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It's Not What You Know, It's Who Knows What You Know: An Econometric Analysis of the Effectiveness of Microfinance in the Presence of Endogenous Peer Effects

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This study shows how social capital affects the outreach and operational self-sufficiency of microfinance institutions (MFIs) around the world. Defining social capital as social networks, social norms, and trustworthiness, this research merges quantitative data from the Microfinance Information Exchange and World Values Survey to empirically test a which aspects of social capital have the greatest influence on MFI performance in the presence of an endogenous peer effect between MFIs. Regression results show that aspects of social capital have a direct influence on MFI performance, suggesting a tradeoff between outreach and sustainability, and display a strong endogenous peer effect.

Keywords: Social Capital, Microfinance, Social Networks, Endogenous Peer Effect

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1. Introduction

This paper examines the role of social capital in the battle against poverty, by quantifying the effects of different measures of social capital on the effectiveness of microfinance institutions (MFIs). We evaluate MFI performance data from the Microfinance Information Exchange (the MIX), explaining MFI performance as a function of social capital and context, while controlling for other factors.

Mohammed Yunus crafted the idea of microfinance in the 1970s to deal with high transactions costs for the poor, who have little collateral and who are best served by multiple small loans (Woolcock and Narayan, 2000). Although there is debate over the impact of MFIs on economic conditions in developing countries, there is evidence that microfinance has a positive effect on poverty (e.g., Chowdury et al. 2005, Hiatt and Woodworth, 2006; Pitt and Khandker, 1998; Cheston, 2002). However, current studies of comparative effectiveness between MFIs all omit the critical role of social capital, or the peer effects caused by other MFIs in the same nation.

Our work models two desirable outcomes, microfinance outreach and operational self-sufficiency, as simultaneously determined by social capital and other explanatory variables, including an endogenous peer effect. The results reflect on the tradeoffs between outreach and self-sufficiency, with suggestions about how MFIs might consider the spillover effects of their choices on other MFIs.

Section 2 reviews the relevant literature, building a definition of social capital. Section 3 describes our data and regression modeling technique. Section 4 presents the regression results, while Section 5 outlines the limitations of the study and makes recommendations for future researchers and policymakers.

2. Literature

In extending loans to any individual, MFIs are simultaneously confronted with two frequently conflicting objectives: reaching the poor, and maintaining the financial sustainability of the organization. The balance is challenging, and less than two percent of MFIs are financially sustainable (Hermes et al., 2011). Due to this dilemma, many MFIs experience mission drift, gradually focusing on giving fewer larger loans to wealthier clients, in order to secure repayment rates and minimize transactions costs.

Social capital may help to forward both objectives simultaneously. Wydick et al. (2011) showed that a household's access to credit in rural Guatemala is closely related to church networks, even accounting for other proxies of networking. Okten and Osili (2004) measure the effects of family and community networks on access to MFIs in Indonesia, demonstrating that networks help to provide information, lower search costs, and enforce loan repayment for the potential microfinance client.

Since Hanifan's (1916) introduction of the term "social capital", scholars have debated the complex definition (e.g., Coleman, 1988; Putnam et al., 1993; Woolcock and Narayan, 2000; Fafchamps, 2007). For our purposes, we concentrate on social capital as those three features fundamental to human relationships— social networks, social norms, and trustworthiness—which may help a community to achieve economic development. The challenge, of course, is to operationalize that definition in a meaningful and potentially quantitative manner.

Evidence of the impact of these factors is strong, among academics creative enough to measure it effectively. Fafchamps and Minten (2002) used a survey of Madagascan agricultural traders to measure the effect of social networks on firm

productivity, revealing that farmers were able to minimize transaction costs by networking with clients and suppliers to obtain price information, increasing their gross margin by 60%. Miguel and Kremer (2007) demonstrated that social interactions, specifically between children who had already taken a drug and those who had not, decreased the likelihood of that child adopting the drug, presumably because many teenagers had unpleasant side-effects during treatment. Conley and Udry (2003) find that farmers in Ghana were more likely to adopt a new technology if they had heard about its success from a nearby neighbor with whom he or she shares information regularly. McMillan and Woodruff (1999) conclude that trade credit is more likely to be offered when (a) the supplier has information about a customer's reliability through investigation or previous experience or (b) the supplier belongs to a network of similar firms that provide information about the customer and helps to sanction bad customers. Putnam et al. (1993) use social networking variables like voter turnout, newspaper readership, membership in societies and clubs and confidence in public institutions to explain the discrepancy between economic development in northern and southern Italy. Munshi and Myaux (2006) found that the adoption of contraceptive techniques in Bangladesh, a society that uses traditional norms to regulate fertility, was strongly dependent upon the interactions between women within religious groups in particular. In short, the configuration of a quantitative variable to approximate social capital depends on context, but frequently tells an important story about outcomes.

3. Data and model

We aim to model two measures of MFI performance, outreach and financial sustainability, in separate but related regressions. Thus, the two dependent variables are

"outreach", measured as the percentage of the national population enrolled in a microfinance program, and "sustainability", calculated as the operational self-sufficiency ratio or revenue over operating expenses (following Luzzi and Weber, 2008). Both measures are obtained from the MIX, a nonprofit organization that collects and shares financial, product, client and social performance data from international MFIs (MIX, 2010). In particular, we use pooled data on 1926 MFIs operating in 115 nations between 1995 and 2011, merged with World Bank population data and measures of social capital constructed using the World Values Survey Five Wave Aggregated File (WVS, 2011), which included survey information from 54 relevant countries conducted between 1981 and 2008. We assume that WVS respondents were representative of their time and place, which naturally may be an unrealistic assumption.

Further, we were constrained in the choice of social capital variables, as many were highly correlated, so we settled on seven that are largely empirically independent, as listed in Table 1. The first four variables represent the social networking component of social capital: education, number of children, religious attendance, and technology. Several authors point to church and school as an important hub for social networks (Wydick et al., 2011; Miguel et al., 2007; Hanifan, 1916). Although the technology variable is technically a measurement of internet usage, it also represents cellphone prevalence because internet and cellphone usage data were highly collinear.

The next two variables, importance of family and friends, represent social norms. As seen in the literature (Munshi and Myaux, 2006), populations that consider friends and family to be very important are likely to interact differently than those who have a lesser opinion of family and friends. Finally, the trust variable represents the third and

final important aspect of social capital. To measure the level of trust in a population, the WVS included the question, "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" to which respondents could answer by saying, "Most people can be trusted," "Can't be too careful," or "Don't know." Although trust seems qualitative in nature and difficult to quantify, this question from the WVS provided quantitative data reflecting the overall levels of trust in a population.

Table 1: Social Capital variables

Variable Name	Description
Education	Average level of education per person in a population with 1 being the lowest (Inadequately completed elementary education) and 8 being the highest (University degree/ higher education).
Number of Children	Average number of children per adult in a population (ranging from 0 to 8).
Religious Attendance	Average religious attendance in a population ranging from more than once a week to practically never.
Technology	Percent of population that uses internet or email on a weekly basis.
Importance of Family	Percent of population that labeled family as very important in life.
Importance of Friends	Percent of population that labeled friends as very important in life.
Trust	Percentage of population that believes most people can be trusted, generally speaking.

Next, we included seven independent variables to serve as control variables. In 2009 the Consultative Group to Assist the Poor (CGAP) published a guide that defines key measures of performance in the field of microfinance, listing five categories that should be addressed when discussing MFI performance:

1. Sustainability/ Profitability
2. Asset/ Liability Management
3. Portfolio Quality

4. Efficiency/ Productivity
5. Outreach.

Table 2 describes the explanatory control variables we were able to construct, according to their CGAP category.

Table 2: MFI Performance variables

Variable Name (& connection to CGAP objective)	Description
Profit Margin (1)	Net operating income divided by financial revenue, to reflect the amount of profit over and above costs.
Profit Status (1)	Indicator variable only, of whether or not an MFI is listed as for-profit and records an above-average financial revenue ratio (financial revenue divided by assets).
Debt-to-Equity Ratio (2)	Total liabilities divided by total equity, to reflect the proportion of debt an MFI uses to finance its assets.
Borrowers per Staff (4)	The number of active borrowers divided by the number of personnel working at an MFI.
Mature Age (5)	Indicator variable only, of whether or not an MFI has been operating for 8 or more years.
Large Outreach (5)	Indicator variable only, of whether or not an MFI makes a large active attempt to target, attract, serve, retain, or otherwise interact with a clientele in selected populations, geographic areas, or targeted initiatives.
Personnel (5)	The total number of staff working at an MFI.

We have two explanatory variables to address the first CGAP category, measured roughly as profit margins and an indicator of above-average profitability. While the debt-to-equity ratio is perhaps not a perfect proxy for the second CGAP category, relating to an MFI's ability to manage its assets and liabilities, it was the best instrument available. We were unable to include any measures of the third CGAP category (portfolio quality) as they all proved to be collinear with other variables already included. The fourth category, efficiency and productivity, reflects "how efficiently an MFI is using its

resources, particularly its assets and personnel," (Gutierrez-Nieto et al., 2007) and measures were collinear here for most variables as well. We finally settled on borrowers per staff member as an imperfect measure of efficiency. Finally, CGAP considers breadth and depth of outreach as a fifth component of success, so we proxy carefully for those objectives using three variables.

Table 3 presents summary statistics of all variables. Average education was about 4.3, representing completion of secondary school, but with the high standard deviation, roughly half of the population has not finished secondary school. Average religious attendance was about 3.5 with a standard deviation of 1.14, suggesting that the population is largely divided between those who are attend religious observances on a regular basis and those who only attend on a monthly or yearly basis.

Similarly, although the average number of children was 2.1, the average standard deviation was actually 1.89, representing WVS answers that ranged from 0 to 8 or more children. Average technology use, measured as the percentage of the population that uses internet or email on a weekly basis, was 9% and peaked at only 34%. If not for multicollinearity problems with other variables, cell phone usage data may have provided a better representation of technology usage.

MFI performance variables show some regularities as well: average profit margins are negative, debt-to-equity ratios are high and highly variable (even negative in the not infrequent cases where equity actually has a negative value recorded), and measures of staff (or staff per borrower) indicate that we are dealing with relatively small but highly disparately staffed organizations.

Table 3: Summary Statistics

Variable Name	Observations	Mean	Std. Dev.	Min.	Max.
Social Capital Variables					
Education	4355	4.27	0.90	2.24	6.54
Number of Children	4355	2.13	0.52	1.05	3.96
Religious Attendance	4355	3.51	1.14	1.37	7.57
Technology	4355	0.09	0.10	0.00	0.34
Importance of Family	4355	0.99	0.01	0.95	1.00
Importance of Friends	4355	0.83	0.11	0.53	0.99
Trust	4355	0.18	0.09	0.03	0.53
MFI Performance Variables					
Profit Margin	4355	-0.10	5.44	-152.16	298.29
Debt-to-equity-ratio	4355	12.80	330.54	-1331.03	21050.21
Borrowers per Staff	4355	132.58	189.93	0.00	7577.59
Personnel	4355	185.71	468.99	1.00	12814.00
		Number of zeroes			
Mature Age	4355	1857 (43%)		0	1
Profit Status	4355	3574 (82%)		0	1
Large Outreach	4355	3584 (82%)		0	1

As a further contribution to the literature, the MFI performance variables are also used to test for an endogenous peer effect. To do so, we define a peer group as all MFIs operating in the same nation, excluding the MFI under observation. We emulate the two-stage modeling work of Manski (1993) to estimate how the behavior of a group of MFIs affects the behavior of an individual MFI operating in the same region. In the first stage, each firm-level MFI performance variable was regressed on all nation-level social capital variables. Predicted values of this regression are then used averaged by peer group (excluding the firm under observation), and used in the second-stage regression to help explain firm-level outcomes, alongside nation-level social capital variables. We avoided the linear variation problem as identified by Manski (1993) by logging all variables in the

second stage of the analysis. Mathematically then, for every firm *i* out of *m* overall firms, valuated at time *t*, using *j* (=7) indicators of social capital and k (=7) indicators of own-firm or peer performance, the estimated model is:

$$performance_{i,k,t} = \alpha_0 + \sum \alpha_j socialcapital_{i,j,t} + u \quad (1)$$

$$peereffect_{i,k,t} = {(\sum \widehat{performance}_{m,k,t} - performance_{i,k,t})}/{m} \quad (2)$$

$$\%\Delta(outcome)_{i,t} =$$

$$\beta_0 + \sum \beta_j \log (socialcapital)_{i,j,t} + \sum \gamma_k \log (performance)_{i,k,t-1} +$$

$$\sum \delta_k peereffect_{i,k,t} + e_i + \varepsilon \quad (3)$$

where the outcome variables are outreach and sustainability, while performance variables (and therefore the endogenous peer effect variables) and social capital variables are summarized in Tables 2 and 3 above. Notice that we include a firm-specific error term in the second stage of analysis as well. We performed appropriate corrections for heteroskedasticity, removed all variables that presented multicollinearity concerns (as outlined above), and are reasonably assured that residuals are normally distributed (although they are slightly skewed in the "outreach" regression).

4. Results

The results of the second-stage regression are presented in Table 4 here (and the results of the first stage are available from the authors on request). Notice that both outcome variables, outreach and sustainability, are presented side-by-side for their own separate results.

First, it is clear that social capital (or the infrastructure for which they proxy) are for the most part statistically significant in their relationship with outcomes. In

accordance with intuition, MFIs tend have larger outreach and are more sustainable where there are larger family sizes, where friends are reported as more important

Table 4: Regression results

	Outreach			Sustainability		
Variable Name	Coefficient	Z-Stat	% Change	Coefficient	Z-Stat	% Change
Social Capital						
Education	-4.93E-04	-1.15	-1.25	3.49E-02	0.39	1.42E-02
Number of Children	2.77E-03	5.77***	7.05	0.50	4.48***	0.28
Religious Attendance	-3.66E-04	-1.24	-0.93	-8.27E-02	-1.49	-2.87E-02
Trust	-2.26E-04	-2.70***	-0.57	-4.30E-02	-2.80***	-1.65E-02
Importance Family	-1.91E-02	-1.01	-47.86	8.89	2.19**	1622.43
Importance Friends	2.65E-03	2.96***	6.75	0.72	3.92***	4.40E-01
Technology	3.95E-03	4.17***	10.02	1.071	4.67***	4.54E-01
MFI Performance						
Profit Margin	-4.31E-04	-2.43**	-1.09	2.43	1.62	55271.80
Debt to Equity Ratio	1.13E-05	0.16	2.87E-02	1.11E-02	0.48	4.66E-03
Borrowers per Staff	9.29E-05	6.54***	0.24	4.04E-02	6.96***	1.90E-02
Mature Age	1.04E-04	2.88***	7.22E-03^	2.51E-02	3.13***	2.51E-02^
Large Outreach	3.19E-04	5.14***	2.21E-02^	1.20E-02	1.20	1.20E-02^
Profit Status	7.45E-06	0.25	5.16E-04^	8.25E-03	1.09	8.25E-03^
Personnel	2.22E-04	16.61***	0.56	8.81E-03	2.77***	3.60E-03
Endogenous Effects						
Profit Margin	-4.66E-04	-1.19	-1.18	-0.26	-2.80***	-7.89E-02
Debt to Equity Ratio	-6.19E-04	-10.62***	-1.57	-2.35E-02	-1.66*	-8.52E-03
Borrowers per Staff	-1.49E-03	-5.31***	-3.75	-0.26	-4.14***	-2.75E-02
Mature Age	2.22E-05	3.57***	5.63E-02	1.23E-02	3.36***	4.77E-03
Large Outreach	-5.48E-03	-3.16***	-13.90	-1.02	-2.97***	-0.30
Profit Status	-4.09E-03	-2.19**	-10.38	-0.39	-0.94	-0.14
Personnel	1.52E-04	3.30***	0.39	7.13E-03	1.84*	2.89E-03
Constant	2.26E-02	1.75*		-17.02	-2.20**	
Number of Observations		4355			4802	
Wald Chi-Squared		596.14			520.09	
R-Squared		0.433			0.182	

*Significant at 90%

**Significant at 95%

***Significant at 99%

^ Binary variable measured as "percent change when variable is present"

(reminiscent of Munshi and Myaux, 2006) and where technology is more present. However, education, religious attendance and the importance of family have insignificant impacts on the outcome variables, unlike Kremer and Miguel (2007). In fact, counter-intuitively, in societies where family is deemed more important, MFIs tend to actually be less sustainable (perhaps due to competing informal credit markets within extended families). The surprisingly large coefficient on the family variable may have been caused by the variable itself, which shows (unsurprisingly) very small variation across cultures in the WVS data.

Second, in terms of firm-specific attributes there are some interesting results here as well. More mature firms have better outreach and sustainability (reflecting survivor bias among other effects), and larger firms as measured by personnel or by borrowers per staff, also see better outcomes in both dimensions, suggesting economies of scale. However, the debt-to-equity ratio and profit status of each MFI seems to be insignificant for both outcomes. We find it provocative that large outreach MFIs are not statistically more sustainable, controlling for other factors, suggesting that economies of scale aren't themselves sufficient to drive success. Interestingly, the measure of profit margin augurs against outreach but doesn't add significantly to sustainability, suggesting that a modest profit margin might be best for all concerned (although it doesn't seem to matter whether the MFI has non-profit status).

Finally, the endogenous peer effects are most interesting of all. Peers with large profit margins threaten the sustainability of all other MFIs, suggesting a social reason to encourage low profit margins, alongside the private motivation. Here, the debt-to-equity ratio matters, with higher debt associated with less effective outcomes for all peer MFIs.

In coordination with the fact that own-debt ratios don't appear to have an effect on single-firm outcomes, this suggesting an argument for policy to restrict debt-equity ratios in the interest of the industry at large. Even worse, the number of borrowers per staff member and the measure of large outreach both weigh in negatively via peer effects, while they were neutral or even highly positive attributes at the firm level. This may very well lead to an (inadvertent) beggar-thy-neighbor strategy by firms acting in their own best interests. On the positive side however, large and mature firms (as measured by seniority and personnel) give credibility to their peer MFIs, dragging them upward in both outcome metrics by their own existence.

5. Discussion and Conclusions

This study explores how social capital and peer effects influence an MFI's outreach and operational self-sufficiency. Wydick et al. (2011) show that social capital impacts the spread and accessibility of microfinance, and this current study confirms that result with international data while controlling for peer effects. Further, we quantified statistically significant peer effects related to peer profitability, age, debt ratio and size, effects which clearly document a spillover effect of individual MFI behavior on the sector as a whole.

There are obvious data limitations in our work, which suggest lines for further research. For example, multicollinearity was a very real empirical challenge in separating sustainability/ profitability from efficiency from outreach. Clearly, variables that proxy for social capital (using the WVS) are prone to mis-measurement or sample selection errors. The merge between WVS and MIX data necessitated the loss of many observations from both sets, and it is unclear that the omissions are randomly distributed.

As a result, our single most potent suggestion for further research is the same refrain of every research paper: find more data.

This research documents the effect of peer MFIs (i.e., those operating in the same country) on each other's outcomes, but future studies might explore more local peer groups, or might examine how MFI clients operating in the same country affect each other.

In conclusion, this study shows that MFIs can increase outreach and improve sustainability by leveraging certain elements of social capital. It also supports literature surrounding the "mission drift" phenomenon by showing that an increased focus on profits may hurt outreach. Finally, we find strong endogenous peer effects, suggesting that coordination of effort or even policy restrictions might have the potential to improve outcomes for all MFIs in a nation.

6. Bibliography

Cheston, Susy. "Empowering Women Through Microfinance." Report, *Opportunity International* (2002): 30-39.

Chowdhury, M. Jahangir Alam, Dipak Ghosh, and Robert E. Wright. "The Impact of Micro-credit on Poverty: Evidence from Bangladesh." *Progress in Development Studies* 5 (2005): 298-309.

Coleman, James S. "Social Capital in the Creation of Human Capital." *The American Journal of Sociology* 94, Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure (1988): 95.

Conley, Timothy G. and Christopher R. Udry. "Learning About a New Technology: Pineapple in Ghana." *The American Economic Review* 100, no. 1 (2003): 35-69.

Consultative Group to Assist the Poor. "Participant Course Materials, Financial Analysis for Microfinance Institutions," 2008 internet online, Available from http://www.cgap.org/gm/document-1.9.9603/FA%20summary%2008.pdf, [December 14, 2011].

Fafchamps, Marcel. "Development and Social Capital." *Global Poverty Research Group* (2007): 1-34.

Fafchamps, Marcel and Bart Minten. "Returns to Social Network Capital Among Traders." *Oxford Economic Papers* 54, no. 2 (2002): 173-206.

Ferro-Luzzi, Giovanni and Sylvain Weber. "Measuring the Performance of Microfinance Institutions." *Working Paper* (2006): 1-17. Available online at http://ssrn.com/abstract=918750.

Hanifan, L. J. "The Rural School Community Center." *Annals of the American Academy of Political Science* 67 (1916): 130.

Hermes, Niels and Robert Lensink. "Microfinance: Its Impact, Outreach, and Sustainability." *World Development* 39, no. 6 (2011): 875-881.

Hermes, Niels, Robert Lensink, and Aljar Meesters. "Outreach and Efficiency of Microfinance Institutions." *World Development* 39 no. 6 (2011): 938-948.

Hiatt, Shon and Warner Woodworth. "Alleviating Poverty Through Microfinance: Village Banking Outcomes in Central America." *The Social Sciences* 43, no. 3 (2006): 471-477.

Kremer, Michael and Edward Miguel. "The Illusion of Sustainability." *The Quarterly Journal of Economics* 122, no. 3 (2007): 1007.

Manski, Charles F. "Identification of Endogenous Social Effects: The Reflection Problem." *The Review of Economic Studies* 60, no. 3 (1993): 531-542.

Manski, Charles F. *Identification Problems in the Social Sciences*. Cambridge: Harvard University Press, 1995.

McMillan, John and Christopher Woodruff. "Interfirm Relationships and Informal Credit in Vietnam." *The Quarterly Journal of Economics* 114, no. 4 (1999): 1285-1320.

MIX Market, 2010 internet on-line, Available from http://www.themix.org/about-mix/about-mix, [December 6, 2011].

Munshi, Kaivan and Jacques Myaux. "Social Norms and the Fertility Transition." *Journal of Development Economics* 80, no. 1 (2006): 1-38.

Gutiérrez -Nieto, Begoña, Carlos Serrano-Cinca, and Cecilio Mar Molinero. "Microfinance Institutions and Efficiency." *Omega* 35, no. 2 (2007): 131-142.

Okten, Cagla and Una Okonkwo Osili. "Social Networks and Credit Access in Indonesia." *World Development* 32, no. 7 (2004): 1225-1246.

Pitt, Mark and Shahidur Khandker. "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 (1998): 958-996.

Putnam, Robert, Robert Leonardi, and Raffaella Y. Nanetti. *Making Democracy Work:*

Civic Traditions in Modern Italy. New Jersey: Princeton University Press, 1993.

Sundeen, Lisa. "Relationships Matter: Social Capital and Microfinance." Thesis, The Colorado College (2011).

Woolcock, Michael and Deepa Narayan. "Social Capital: Implications for Development Theory, Research, and Policy." *The World Bank Research Observer* 15, no. 2 (2000): 225-249.

World Values Survey, 2011 internet on-line, Available from http://www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_46 [December 6, 2011].

Wydick, Bruce, Harmony Karp Hayes, and Sarah Hilliker Kempf. "Social Networks, Neighborhood Effects, and Credit Access: Evidence from Rural Guatemala." *World Development* 39, no. 6 (2011): 974-982.