as financial intermediation (e.g., Aggarwal and Goodell (2009)) and corporate capital structure (e.g., Chui, Lloyd and Kwok (2002)). Here we consider the influence of national culture on trust and how it may affect the targeting of women borrowers by MFIs. As measures of culture, we introduce the independent variables UAI, MAS, IDV and PDI, which are respectively the Hofstede (2001) cultural dimensions of uncertainty avoidance, masculinity, individuality and power distance. We investigate the effect of national culture and social trust on the percentage of women MFI borrowers taking an approach based on Doney et al. (1998). In Table 4 we present two models, one for countries where trust is predominantly likely to be behavioral while a second for countries where trust is likely to be predominantly economic.

In order to overcome any confounding of trust with national culture, we orthogonalize SOC_TRUST against national culture. Orthogonalization is done by first regressing SOC_TRUST against the measures of national culture according to Equation 2 below and then using the residuals from Equation 3, RESID_SOC_TRUST as substitutes for the independent variable TRUST in the percent of women borrower's regressions.

$$\text{SOC\_TRUST}_i = \alpha_i + \beta_{1i}\text{UAI} + \beta_{2i}\text{MAS} + \beta_{3i}\text{PDI} + \beta_{4i}\text{IDV} + \varepsilon_i \qquad (3)$$

Model 1 (behavioral trust countries) restricts the sample to relatively high uncertainty avoidance, low masculinity and low power distance countries. Model 2 (economic trust countries) restricts the sample to relatively low uncertainty avoidance, high masculinity and high power distance countries. We classify these countries by first calculating the global mean values for UAI, MAS and PDI and then examining how the measure for each country compares to the overall global mean for that measure. A cultural dimension for a country is classified as high (low) when it is greater (less) than the mean value across all countries..

(Please insert Table 4 about here)

In Model 1 of Table 4 social trust is negatively significant (1%); while in Model 2 social trust is not significant. The results of Table 4 suggest that in environments of high uncertainty avoidance, low masculinity and low power distance, where social trust is primarily behavioral in nature, social trust is an important determinant of the targeting of women borrowers by MFIs. In these countries, with a significant role for social pressure, microfinance is not like traditional banking. In contrast in environments of low uncertainty avoidance, high masculinity and high power distance, where social trust is primarily economic and there is little or no role for social pressure, social trust is not an important determinant of the targeting of women borrowers by MFIs. These results are consistent with the notion that the negative association of social trust and the percentage of women borrowers which we evidence for our combined sample is driven by environments where social trust is established through prediction and intentionality (behavioral trust countries). These results strongly support our second hypothesis.

In Table 5 we present results of estimates which include as an independent variable an index of behavioral trust formation which we create for this paper (TRUST_FORM). In order to create this index we first standardize UAI, MAS and PDI. We then sum the following: 1) the difference between the country standardized UAI and the minimum for our sample of the standardized UAI; 2) the difference between the maximum standardized MAS and the country standardized MAS; and the difference between the maximum standardized PDI and the country standardized PDI. There is a large range across countries in the behavioral (versus economic) formation of trust. For example, in our sample of countries Costa

Rica has, based on its higher levels of UAI and lower levels of MAS and PDI, the highest predilection toward behavioral trust formation with an index value of 13.80, while Slovakia is the least inclined toward behavioral trust formation with an index value of 1.86. The models estimated in Table 8 use the same set of independent variables as used in Table 6. The results of this regression show that the index (TRUST_FORM) is positively significant at 1%. This suggests that the nature of trust formation has a significant impact on the percent of women borrowers amongst MFIs. Results for the other independent variables are consistent with those of Table 6. Of particular interest, RESID_SOC_TRUST is again negatively significant at 1%.

(Please insert Table 5 about here)

5.2 Brief discussion and implications

In this study we document a number of intriguing results with regard to social trust and the focus on woman borrowers in MFIs. We empirically support our contention that MFIs target women borrowers as a substitute for lower social trust. This result is interesting in the context of a related literature that has pointed toward family values and family connections as a substitute for social trust (e.g., Fukuyama (1995), La Porta, Lopez-de-Silvanes, Shleifer and Vishny (1997), Tabellini (2010)). This relationship between intra- and inter-family trust along with our results on the role of women, may have important implications for the role of women in financial development. For example, Tabellini (2010) suggests that enhanced family connections in the southern portion of Italy is partially responsible for this region being less financially developed than northern portions of Italy. To promote financial development in such places our results suggest that it may be useful to target women for small loans.[8]

There have been many studies of the success of microfinance. But these studies are inconsistent, finding that the success of microfinance varies greatly from country to country (Brau and Woller (2004)). Recently Ahlin, Lin, and Maio (2011) suggest that the success of MFIs depends on the macroeconomic conditions in a country. Our findings that microfinance works better in countries where social trust is

8 The findings in Croson and Buchan (1999) are also interesting in this regard. They find that women are more likely to reciprocate in the ultimatum game than men. This is consistent with the notion that in an atmosphere of lack of trust, women provide utility by bringing more trust.

primarily behavioral and not economic in nature may provide a context to illuminate these prior studies. For example, it has been contended that microfinance may be able to reduce poverty in the US and other industrial countries (Servon (1997); Bhatt, Painter and Tang (1999); Bhatt et al. (1999) and Bhatt and Tang (2001). However, Schreiner (1999) analyzes US microenterprise programs and finds that although some programs can move some people from welfare to self-employment, it only works about one percent of the time. Our findings note that microfinance is unlikely to succeed in a country like the US where social trust is primarily economic.

6. Conclusions

Microfinance has become an important mechanism for extending access to finance to the poor and for fighting poverty. MFIs seem to succeed by taking advantage of social networks to help monitor borrowers and ensure repayment. MFIs generally try to fulfill the dual objectives or "double bottom line" of assisting the poor while achieving sustainable financial performance. While all financial intermediation must solve the usual problems of asymmetric information, moral hazard, and payment collection, these issues are especially important and distinctive among the poor who have limited experience and understanding of finance, are often uneducated, have weak legal and political rights, and have low and irregular incomes. Thus, given the incompleteness of contracts in practice, the social, cultural, and economic environments can be expected to be important. Consequently, the nature and structure of microfinance institutions will differ not only due to the composition of its borrowers but also from country to country depending on the social, cultural, and economic environment.

Nevertheless, international differences in microfinance seem to be an understudied area. For example, an important and widespread feature of microfinance is its focus on women borrowers. Indeed, our sample of 1019 microfinance institutions suggests this is the case with an average of 67% of borrowers being female. However, little is known about the reasons why this focus on female borrowers in microfinance differs internationally. It is often suggested that microfinance institutions (MFI) target women because they are both more trustworthy and lending to women has greater social impact than

lending to men. However, the relationship between social trust and the preference of MFIs for women borrowers has not previously been empirically investigated.

Controlling for the declared social outreach goals of MFIs, we robustly document that there are higher percentages of women MFI borrowers in lower trust countries. We suggest this is so because the targeting of women borrowers is done as a substitute for low social trust. We extend the analysis to investigate the relationship between the targeting of women borrowers and social trust based on how national culture forms social trust. We find that the targeting of women borrowers by MFIs increases in countries where social trust is formed primarily behaviorally.

In addition, we find a positive association of the percent of women borrowers with the extent to which MFIs targets the poor. We interpret this result as consistent with the social mission of microfinance institutions especially as this positive association is even stronger for microfinance institution that are nonprofit and those that target the lower end of the social economic spectrum. In addition, we find a negative association between the percent of female borrowers and the total number of borrowers, average loan size and with the microfinance institution being from Latin America.

This research contributes by illuminating the nature of MFIs and the importance of the role of gender and culture in finance and economic development. The results presented are robust to alternative estimates and help us better understand the nature of microfinance. While we leave it to others to explore more fully some of the implications of the findings presented in this paper, they should be of great interest to policy makers and scholars interested not only in the design and operation of microfinance institutions, but also in gender, culture, poverty reduction, ‘bottom of the pyramid’ customers, and economic and financial development.

References

Aggarwal, Raj, and John W. Goodell, (2009), "Markets and institutions in financial intermediation: National characteristics as determinants", *Journal of Banking and Finance* 33 (No. 10, October) pp. 1770-1780.

Agier, Isabelle, and Ariane Szafarz, (2011), Credit to women entrepreneurs: The curse of the trustworthier sex, Universite Libre de Bruxelles Working Paper CEB 11-005.

Agier, Isabelle, and Ariane Szafarz, (2013), "Microfinance and gender: Is there a glass ceiling in loan size?", *World Development* 42 (No. C) pp. 165-181.

Akerlof, George A., (1970), "The Market for Lemons: Quality Uncertainty and the Market Mechanism", *Journal of Economics* 84 (No. 3, August) pp. 488-500.

Armendariz, Beatriz , and Jonathan Morduch, (2000), "Microfinance beyond group lending", *Economics of Transition* 8 (No. 2, July) pp. 401-420.

Armendariz, Beatriz , and Jonathan Morduch, (2005), *The Economics of Microfinance* (MIT Press, Cambridge, Massachusetts).

Bauer, Michal, Julie Chytilova, and Jonathan Morduch, (2012), "Behavioral Foundations of Microcredit: Experimental and Survey Evidence from Rural India", *American Economic Review* 102 (No. 2, April) pp. 1118-1139.

Beck, Thorsten, Patrick Behr, and Andreas Madestam, (2011), Sex and credit: Is there a gender bias in microfinance?, Innocenzo Gasparini Institute for Economic Research Working Paper 411.

Beck, Thorsten, Asli Demirguc-Kunt, and Maria Soledad Martinez Peria, (2008), "Banking services for everyone? Barriers to bank access and use around the world", *World Bank Economic Review* 22 (No. 3, November) pp. 397-430.

Bernstein, Anita, and Hans Dieter Seibel, (2010), "Reparations, microfinance, and gender: A plan, with strategies for implementation", *Cornell International Law Journal* 44 (No. 1, Winter) pp. 75-114.

Bhatt, Nitin, Gary Painter, and Shui-Yan Tang, (1999), "Can microcredit work in the United States?", *Harvard Business Review* 77 (No.) pp. 26-27.

Bhatt, Nitin, and Shui-Yan Tang, (2001), "Making microcredit work in the United States: Social, financial, and administrative dimensions", *Economic Development Quarterly* 15 (No. 3, August) pp. 229-241.

Brau, James C., and Gary Woller, (2004), "Microfinance: A comprehensive review of the existing literature", *Journal of Entrepreneurial Finance and Business Ventures* 9 (No. 1) pp. 1-26.

Bruton, Garry D., Susanna Khavul, and Helmuth Chavez, (2011), "Microlending in emerging economies: Building a new line of inquiry from the ground up", *Journal of International Business Studies* 42 (No. 5, June/July) pp. 718-735.

Buckley, Peter J., and Mark Casson, (2002), "A Theory of Cooperation in International Business", in Farok J. Contractor, and Peter Lorange, (eds), *Cooperative Strategies and Alliances in International Business: Joint Ventures & Technology Partnership* (London: Pergamon).

Buvinic, Mayra, and Marguerite Berger, (1990), "Sex differences in access to a small enterprise development fund in Peru", *World Development* 18 (No. 5) pp. 695-705.

Chen, Shaohua, and Martin Ravallion, (2008), The developing world is poorer than we thought, but no less successful in the fight against poverty, World Bank Policy Research Working Paper 4703.

Cheston, Susy, and Lisa Kuhn, (2002), *Empowering women through microfinance* (UNIFEM)

Chui, Andy C.W., Alison E. Lloyd, and Chuck CY Kwok, (2002), "The determination of capital structure: Is national culture a missing piece to the puzzle?", *Journal of International Business Studies* 33 (No. 1, 1st Qtr) pp. 99-127.

Collins, Daryl, Jonathan Morduch, Stuart Rutherford, and Orlanda Ruthven, (2009), *Portfolios of the Poor: How the World's Poor Live on $2 a Day* (Princeton University Press, Princeton, New Jersey).

Conning, Jonathan, (1999), " Outreach, sustainability and leverage in monitored and peer-monitored lending", *Journal of Development Economics* 60 (No. 1) pp. 51-77.

Croson, Rachel T. A., and Nancy R. Buchan, (1999), "Gender and culture: International experimental evidence from trust games", *American Economic Review* 89 (No. 2, May) pp.

Cull, Rober, Asli Demirguc-Kunt, and Jonathan Morduch, (2007), "Financial performance and outreach : a global analysis of leading microbanks", *Economic Journal* 117 (No. 517, February) pp. F107-F133.

D'Espallier, Bert, Isabelle Guérin, and Roy Mersland, (2011), "Women and repayment in microfinance: A global analysis", *World Development* 39 (No. 5, May) pp. 758-772.

De Mel, Suresh, David McKenzie, and Christopher Woodruff, (2009), "Are women more credit constrained? Experimental evidence on gender and microenterprise returns", *American Economic Journal: Applied Economics* 1 (No. 3) pp. 1-32.

De Soto, Hernando, (2000), *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else* (Basic Books, New York).

Dessy, Sylvain, and Jacques Ewoudou, (2006), Microfinance and female empowerment, CIRPEE Cahiers de recherche Working Paper 0603.

Deutsch, Morton, (1960), "The effect of motivational orientation upon trust and suspicion", *Human Relations* 13 (No. 2, May) pp. 123-139.

Doney, Patricia M., Joseph P. Cannon, and Michael R. Mullen, (1998), "Understanding the influence of national culture on the development of trust", *Academy of Management Review* 23 (No. 3, July) pp. 601-620.

Field, Erica, and Rohini Pande, (2008), "Repayment frequency and default in microfinance: Evidence from India", *Journal of the European Economic Association* 6 (No. 2-3) pp. 501-509.

Fletschner, Diana, (2009), "Rural women's access to credit: market imperfections and intrahouseholds dynamics", *World Development* 37 (No. 3) pp. 618-631.

Fukuyama, Francis, (1995), *Trust: The Social Virtues and the Creation of Prosperity* (Free Press, New York).

Garmaise, Mark J., and Gabriel Natividad, (2010), "Information, the Cost of Credit, and Operational Efficiency: An Empirical Study of Microfinance", *Review of Financial Studies* 23 (No. 6) pp. 2560-2590.

Ghatak, Maitreesh, (1999), "Group lending, local information and peer selection", *Journal of Development Economics* 60 (No. 1) pp. 27-50.

Goetz, Anne Marie, and Rina Sen Gupta, (1996), "Who takes the credit? Gender, power, and control over loan use in rural credit programs in Bangladesh", *World Development* 24 (No. 1, January) pp. 45-63.

Gomez, Rafael, and Eric Santor, (2001), "Membership has its privileges: The effect of social capital and neighbourhood characteristics on the earnings of microfinance borrowers", *Canadian Journal of Economics* 34 (No. 4, November) pp. 943-966.

Greenwood, Jeremy , Juan M. Sanchez, and Cheng Wang, (2010), "Financing development: The role of information costs", *American Economic Review* 100 (No. 4, September) pp. 1875-1891.

Guerin, Isabelle, (2006), "Women and money: Lessons from Senegal", *Development and Change* 37 (No. 3, May) pp. 549-570.

Hofstede, Geert, (1980), *Culture's Consequences: International Differences in Work-Related Values* (Sage Publications, Newbury Park, California).

Hofstede, Geert, (2001), *Culture's Consequences* (Sage Publications, London).

Hofstetter, Shana, (2008), "The interaction of customary law and microfinance: women's entry into the world economy", *William and Mary Journal of Women and the Law* 14 (No. 2) pp. 337-361.

Karlan, Dean, and Jonathan Morduch, (2009), "Access to Finance", in *Handbook of Development Economics* (Amsterdam: Elsevier).

Karlan, Dean S. , and Jonathan Zinman, (2008), "Credit elasticities in less-developed economies: Implications for microfinance", *American Economic Review* 98 (No. 3) pp. 1040-1068.

Karlan, Dean S. , and Jonathan Zinman, (2009), "Observing unobservables: Identifying information asymmetries with a consumer credit field experiment", *Econometrica* 77 (No. 6, November) pp. 1993-2008.

Karlan, Dean S., and Jonathan Zinman, (2010), "Expanding credit access: Using randomized supply decisions to estimate the impacts", *Review of Financial Studies* 23 (No. 1) pp. 433-464.
Khandker, Shahidur R., (2005), "Microfinance and Poverty: Evidence Using Panel Data from Bangladesh", *World Bank Economic Review* 19 (No. 2) pp. 263-286.
La Porta, Rafael, Florencio Lopez-de-Silvanes, Andrei Shleifer, and Robert W. Vishny, (1997), "Trust in large organizations", *American Economic Review* 87 (No. 2, May) pp. 333-338.
Levine, Ross, (2005), "Finance and growth: Theory and Evidence", in Philippe Aghion, and Steven N. Durlauf, (eds), *Handbook of Economic Growth* (Amsterdam: Elsevier).
Lewicki, Roy J., and Barbara Benedict Bunker, (1995), "Trust in relationships, A model of development and decline", in Barbara Benedict Bunker, and Jeffrey Z. Rubin, (eds), *Conflict, Cooperation, and Justice* (San Francisco: Jossey-Bass).
Lyngdoh, Benjamin, and AP Pati, (2010), Micro credit as catalyst to women empowerment: Evidences and observations, Working paper.
Maclean, Kate, (2010), "Capitalizing on women's social capital? Women-targeted microfinance in Bolivia", *Development and Change* 41 (No. 3) pp. 495-515.
Mallick, Ross, (2002), "Development in Practice, Vol. 12, No. 2, May 2002, Oxford Implementing and evaluating microcredit in Bangladesh", *Development and Practice* 12 (No. 2, May) pp. 153-163.
Mersland, Roy, Trond Randøy, and Reidar Øystein Strøm, (2011), "The impact of international influence on microbanks' performance: A global survey", *International Business Review* 20 (No. 2, April) pp. 163-176.
Morduch, Jonathan, (1999), "The microfinance promise", *Journal of Economic Literature* 37 (No.) pp. 1569-1614.
Navajas, Sergio, and Luis Tejerina, (2006), Microfinance in Latin America and the Caribbean: How large is the market?, Inter-American Development Bank IDB publication 36799.
Petersen, Mitchell A., and G. Rajan Raghuram, (1994), "The benefits of lending relationships: Evidence from small business data", *Journal of Finance* 49 (No. 1, March) pp. 3-37.
Pitt, Mark M., and Shahidur R. Khander, (1998), "The impact of group-based credit programs on poor households in Bangladesh: Does the gender of participants matter?", *Journal of Political Economy* 106 (No. 5, October) pp. 958-996.
Prahalad, C. K., (2006), *The Fortune at the Bottom of the Pyramid* (Pearson Prentice Hall, Upper Saddle River, New Jersey).
Reeb, David, Mariko Sakakibara, and Ishtiaq P. Mahmood, (2012), "From the Editors: Endogeneity in international business research", *Journal of International Business Studies* 43 (No. 3, April) pp. 211-218.
Schreiner, Mark, (1999), "Self-employment, microenterprise, and the poorest Americans", *Social Service Review* 73 (No. 4, December) pp. 496-523.
Servon, Lisa J., (1997), "Microenterprise programs in U.S. inner cities: Economic development or social welfare", *Economic Development Quarterly* 11 (No. 2, May) pp. 166-180.
Stevenson, Lois, and Annette St-Onge, (2005), *Support for growth-oriented women entrepreneurs in Tanzania* (International Labour Organization).
Stiglitz, Joseph, (1990), "Peer monitoring and credit markets", *World Bank Economic Review* 4 (No. 3) pp. 351-366.
Tabellini, Guido, (2010), "Culture and institutions: Economic development in the regions of Europe", *Journal of the European Economic Association* 8 (No. 4, June) pp. 677-716.
Van Tassel, Eric, (1999), "Group lending under asymmetric information", *Journal of Development Economics* 60 (No. 1, October) pp. 3-25.
Webb, Justine W., Laszlo Tihanyi, R. Duane Ireland, and David G. Sirmon, (2009), "You say illegal, I say legitimate: Entrepreneurship in the informal economy", *Academy of Management Review* 34 (No. 3) pp. 492-510.
Williamson, Oliver E., (1985), *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting.* (Free Press, New York).

Table 1: Percent of women microfinance borrowers by country

This table presents the mean percent of women borrows in microfinance institutions by country for our sample as reported by www.mixmarket.org. The period of study ranges from 1996 to 2010 depending on data availability and the age of the microfinance institution**.**

Country	Mean	Country	Mean
Turkey	100.00	Russia	60.83
Bangladesh	95.08	Peru	60.42
Thailand	95.00	Trinidad and Tobago	59.99
Vietnam	93.49	Chile	58.02
India	92.41	Rwanda	57.33
Tanzania	87.68	Mali	56.79
Mexico	80.02	Kyrgyz Republic	53.68
South Africa	77.96	Georgia	50.85
China	77.78	Pakistan	50.71
Philippines	75.14	Ethiopia	50.49
Zambia	75.07	Brazil	50.01
Ghana	73.47	Indonesia	47.75
Dominican Republic	72.81	Serbia	46.67
Guatemala	71.96	Armenia	44.17
Ukraine	71.38	Uruguay	42.77
Jordan	70.42	Poland	39.93
Morocco	67.44	Moldova	37.77
Egypt	65.11	Bulgaria	36.53
El Salvador	64.89	Romania	34.78
Argentina	64.50	Azerbaijan	32.98
Burkina Faso	62.91	Albania	24.10
Colombia	62.68	Iraq	18.33
Bosnia and Herzegovina	62.67		

Table 2: Summary of variables and data sources used in this study

Variable	Mean	Standard Deviation	Coeff of Variation (Stdev/Mean)	Source
WOMEN	67.29	29.35	0.44	Percentage of women borrowers from www.mixmarket.org
SOC_TRUST	19.21	9.63	0.50	% responding "yes" to question whether most people can be trusted from World Values Survey
OUTREACH	0.77	0.85	1.10	Assigned "0" if small outreach, "1" if medium outreach; and "2" if large outreach according to www.mixmarket.org
TARGET	0.58	0.49	0.84	Dummy variable that is assigned "1" if microfinance institution is considered targeting toward "low end" by www.mixmarket.org.
NONPROFIT	0.65	0.48	0.74	Dummy variable that is assigned "1" if microfinance institution is designated "non profit" by www.mixmarket.org.
MARGIN	–0.91	84.75	93.13	Profit margin www.mixmarket.org
ROA	0.50	14.54	29.08	Return on assets www.mixmarket.org
NUM_BORR	88,454.48	473,769.6	5.36	Total number of borrows www.mixmarket.org
GROSS_LOANS	77.04	44.93	0.58	Gross loans to total assets www.mixmarket.org
LEV	11.75	335.27	28.53	Debt to equity www.mixmarket.org
OP_EFF	118.65	84.01	0.71	Operational self sufficiency www.mixmarket.org
AVG_LOAN	50.81	137.56	2.71	Average loan balance per borrower/GNI per capita www.mixmarket.org
LATIN_AM	0.26	0.44	1.69	Dummy variable that is assigned "1" if loan's country is from Latin America (including South America, Central America, Mexico and the Caribbean) and "0" otherwise.
WRITE_OFF	0.02	0.05	2.50	Percentage of loans written off from www.mixmarket.com
UAI	63.77	19.41	0.30	Cultural dimension of uncertainty avoidance from Hofstede (1980)
MAS	50.67	12.70	0.25	Cultural dimension of masculinity from Hofstede (1980)
IDV	26.32	12.24	0.47	Cultural dimension of individuality from Hofstede (1980)
PDI	75.43	11.84	0.16	Cultural dimension of power distance from Hofstede (1980)

Table 3: Cross-national differences in female participation in microfinance: Results of Huber and White regressions

This table reports results of Huber and White robust standard errors regressions. Dependent variable is the percentage of female microfinance borrowers from www.mixmarket.org. Independent variables are defined in Table 2. Variance inflation factors are less than 10 for all variables and models. The period of study ranges from 1996 to 2010 depending on data availability and the age of the microfinance institution.

	Model			
Dependent Variable: Percentage of women MFI borrowers	1	2	3	4
SOC_TRUST	–0.29*** (0.001)	–0.29*** (0.001)	–0.29*** (0.001)	–0.26*** (0.002)
OUTREACH	–0.54 (0.442)	–0.57 (0.412)	–0.57 (0.416)	–0.21 (0.765)
TARGET	21.89*** (0.000)	21.87*** (0.000)	21.83*** (0.000)	22.51*** (0.000)
LATIN_AM	–39.74*** (0.000)	–39.65*** (0.000)	–39.79*** (0.000)	–27.36*** (0.000)
NONPROFIT	8.32*** (0.000)	8.38*** (0.000)	8.38*** (0.000)	7.31*** (0.000)
LN_NUM_BORR	1.27*** (0.000)	1.30*** (0.000)	1.29*** (0.000)	0.92*** (0.010)
ROA	0.06 (0.361)	0.05 (0.392)	0.06 (0.319)	0.06 (0.299)
MARGIN	–0.01 (0.195)	–0.01 (0.176)	–0.01 (0.181)	–0.01 (0.228)
GROSS_LOANS	–0.00 (0.681)	–0.00 (0.742)	–0.00 (0.780)	–0.00 (0.681)
LEV		0.00 (0.265)	0.00 (0.286)	0.00 (0.253)
OP_EFF			–0.00 (0.138)	–0.00 (0.226)
AVG_LOAN				–0.02*** (0.000)
INTERCEPT	61.20*** (0.000)	60.82*** (0.000)	61.33*** (0.000)	64.69*** (0.000)
COUNTRY DUMMIES	yes	yes	Yes	yes
Observations	4098	4093	4092	3965
R-square	0.50	0.50	0.50	0.51
F-test	259.96*** (0.000)	254.42*** (0.00-)	250.02*** (0.000)	271.70*** (0.000)

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

Table 4: Cross-national differences in female participation in microfinance and the nature of trust: Behavioral versus economic trust countries

This table reports results of Huber and White robust standard errors regressions. Dependent variable is the percentage of female microfinance borrowers in 2009 from www.mixmarket.org. Independent variables are defined in Table 2. Variance inflation factors are less than 10 for all variables and models.

Dependent Variable: Percentage of women MFI borrowers	Prediction/Intentionality (behavioral trust)	Calculative/Capability (economic trust)
	High UAI/ Low MAS/ Low PDI	Low UAI/ High MAS/ High PDI
	1	**2**
RESID_SOC_TRUST	–1.52*** (0.000)	–0.05 (0.627)
LATIN_AM	3.21 (0.240)	–32.51*** (0.000)
OUTREACH	1.50** (0.018)	2.44*** (0.004)
TARGET	19.45*** (0.000)	17.07*** (0.000)
NONPROFIT	5.96*** (0.000)	8.27*** (0.000)
LN_NUM_BORR	–0.00*** (0.000)	–0.14 (0.732)
ROA	0.07 (0.325)	0.11** (0.033)
MARGIN	–0.01 (0.432)	–0.03*** (0.001)
GROSS_LOANS	0.04 (0.228)	0.03 (0.201)
LEV	–0.00 (0.955)	0.00 (0.459)
OP_EFF	–0.00 (0.598)	–0.00 (0.775)
AVG_LOAN	–0.06*** (0.000)	–0.09*** (0.000)
INTERCEPT	54.54*** (0.000)	63.10*** (0.000)
COUNTRY DUMMIES	Yes	yes
Observations	2290	2378
R-square	0.40	0.57
F-test	182.75*** (0.000)	243.30*** (0.000)

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

Table 5: Cross-national differences in female participation in microfinance and the nature of trust: Impact of the index of trust formation

This table reports results of Huber and White robust standard errors regressions. Dependent variable is the percentage of female microfinance borrowers in 2009 from www.mixmarket.org. Independent variables are defined in Table 2. Variance inflation factors are less than 10 for all variables and models.

Dependent Variable: Percentage of women MFI borrowers	**1**
RESID_SOC_TRUST	–1.17*** (0.000)
TRUST_FORM	3.54*** (0.000)
LATIN_AM	11.56*** (0.000)
OUTREACH	1.00 (0.181)
TARGET	20.94*** (0.000)
NONPROFIT	6.97*** (0.000)
LN_NUM_BORR	0.36 (0.390)
ROA	0.06 (0.368)
MARGIN	–0.01 (0.255)
GROSS_LOANS	0.05** (0.041)
LEV	0.00 (0.393)
OP_EFF	–0.00 (0.574)
AVG_LOAN	–0.05*** (0.000)
INTERCEPT	15.88*** (0.001)
COUNTRY DUMMIES	Yes
Observations	3293
R-square	0.51
F-test	239.80*** (0.000)

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