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Probability of Sustainability and Social Outreach of Microfinance Institutions

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Abstract

Prior studies have shown empirical evidence of either a tradeoff or a complementary relationship between financial performance and social outreach of a microfinance institution (MFI). To analyze this relationship, I consider the probability of attaining financial sustainability to be a more appropriate predictor of social outreach efforts of an MFI, than standard measures of financial performance. Using an unbalanced panel of 1210 MFIs over a period of 9 years, I estimate the probability of attaining financial sustainability for an individual MFI, utilizing a probit model. Next, I use the predicted probability and other control variables, to explain the variability of social outreach. The results of our study show that the better probability of financial sustainability has a positive effect on depth of outreach, breadth of outreach, and outreach to women.

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1. Introduction

A large portion of the world population have not been able to escape the vicious cycle of poverty. One of the many associated problems with the state of poverty is the dearth of access to funds, which could provide them with an avenue of entrepreneurship. Microcredit is a viable financial alternative for poor people with no access to credit from formal financial institutions, and it has been able to attain some of the objectives such as, eradication of poverty and empowerment of women, by fostering small-scale entrepreneurship through simple access to credit. Microfinance differentiates itself by allocating small loans to the poor, using non-traditional plans such as, group lending, progressive loan structures, immediate repayment plans, collateral-free loans, and collateral substitutes. While the primary goal of Microfinance Institutions (MFI) is to provide credit to poor borrowers, also known as social outreach, they also need to attain financial sustainability in order to wean themselves off donor subsidies.

The rest of the paper is organized as follows; section 2 provides a brief review of the literature; section 3 explains the importance of social outreach and the renewed emphasis on financial sustainability; section 4 describes the data and variables; section 5 details the model and the empirical results; and section 6 provides a summary and conclusions.

2. Literature Review

Morduch (1999) argued that the high recovery rate of loans in the microfinance industry did not translate into financial sustainability of MFIs, and was skeptical of the notion that financial sustainability would ensure better depth of outreach (Morduch; 2000). Sharma and Zeller (1997) and Zeller (1998), found that repayment performance decreased with the level of poverty in Bangladesh and Madagascar respectively, arguing that the poorest people are more susceptible to economic shocks and invest in activities with a lower rate of return. Navajas et al (2000) and Cull et al (2007) claimed that MFIs were extending loans to households that are near the poverty line, ignoring households that are much below the poverty line.

Navajas et al. (2000), Schreiner (2002), Rhyne (1998) and Von Pischke (1998) contend that greater transaction costs associated smaller loans results in a tradeoff between financial sustainability and depth of outreach, while Olivares-Polanco (2005) found evidence of a trade-off between outreach and sustainability. Manos and Yaron (2009) conclude that tradeoffs may exist between outreach and sustainability in the short-run but also mention that both may improve d over time due to of economy of scale, improved operational modes, and innovations. Paxton (2003) and Hartarska & Nadolnyak (2007) argue against the notion of trade-off, and Gonzalez and Rosenberg (2006) find no evidence of a trade-off. Quayes (2012; 2015) found empirical evidence of a complementary relationship between financial performance and depth of outreach. Kar (2012) showed that leveraging of equity has a negative effect on depth of outreach but has no statistically significant effect on breadth of outreach or outreach to women. Barry and Tacneng (2014) found that nonprofit non-governmental organizations have better social outreach than profit oriented MFIs. Finally, Abdullah and Quayes (2016) have shown a positive association between financial performance and outreach to women.

3. Sustainability and Outreach

The primary goal of MFIs is to provide extend credit to poor households that have little or no access to credit from the formal financial market. Some measures of the success of such a goal are the number of such borrowers, the proportion of female borrowers, and the poverty level of the borrowers. At the same time, another important goal of MFIs is to achieve financial self-sustainability and wean themselves off the legacy of donor subsidies.

3.1 Importance of Outreach

I use three measures of social outreach – depth of outreach, breadth of outreach, and outreach to women. Schreiner (2002) formally defined the concepts of depth of outreach and breadth outreach. Depth of outreach is a measure of penetration of credit access to the level of poverty; the poorer the borrower is, the greater the depth of outreach. Depth of outreach measures the amount of credit disbursement to the poorest borrowers. While the ideal measure of depth of outreach would be the average income or wealth of the borrowers, I use the size of loan as a proxy for income of the borrower. Hence, depth of outreach and average loan size are inversely related. Breadth of outreach measures the extension of credit; larger number of borrowers implies greater breadth of outreach. An increase in breadth of outreach may adversely affect depth of outreach when an MFI is expanding its portfolio in the same market. However, it will have no effect on depth of outreach if MFIs are undergoing geographic expansion. Majority of borrowers in the microfinance industry are women, and I define the proportion of female borrowers in an MFI's portfolio as outreach to women. I expect outreach to women to have a positive correlation with depth of outreach since most of the female borrowers (are poor and) receive small loans.

3.2 Importance of Financial Sustainability

The motivation for an emphasis on financial sustainability stems from the apprehension about the uncertainty of future flow of funds for MFIs that currently operate on subsidies. Financial sustainability would absolve these MFIs of their dependency on outside funding and subsidies, and guarantee continued operation of MFIs without the risk of any future reduction in their loan portfolio. Secondly, donor agencies planning on continued participation and supplying funds expect efficient utilization of their funds. Finally, emphasis on financial sustainability would allow the MFIs, to compete with traditional financial intermediaries, allowing the MFIS to diversify their asset-liability portfolio and have access to sources of funds from deposits.

MFI management is in a unique position to assess its prospect of financial sustainability on a regular basis. As a result, it may adapt the outreach portfolio to reflect its assessment of attaining financial sustainability for that fiscal year. While such assessment is private information to the MFI management, I attempt to estimate the probability of attaining financial sustainability by an MFI, from available data over a large panel of MFIs. After estimating the predicted probability, I can use it to analyze its effect on the social outreach of MFIs.

3.3 Sustainability Outlook and Outreach

The notion of a trade-off between outreach and sustainability of an MFI, gives rise to some apprehension, that a focus on financial sustainability may adversely affect the industry's primary mission of poverty alleviation. However, I concur with some recent empirical findings that dispel the notion of such a trade-off.

This paper examines how the management's outlook of financial sustainability affects the social goal of outreach of MFIs. MFI management may be in a position to assess the probability of financial sustainability and use it to formulate their outreach strategy. While such assessment is not public information, I utilize information on a panel of MFIs to estimate this probability and use it to make inference about its effect on social outreach. While there have been arguments in favor of a tradeoff between financial sustainability and outreach, I hypothesize that a higher probability will result in better depth of outreach, increased breadth of outreach, and greater outreach to women.

4. Description of Data and Variables

The study utilizes an unbalanced panel of 1210 MFIs from 100 countries spanning from the year 2003 to 2011. MIX Market, a web based platform that contains an extensive database of financial information for most of the microfinance institutions in the world, is the source of the data. The database has converted monetary values in local currency into in US dollars and reports the variables in US dollars.

MIX database defines operational self-sufficiency (OSS) as total financial revenue divided by the sum of financial expense, operating expense, and impairment loss. As such, an OSS value of 1 or greater indicates financial self-sufficiency (FSS), and I define a dummy variable FSS equal to 1 if OSS is greater than or equal to 1 and 0 otherwise. Next, I estimate the probability of FSS utilizing a probit model and define this probability as probability of attaining financial sustainability (PFS).

The central focus of this study is to demonstrate empirical evidence in support of the hypothesis that a better prospect of financial sustainability is positively associated with social outreach. I use three measures of social outreach – depth of outreach, breadth of outreach, and outreach to women. Average loan balance per borrower (ALB) represents the size of loans allocated by an MFI; it is the size of the loan when originated. A smaller ALB implies disbursement of smaller loans indicating better depth of outreach. Since the sample includes data from different countries, ALB divided by the gross national income per capita of the respective country, to normalize for the variation in income across countries. Following prior studies in the literature, I use average loan balance per borrower adjusted for GNI (ALBG) to measure the depth of outreach. I measure breadth of outreach by the number of active borrowers (NB) for the MFI. Finally, the fraction of borrowers that are women (WBR) represents the outreach to women by an MFI.

Size of the firm, measured by gross loan portfolio (LP) expressed in US dollars, may have a negative effect if an increase in portfolio size is due to diversification of portfolio by expanding into larger loans but it should not have any effect if it is simply due to geographic expansion. The same arguments holds for the effect of size on outreach to women. On the other hand, an increase in size should have a positive association with breadth of outreach.

Intuitively, a larger level of equity (EQ) should have a positive impact on social outreach, since greater equity may require MFIs to commit to specific outreach targets. Therefore, a larger level of total equity should have a positive impact on depth of outreach, breadth of outreach and outreach to women.

Smaller loans are usually associated with a larger per dollar loan expense. An increase in the total expense ratio (ER) should have favorable effect on depth of outreach. In other words, smaller the loan size would be associated with higher expense ratio. An increase in higher expense ratio should be associated with greater breadth of outreach. The effect of expense ratio on outreach

to women is ambiguous and I do not have any a priori assumption about its association with outreach to women.

Loan loss reserve ratio (LR), defined as loan loss reserve as a fraction of loan portfolio, is an indicator of anticipated loss from defaults, may discourage MFIs from being aggressive in their effort to extend depth of outreach, and hence it would be negatively associated with better depth of outreach. Anecdotal evidence indicates that small borrowers have better repayment record; this may motivate MFIs to increase their efforts in providing more small loans. On the other hand, LR may be negatively associated with breadth of outreach.

I use the dummy variable nonprofit (NP) which is equal to 1 if the MFI is a nonprofit organization and zero otherwise. The variable will allow us to identify whether nonprofit MFIs achieve better social outreach than for profit MFIs. I expect, nonprofit MFIs to achieve better social outreach in terms of depth of outreach, breadth of outreach, and outreach to women, than for profit MFIs.

Table I Descriptive Statistics

Variable	Average	Standard Deviation	Median	Minimum	Maximum
OSS	1.1805	0.3094	1.1343	-0.2874	2.9982
LP	42,257,237	232,860,028	5,332,463	562	10,018,228,234
EQ	10,338,592	46.4260	2.0603	4	1,807,154,084
ER	0.2442	0.1377	0.2120	0	1.6289
LR	0.0175	0.1841	0.0030	0	13.0655
NP	0.5246	0.4994	1.0000	0	1.0000
RG	0.6116	0.4874	1.0000	0	1.0000
PFS	0.7790	0.1606	0.8273	0.000006	0.9927
ALBG	0.6910	2.0745	0.2969	0.0010	94.7120
NAB	82448.39	453,405.50	11524.50	2	8,519,497
WBR	0.6570*	0.2760*	0.6515*	0	1.0000
N	6182				

* N=5525

From table 1, we can see that the average operation self-sustainability of the MFIs in our sample is 1.18 with a median of 1.13. Hence, a majority of the MFIs in our sample attain financial self-sufficiency. Although the average gross loan portfolio is about $42 million, the median MFI has a loan portfolio of $5.33 million. More than fifty percent of the MFIs in the sample are nonprofit and almost two-thirds of the borrowers are women. The median MFI has more than eleven thousand borrowers. As per our estimation, the median MFI has an estimated probability of attaining financial sustainability equal to 0.83. The ninetieth percentile MFI has an estimated probability of 0.92 while the tenth percentile has a probability of 0.72.

5. Model and Empirical Results

First, I estimate the following probit model and estimate the predicted probability (PFS) of attaining financial self-sufficiency, based on the results from the estimated model:

$$P(FSS_{it} = 1) = \Phi(\beta_0 + \beta_1 LP_{it} + \beta_2 EQ_{it} + \beta_3 TR_{it} + \beta_4 LR_{it} + \beta_5 RG_{it}) + u_{it} \quad (1)$$

where
LP = Log of gross loan portfolio
EQ = Log of total equity
ER = Total expense ratio
LR = Loan loss reserve ratio
RG = 1 if the MFI is regulated and 0 otherwise.

The focus of this study is to find an association between the probability of financial sustainability and the social outreach of an MFI. Equation 2 models the financial performance of MFIs as a function of probability of financial sustainability and other firm-specific characteristics:

$$SP_{it} = \alpha_i + \lambda PFS_i + \beta' M_{it} + \varepsilon_{it} \quad (2)$$

where, SP measures social performance; LS represents the prevailing legal system in the country; and M is a vector of MFI-specific control variables. To delineate the association between the legal system and the social performance of MFIs based on equation (2), I estimate the following panel regression model described by equation (3).

$$SP_{it} = \alpha_i + \beta_1 LP_{it} + \beta_2 EQ_{it} + \beta_3 ER_{it} + \beta_4 LR_{it} + \beta_5 NP_{it} + \beta_6 PFS_{it} + \varepsilon_{it} \quad (3)$$

where
SP = Social Performance measured by (i) log of average loan balance per borrower divided by per capital GNI (ALBG); (ii) log of number of borrowers (NAB); and (iii) proportion of female borrowers (WBR).
NP = 1 if MFI is not for profit and 0 otherwise
PFS = Predicted probability of achieving financial sustainability

Table II Probability of Sustainability and Social Outreach: Fixed Effects Model

Variable	Depth of Outreach	Breadth of Outreach	Outreach to Women
LP	0.0698***	0.6255***	-0.0146***
	(7.12)	(65.50)	(-3.56)
EQ	-0.0381***	0.0155	0.0011
	(-3.61)	(1.50)	(0.26)
ER	-1.4153***	1.5292***	0.2233**
	(-5.60)	(6.21)	(2.14)
LR	-0.016	0.0137	-0.0053
	(-0.62)	(0.55)	(-0.23)
PFS	-0.4358*	0.7616***	0.1734*
	(-1.84)	(3.30)	(1.76)
Constant	-1.0243***	-1.612***	0.6777***
	(-6.51)	(-10.53)	(10.49)

t-statistics are reported within parentheses
***Indicates statistical significance at the 0.01 level.
**Indicates statistical significance at the 0.05 level.

*Indicates statistical significance at the 0.10 level.

Table 2 reports the estimated coefficients for depth of outreach, breadth of outreach, and outreach to women, from the firm (MFI) fixed effects model and table 3 reports the estimated coefficients from the random effects model. I conducted the Hausman test and rejected the null hypothesis of consistent random effects estimators for each of the three measures of outreach. As such, I rely on the estimated coefficients from fixed models to interpret the results and make inferences.

Both models show that an increase in the estimated probability of attaining financial sustainability (PFS) results in a decrease in average loan balance per borrower (ALBG). The estimated coefficient is significant at the ten percent level in the fixed effect model, and this implies that a 0.01 increase in PFS would result in a 0.44% decrease in ALBG. The estimated coefficient of PFS in random effects model is significant at the one percent level, and an increase of 0.01 in PFS would result in a 0.90% decrease in ALBG. This indicates that an increase in PFS results in greater depth of outreach. While, it is encouraging that probability of better financial performance and depth of outreach have a positive association, it is also discouraging that worsening outcome of financial sustainability will push MFIs to reduce their depth of outreach.

Table III Probability of Sustainability and Social Outreach Random Effects Model

Variable	Depth of Outreach	Breadth of Outreach	Outreach to Women
LP	0.0845***	0.6405***	-0.0117***
	(8.83)	(68.57)	(-3.14)
EQ	-0.0276***	0.0093	-0.0093**
	(-2.66)	(0.92)	(-2.29)
ER	-2.1433***	1.6713***	0.4238***
	(-8.66)	(6.92)	(4.41)
LR	-0.0357	0.0188	-0.0013
	(-1.38)	(0.75)	(-0.05)
NP	-0.3759***	0.1580**	0.0775***
	(-6.03)	(2.26)	(5.20)
PFS	-0.9047***	0.8325***	0.3100***
	(-3.88)	(3.66)	(3.38)
Constant	-0.6895***	-2.0626***	0.5776***
	(-4.33)	(-13.10)	(9.67)

t statistics are shown within parentheses.
***Indicates statistical significance at the 0.01 level.
**Indicates statistical significance at the 0.05 level.
*Indicates statistical significance at the 0.10 level.

The second column from table 2 and table 3 lists the estimated coefficients for breadth of outreach. An increase in PFS results in an increase in the number of borrowers (NAB) or breadth of outreach. In both models, the estimated coefficient for PFS is statistically significant at the one percent level. For a 0.01 increase in PFS, we can expect a 0.76% increase in NAB as per the fixed effects model and a 0.83% increase according to the random effects model. From a policy

standpoint, it is encouraging to see that better financial performance prospect will result in greater breadth of outreach.

The estimated regression results for outreach to women measured by the proportion of women borrowers (WBR) reported in third column of tables 2 and 3, show that an increase in PFS results in an increase in WBR. The results are similar to the results for depth of outreach for both regression models. In the case of random effects panel model, the estimated coefficient for PFS is statistically significant at the one percent level, while it is significant at the ten percent level for the fixed effects panel model. For a 0.01 increase in PFS, we can expect a 0.0017 increase in the fraction of female borrowers according to the fixed effects model and 0.0031 increase according to the random effects model. The results indicate that an increase in PFS will result in a better outreach to women, while the reverse would be true for a decrease in PFS.

Size measured by gross loan portfolio (LP), has a positive effect on breadth of outreach, but a negative effect on depth of outreach and outreach to women. The level of equity has a positive effect on depth of outreach but its effect on either breadth of outreach or outreach to women is not statistically significant. Increased expenditure ratio is positively associated with all three measure of outreach. The estimated coefficient for loan-loss reserve ratio is not statistically significant. Finally, estimates from the random effects model indicates that that nonprofit MFIs achieve better depth of outreach, breadth of outreach, and greater outreach to women.

Table IV Probability of Sustainability and Social Outreach Hausman-Taylor Model

Variable	Depth of Outreach	Breadth of Outreach	Outreach to Women
LP	0.0756***	0.6341***	-0.0111***
	(8.08)	(69.46)	(-2.95)
EQ	-0.0369***	0.0119	-0.0034
	(-3.65)	(1.20)	(-0.84)
ER	-1.6544***	1.5735***	0.2901***
	(-6.79)	(6.63)	(2.93)
LR	-0.0187	0.0153	-0.0064
	(-0.75)	(0.63)	(-0.29)
NP	-0.4008***	0.1647*	0.0832***
	(-4.99)	(1.87)	(4.38)
PFS	-0.5158**	0.7744***	0.1924**
	(-2.25)	(3.47)	(2.03)
Constant	-0.8264***	-1.9374***	0.6061***
	(-5.13)	(-12.14)	(9.72)

t statistics are shown within parentheses.
***Indicates statistical significance at the 0.01 level.
**Indicates statistical significance at the 0.05 level.
*Indicates statistical significance at the 0.10 level.

The results reported in table 2 and table are based on the assumption of one-way causality between financial sustainability and social outreach. However, it could very well be that outreach variables also have an effect on financial sustainability. To address possible endogeneity in the models, I utilized the Hausman-Taylor panel regression model, which allows one or more

explanatory variables to be correlated with individual effects. It also captures the effect of time-invariant variables that fixed effects models cannot capture. The estimated coefficients of the Hausman-Taylor panel regression are reported in table 4. The results indicate that PFS has positive effect on depth of outreach, breadth of outreach, and the outreach to women. The estimated coefficients of PFS for all three measures of outreach are significant at the one percent level of significance.

For robustness check, I also utilized a one-step method, by running firm fixed effects model and random effects model panel regression using operational self-sufficiency (OSS) as an explanatory variable instead, of using the estimated probability of attaining financial sustainability (PFS). Results are reported in table A1 and table A2 of the appendix. The estimated coefficients of OSS for all three measures of outreach have the same sign as the estimated coefficients of PFS, in both the firm fixed effects model and the random effects model. Although the estimated coefficient of OSS is not statistically significant (in either the fixed effect model or the random effects model) for depth of outreach, estimated coefficients of OSS are significant at the one percent level for both models for breadth of outreach and outreach to women. This shows that while an increase in OSS does not have a negative effect on depth of outreach, it actually has a positive effect on breadth of outreach and outreach to women.

Finally, I also estimated the random effects model using country fixed effects. The results reported in table A3 of the appendix clearly shows that an increase in the probability of financial sustainability has a positive effect on the depth of outreach, breadth of outreach, and the outreach to women. The estimated coefficient of PFS in each of the three regression models is statistically significant the one percent level.

While financial outreach can affect outreach, it is very plausible that outreach may also affect financial sustainability. As a robustness check for the results, I estimated a Hausman-Taylor panel regression model, to address possible endogeneity of two-way causality between probability of attaining financial sustainability and social outreach, reported in table 4. PFS has a negative effect on average loan per borrower and the estimated coefficient if significant at the five percent level. The effect of PFS on number of borrowers and proportion of women borrowers is positive and significant at the one percent level. Hence, the results continue to show a positive relationship between probability of achieving financial sustainability and social outreach measured by depth of outreach, breadth of outreach, and outreach to women.

6. Conclusion

I estimate the probability of financial sustainability of an MFI and then utilize it to investigate its possible effect on social outreach. While there have been arguments in favor of a tradeoff between financial sustainability and outreach, I show empirical evidence that a higher PFS will result in better social outreach. Using panel regression models, I show that an increase in the probability of attaining financial sustainability results in increased depth of outreach, better breadth of outreach, and greater outreach to women. These results are robust to using a one-step estimation using OSS as the explanatory variable, including a country fixed effect, and using a Hausman-Taylor panel model to address possible endogeneity. These results refute the notion of tradeoff between social outreach and financial performance, and show empirical evidence of a positive association between social outreach and financial sustainability. However, the pressure of achieving financial sustainability may often induce MFIs facing lower probability of achieving financial sustainability, to deviate from their mission of social outreach.

References

Abdullah, S. and S. Quayes (2016) "Do Women Borrowers Augment Financial Performance of MFIs?" *Applied Economics* **48(57)**, 5593-5604.

Barry, T.A. and R. Tacneng (2014) "The Impact of Governance and Institutional Quality on MFI Outreach and Financial Performance in Sub-Saharan Africa" *World Development* **58(C)**, 1-20.

Cull, R., A. Demirguc-Kunt, J. Morduch (2007) "Financial Performance and Outreach: a Global Analysis of Leading Microbanks" *Economic Journal* **117**, 107–33.

Gonzalez, A. and R. Rosenberg (2006) "The State of Microfinance - Outreach, Profitability and Poverty: Findings from a Database of 2300 Microfinance Institutions" http://dx.doi.org/10.2139/ssrn.1400253

Hartarska, V. and D. Nadolnyak (2007) "Do Regulated Microfinance Institutions Achieve Better Sustainability and Outreach? Cross Country Evidence" *Applied Economics* **39(10-12)**, 1207-22.

Kar, A.K. (2012) "Does Capital and Financing Structure Have Any Relevance to the Performance of Microfinance Institutions?" *International Review of Applied Economics* **26(3)**, 329-48.

Manos, R. and J. Yaron (2009) "Key Issues in Assessing the Performance of Microfinance Institutions" *Canadian Journal of Development Studies* **29**, 101–22.

Morduch, J. (1999) "The Microfinance Promise" *Journal of Economic Literature* **37**, 1569–614.

Morduch, J. (2000) "The Microfinance Schism" *World Development* **28**, 617–29.

Navajas, S., M. Schreiner, R.L. Meyer, C. Gonzalez-Vega, and J. Rodriguez-Meza (2000) "Microcredit and the poorest of the poor: theory and evidence from Bolivia" *World Development* **26**, 333–46.

Olivares-Polanco, F. (2005) "Commercializing Microfinance and Deepening Outreach? Empirical Evidence from Latin America" *Journal of Microfinance* **7(8)**, 47-69.

Paxton, J. (2003) "A Poverty Outreach Index and its Application to Microfinance" *Economics Bulletin* **9**, 1–10.

Quayes, S. (2012) "Depth of Outreach and Financial Sustainability of Microfinance Institutions" *Applied Economics* **44(25-27)**, 3421-3433.

Quayes, S. (2015) "Outreach and Performance of Microfinance Institutions: A Panel Analysis" *Applied Economics* **47(18)**, 1909-1925.

Rhyne, E. (1998) "The Yin and Yang of Microfinance: Reaching the Poor and Sustainability" *Microbank Bulletin* **2**, 6–8.

Sharma, M. and M. Zeller (1997) "Repayment Performance in Group Based Credit Programs in Bangladesh: An Empirical Analysis" *World Development* **25**, 1731–42.

Schreiner, M. (2002) "Aspects of Outreach: A Framework for Discussion of the Social Benefits of Microfinance" *Journal of International Development* **14**, 591–603.

Von Pischke, J. D. (1998) “Measuring the Tradeoff between Outreach and Sustainability of Micro-enterprise Lenders” *Journal of International Development* **8**, 225–39.

Zeller, M. (1998) “Determinants of Repayment Performance in Credit Groups: The role of Program Design, Intragroup Risk Pooling, and Social Cohesion” *Economic Development and Cultural Change* **46**, 599–620.