

ALL THAT GLITTERS: A META-ANALYSIS OF MICROFINANCE IN THE DEVELOPING WORLD

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ABSTRACT

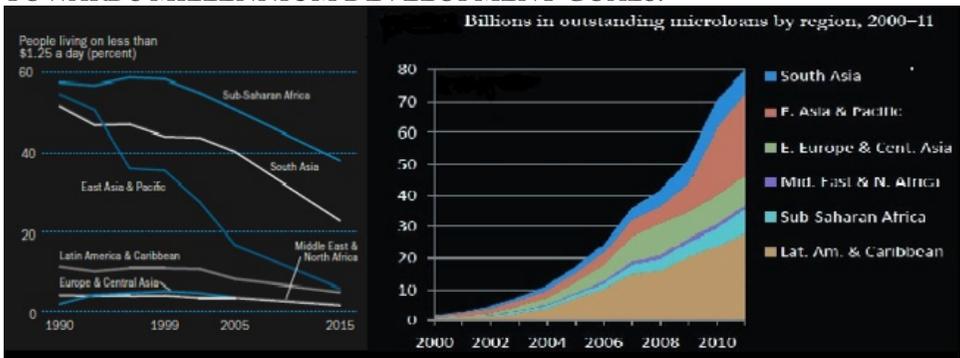
Microfinance has become a popular tool over the last several decades to fight poverty in the developing world. In a meta-analysis combining data from randomized field experiments, quasi-experiments, and market reports from 38 Microfinance Institutions in Africa, Asia, North America, and South America, this paper tests the hypothesis that microfinance alleviates poverty.

Ordinary least squares regression was used to determine poverty rate changes associated with usage of two types of microfinance products: micro-savings & micro-loans. The rate changes were observed over periods of time ranging from two to seven years. The regression showed that on average, micro-loans were associated with a 1.6 percentage point reduction in poverty rates. Micro-savings programs were associated with a 3.19 percentage point reduction in poverty rates. Yet, high standard errors made neither finding statistically significant. Results suggest that in at least in the short-term, microfinance will not significantly reduce poverty.

I. BACKGROUND AND THEORY OF MICROFINANCE

Microfinance is the introduction of formal financial institutions & products into impoverished communities to increase wealth in those communities through use of financial services by the unbanked poor. Its modern history goes back decades when philanthropists in South America and Asia began making loans to low-income groups to start businesses.¹ In 1983 Muhammad Yunus founded one of the first, and to date most successful, microfinance institutions (MFIs), The Grameen Bank in Bangladesh.² Decades later he would win the Nobel prize for his efforts. Today, enthusiasm for microfinance is at record levels from international development stakeholders. Governments and organizations including the United Nations, The World Bank, non-government organizations (NGOs) herald microfinance’s ability to reduce poverty.³ Microfinance funding is at record levels while traditional indicators suggest a decline in poverty rates worldwide.

FIGURE 1. GROWTH IN MICROFINANCE LOANS AND PROGRESS TOWARDS MILLENNIUM DEVELOPMENT GOALS.



Source: The Mix.org & The World Bank^{4,5}

While slowly growing in popularity since its inception, interest in microfinance expanded dramatically when 189 governments signed the Millennium Declaration in the year 2000.⁶ The Millennium Development Goals were meant to be both an umbrella framework to coordinate anti-poverty programs and be a benchmark to judge their success; and Goal

- 1 Global Envision, The History of Microfinance.
- 2 The Guardian, A short History of Microfinance.
- 3 CGAP, Aid effectiveness in Microfinance.
- 4 The Mix, Cross-Market Analysis of MFIs 2000-11.
- 5 The World Bank, World Development Indicators 2010, xxviii.
- 6 ILO, Guide to the New Millennium Development Goals, 11.

I was to eradicate poverty. With a clearly defined goal and a timeline in which to achieve it (by the end of 2015), donor organizations began pouring money into microfinance. As a result new MFIs emerged and existing ones began to scale up their operations.⁷

While there is no formal standard theory of microfinance, common definitions and models usually rely on four basic assumptions. First is the assumption that there is indeed a demand in the developing world for financial products despite the small per-capita income of most the population. This assumption is supported by the prevalence of informal finance systems (e.g. ROSCAs, Susu collectors, Chit funds, and Tontines) in many impoverished countries.^{8,9} The existence of demand is further evidenced by survey-based market feasibility studies conducted by the World Bank that indicate a significant level of interest in formal banking & finance products among the rural poor.¹⁰

The second assumption is that informal financial systems (or none at all) create inefficiency, instability, and vulnerability which prevent individuals from meaningfully leveraging their capital & assets to rise out of poverty.¹¹

The third assumption is that large operating costs, high risk, and the perception of low returns on investment prevent entry into the market by most for-profit firms. Thus, intervention by governments and NGOs to provide these services (or create a market for them) is both necessary and will lead to poverty reduction. Finally, as MFIs become self-sufficient their operating model will transition from a non-profit social organization to a traditional for-profit financial institution.¹² At this point, the intervention will be considered a success (and will taper off) since there is now enough wealth in the community to sustain economic growth endogenously.

However, questions remain about the efficacy of microfinance, its delivery models, and unintended negative effects & externalities. Individual studies show dramatically varying results and often contradict each other both in models of behavior & observed effects. Thus, the need for objective large-scale evaluation remains. This paper helps fill this void by testing estimating the impacts of microfinance on poverty worldwide.

7 The Mix, Cross-Market Analysis of MFIs.

8 Cole et al, Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets?

9 Global Envision, The History of Microfinance.

10 World Bank, Vietnam: Developing a Comprehensive Strategy to Access.

11 James et al, Microfinance and Community Development, 248-50.

12 James et al, Microfinance and Community Development, 250, 252-59.

II. LITERATURE REVIEW OF MICROFINANCE

As microfinance has become increasingly prominent, a large number of studies on various aspects of microfinance and MFIs have emerged. Trans-national organizations including The United Nations, World Bank, and The Organization for Economic Cooperation & Development have published working papers and technical guidelines for those directly involved in microfinance. Donor organizations like The Bill & Melinda Gates foundation have begun requiring descriptive reports on the projects they fund. These combined with more traditional academic research provide a large pool of studies from which to draw upon. However, the aspects of microfinance being studied vary widely along with differing dimensions of success. This paper divides the existing literature into 3 broad categories: Theoretical Models of Microfinance Market Structure, Tangible Direct Impacts, and Participant Growth.¹³

A. *Theoretical Models of Microfinance Market Structure*

The market structure for microfinance is still not well understood by current and potential stakeholders.¹⁴ As a result much research has focused on what the market demand for microfinance is or could be, what types of products should be offered, for what purposes (i.e. consumption versus investment), or whether the point of service should be delivered by for-profit firms, NGOs, or government agencies. Laureti & Hamp (2011) observed that the poor are very susceptible to negative shocks, thus will demand microfinance products that offer maximum flexibility.¹⁵ However, they are quick to note that a high demand for flexible finance products does not guarantee a viable business model for an MFI. Operational costs to provide such flexible products (or any) would be very high while expected revenues would be negligible^{3/4} and currently for many MFI's revenue does not cover operating costs, which forces them to rely continuously on outside funding to sustain operations. From a supply side standpoint, the viability of the microfinance market is dependent on a large base of customers to lower long-term average total costs & (marginally) increase stability in the risk pool along with commitment mechanisms for account holders to reduce the probability of default, non-compliance, or other forms of moral hazard. Otherwise, the MFI must be prepared to operate at a loss indefinitely.

Commitment mechanisms take a variety of forms. In most informal

13 The analysis in this paper will focus only on Tangible Direct Impacts (i.e. poverty rates).

14 CGAP, Aid Effectiveness in Microfinance.

15 Laureti & Hamp, Innovative and Flexible Products in Microfinance.

microfinance arrangements (and in a few formal MFIs) peer and social pressures are used to guarantee individual compliance. Access to loans is made in group settings rather than on an individual case by case basis. Here, the entire group is responsible for repaying the loans of all its members. Since these groups are derived from the same community, are self-selecting and interact with each other continually on a near-daily basis, there is a strong incentive for each member to fulfill his/her obligations and to be careful who is allowed to join. For individual products offered by MFIs, commitment mechanisms usually involve some type of compulsory payment depending on the type of product. For those seeking a loan, compulsory payments usually involve either requiring the borrower to open a deposit account (access to which is frozen, usually until the initial loan is repaid) or require the borrower to purchase an insurance policy against default. For those opening a deposit account, large initial lump sum payments are often required as well as compulsory weekly or monthly deposits. Furthermore, access to funds in deposit accounts may also be frozen for a period of time (usually a year). Finally, it should be noted that for products with compulsory mechanisms, the majority of clients are women.¹⁶

In most of the developing world, a significant portion of the economy is informal, especially for women. In this part of the world, some estimates place the average informal economy at 36% of GDP.¹⁷ The International Labor Organization has documented a link between poverty rates and the size of a country's informal economy.¹⁸ Yet even among participants in informal sectors, demand for financial services is high. Research suggests that as more of those in the informal economy become aware of the availability & benefits of formal financial services, demand will grow.¹⁹ When presented with the opportunity to use either informal or formal financial services, a majority of unbanked poor households will chose the later with the belief it is more likely to make them better off.²⁰

While focus of much of the literature in this category is on acceptance rates of a product (e.g. Crepon et al., 2014), it is important to note that market supply, demand, acceptance, or retention rates should not in and of

16 Ashraf, Tying Odysseus to the Mast, 636-7.

17 Cole, Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets? 2-4.

18 ILO, Guide to the New Millennium Development Goals, 11.

19 Cole, Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets? 4-5.

20 World Bank, Vietnam: Developing a Comprehensive Strategy to Expand Access, 38-46.

themselves be as signs of successfully reducing poverty. The growing use of pay-day loans in the U.S. by low-earning households is a good example of a negative relationship between demand for (and supply of) a microfinance product and poverty alleviation. Similar examples have been documented in the developing world where participation in an MFI can lead to debt spirals and poverty traps.²¹ Thus, the consumer's purpose for using microfinance must also be considered. Those who take up a microfinance product usually do so either to smooth consumption (i.e. being able to buy the same bundle of goods year after year despite income shocks), make lumpy purchases to make the household better off in the long run (e.g. installing running water or pay tuition for children), or to make business investments and/or improvements. However, this is complicated by the fact most borrowers in the developing world often borrow from more than one source and for different reasons creating multiple-treatment interference when studying the relationship between microfinance and poverty. Thus, identifying the effects of a business micro-loan on poverty reduction is difficult when the borrower has also taken out a separate loan to increase his consumption. (Banerjee & Duflo 2014)

B. Tangible Direct Impacts

Often times, researchers will study changes in possessions or capital that occur after a household has begun participating in a microfinance program. Researchers study these measures because they have the potential to lead to poverty reduction in the future. Measuring these outcomes are very common when a majority of program participants are farmers, fishermen, herders, small business owners, or own-account workers for whom microfinance is used to expand/start a business or make a lumpy purchase. Changes in income, consumption level, asset value, deposit balances, and outstanding debt (which are direct measures related to poverty) are also considered measures of tangible direct impacts for the purposes of this paper.

Crepon noted that in agricultural communities in Morocco, those who benefited from microfinance were likely to be engaged in agriculture or own a business. Using microfinance, farmers were able to increase their yields through additional planting or purchasing equipment. Since farmers in the developing world often grow food or raise animals for household use as well as for sale, this allowed them to increase their consumption without having to reduce their income or purchases of other goods.²² Aportela

21 Mitra, Exploitative Microfinance Interest Rates.

22 Crepon and Duflo, Estimating the impact of microcredit on those who take it up.

noticed a similar phenomenon in rural Mexico among those who participated in Panhal, consumption among subsistence farmers increased without negatively affecting income or increasing debt.²³

C. Participant Growth

Many non-profit and charitable organizations study the impacts of their microfinance programs by measuring changes in household or individual behavior since the program was enacted. While not directly measuring the effects on poverty, these indicators can be predictors of trends that might lead to economic growth or a reduction in poverty in the future. Such indicators include the number of participants who graduate from an educational or training program associated with an MFI, the number of participants who are active account holders after a given period of time, increases in access to medical care, whether or not children in a participating household attend school, change in household debt, whether or not females enter into under-aged or arranged marriages (because of economic reasons).

In a quasi-experimental study of households in the Philippines, The Asian Development Bank (ADB) found that status of women in households improved significantly for a majority of those who were receiving a microfinance loan and household consumption increased.²⁴ Banerjee & Duflo found that while participation in an MFI did not change the level of consumption, the nature of the bundle consumed changed with unnecessary purchases being reduced in favor of durable goods.²⁵ There is additional evidence that microfinance programs with commitment mechanisms lead to other types of behavior modification. Ashraf noted that restricting both the dates and the amount that deposits could be accessed encouraged participants to become more aware of future costs, building up financial discipline and long-term planning ability among participants.²⁶

Other research has noted that microfinance can be used as an incentive to have participants avail themselves of social services they otherwise would not have. In Peru, De Los Rios observed that women participating in an MFI that also offered life insurance and financial training were much more likely to purchase life insurance or start a business than those in the control

23 Aportela, Effects of Financial Access on Savings by Low Income People.

24 ADB, Effect of Microfinance Operations on Poor Rural Households and the Status of Women, 55-6. 78-80.

25 Banerjee et al., The miracle of microfinance? Evidence from a Randomized Evaluation.

26 Ashraf, Tying Odysseus to the Mast.

group.²⁷ In Malawi, those who had deposit accounts in an MFI were more likely to either give or loan out money to relatives who suffered a loss. Thus preventing the need for the family go into debt or forgo a vital purchase (e.g. a medical procedure).²⁸

However, it should be noted that outcome variables reported in these types of studies cannot directly answer question “are these programs alleviating poverty?” To date, there are no known models that successfully use participant growth vectors as instrument variables for direct tangible impacts. The ADB found that in the short-term, income levels actually diminished in their QE and the program itself was not self-sufficient. De Los Rios lamented that the difference in wealth between groups in Peru was negligible and was not likely to attract new MFIs into the market even though she considered the program to be a success.

III. HYPOTHESIS AND EXPERIMENTAL DESIGN

Though most anecdotal accounts (to date) are promising, microfinance must ultimately be judged by lasting tangible improvements in the lives of those who participate. Given the discussions in the previous sections, it is hypothesized that participation in an MFI alleviates poverty for who take up the program. This paper tests this hypothesis by using meta-analysis to measure the change in poverty rates among participants in 38 MFIs in the developing world.²⁹ Meta-analysis was chosen because microfinance goes back decades and there exists a large pool of studies for review, though the preceding section highlights the difficulties in focusing on a single outcome variable. Furthermore, there is conflicting evidence on whether microfinance is actually an effective tool to fight poverty. Many studies show high returns in certain areas and demographics (Brune et al 2011; Duflo, Kremer and Robinson 2008). Other studies link microfinance to increases in poverty or show the impacts are not statistically significant (Mitra 2009). Meta-analysis will be able to synthesize these results into a more conclusive finding.

This paper uses three sets of sources of data for its meta-analysis. The first set is Randomized Field Experiments (RFE’s) conducted by academic researchers in conjunction with a pre-selected MFI. The second set is quasi-experiments (QEs) conducted by trans-national organizations,

27 De Los Rios, Synergetic affect of micro savings and micro insurance on vulnerability.

28 Flory, Micro-Savings and Informal Insurance in Villages.

29 For the purposes of this paper, the developing world is defined as nations in North America, South America, Africa, and Asia; countries with either a low GNI Per Capita (adjusted for PPP) or the recipient of substantial international development aid.

academics, or donor organizations. The third set is non-experimental data (NE's) compiled by MFIs and submitted as part of their annual reports to donor organizations. While this third set was the most complete and plentiful source of information measuring changes in poverty, its inclusion is also the riskiest for internal validity. Since the data is collected from the total MFI client pool for each year by product type, there is no way to be certain that those used for baseline analysis were included at the end and vice versa. In an attempt to mitigate this, periods of time for analysis were chosen so that the number of clients throughout were roughly comparable (i.e. the numbers in the pool did not differ dramatically). Literature suggests that the vast majority of MFI clients will remain clients in good standing with an MFI for many years in order to continue receiving services, making it highly likely the bulk of clients were included in both measures.³⁰ Thus the benefits of including this third set outweigh the risks, especially given the paucity of publicly available data from other sources that directly measure changes in poverty.

TABLE 1. DESCRIPTIVE STATISTICS OF DATA BY REGION, PROGRAM, AND EXPERIMENT TYPE.

	Countries	Micro-savings Programs	Micro-loans Programs	RFEs	QEs	NEs	Mean Sample Size
North America	7	3	7	0	1	8	41,471
South America	4	3	4	0	0	7	12,514
Africa	6	1	7	2	0	5	30,416
Asia	7	4	9	2	5	8	28,469
Total	24	11	27	4	6	28	30,032

Mean Sample Size	24,975	32,440	3,949	3,931	42,592
Mean Years of Study	2.92	2.8	2.25	3.17	3.76

The theoretical equation for this analysis is as follows:

$$\Delta \text{Poverty Rate} = \alpha + \beta(\text{program type}) + \zeta(\text{Commitment Mechanism}) + \lambda(\text{program years}) + \delta(\text{percent female}) + \Omega$$

Description of Theoretical Variables

Poverty Rate: This is the percentage point change in participants considered to be below a poverty line. When possible, this was measured using (or converted to) the \$1/day consumption threshold set by the World Bank. However, some studies used either a national index or a program proprietary index instead. Since the methodology for calculating these indices was not disclosed, converting them to the World Bank consumption threshold or creating a universal standardized score was not possible. All studies included used the same index type for pre and post-test comparison.

Program Type: This is a dummy variable equaling 1 when the program is micro-savings and zero otherwise. α is the estimate of the average effect size when the program is a micro-loan, β is the estimate of the difference between micro-loan and savings programs. α is hypothesized to be negative since the bulk of literature suggests that microfinance reduces poverty levels. It is also hypothesized that β is negative and significantly different from α .

Commitment Mechanism: This is a control variable equaling 1 when participation in the MFI required a commitment mechanism and zero otherwise.

Program Years: This is a control variable representing the duration of years of the study.

Percent Female: This is a control variable for the number of participants in each study that are female. In studies where there are different before and after percentages, the average of the two are used.

Ω : This is a stochastic term assumed to be normally distributed.

IV. RESULTS

Parameter estimates were made using ordinary least squares

regression (OLS). The regression found that participation in a micro-loan program reduced the number of participants living in poverty by 1.6 percentage points while participation in a micro-savings program reduced the poverty rates by 3.19 percentage points, furthermore the inclusion of commitment mechanism reduced poverty by an additional 1.8 percentage points. However, these results were not considered statistically significant. (See Table 2) This paper fails to reject the null hypothesis that microfinance has no impact of poverty levels. Furthermore, this paper also fails to reject the null hypothesis that micro-savings does not differ significantly than micro-loans. In other words, it does not appear that either of these programs are achieving their goal of reducing poverty (in the short-term). Also of note is that the variable for commitment mechanism had a higher parameter estimate and lower p-value than the program variables.

TABLE 2. OLS ESTIMATES OF THE THEORETICAL MODEL.

	Coefficient	P-Value
Micro-Loan	-1.6	.81
Micro-Savings	-3.19	.47
Commitment Mechanism	-1.8	.37
Years of Study	.98	.39
Percentage Women	-.03	.67

V. DISCUSSION

The primary threats to both the internal and statistical validity of the results involve the quality of data collected. While the sample sizes for each source were deemed large enough for accurate hypothesis testing, in meta-analysis the unit of observation is the number of studies not their sample sizes. Here the problem of the limited number of studies publicly available directly measuring the impact of microfinance of poverty rates presents itself, though it is likely many development and donor organizations have additional data outside the public domain that can be used in future analyses. Thus, this paper relied mostly on market data. Furthermore, little interest in studying micro-savings also created an imbalance where data points for micro-loan programs outnumbered micro-savings by approximately 2:1.³¹ Furthermore, there was little variation in the number of years of each study period. Most studies were

for either 2 or 3 years, allowing for very little variance to estimate the impact time has on the effects of microfinance; the only outlier was a QE study of the Grameen Bank which lasted 7 years. Thus even if the null were rejected, the estimates would only be valid for short-term effects. Because of these data issues, it is not surprising that high standard errors were observed in the regression. However, it is important to note that all the signs were in the expected direction; making it highly plausible that there are long-term effects.

One common characteristic in the sources used is that they all employ self-reporting survey data as their measurement instrument. There was likely little to no effort to verify the accuracy of the information reported due to the costly and burdensome nature of such a procedure. While this certainly contributed to a great deal of noise, there is no reason to believe it systematically biased estimates. However, it is likely there was some degree of measurement bias in the poverty indicators. Most poverty indices involve whether a household is able to consume a certain bundle of goods deemed necessary for a basic standard of living. The World Bank \$1/day consumption index, which has since been adjusted to \$1.25/day, was chosen for this study because it is the most widely used. However, it is fairly arbitrary since meeting this threshold does not guarantee the minimum bundle can be consumed. Recognizing this, many stakeholders use their own index but there is no way to be certain these new indices solve the underlying problem (even when their methodology is disclosed and can be reviewed).³² Thus the use of currently available poverty indices likely biases downwards the true rates of poverty. However, the bias present in both pre and post-test measures is likely the same. Hence, the actual change in poverty is likely to be unbiased.

Despite issues of internal and statistical validity, the underlying finding in this analysis (that on average microfinance has no significant short-term poverty reduction in the developing world) is likely accurate for two reasons: First, the countries included are geographically, ethnically, and politically diverse-- giving the sample a high degree of external validity. Second, the “noise” observed in this analysis is similar to mixed observations of financial growth in lower income households in the developed world. Between 2010-13 (about the average time period of analysis in this study), the Federal Reserve noticed similar asset growth and decreases in nominal poverty indicators in banked poor households in the U.S., yet high standard errors were present in the data.³³ Meanwhile

32 Progress Out of Poverty, About the PPI.

33 Federal Reserve Bulletin, Changes in U.S. Family Finances from 2010 to 2013, 9-14.

sociological indicators (e.g. health status, education, and consumption) presented a different story;³⁴ suggesting the results of this meta-analysis would be consistent with similar observations of financial portfolios of low-income earners in the industrialized world. This leads to a basic theoretical question about the current structure of microfinance that needs to be addressed: Why should stakeholders expect microfinance to perform much higher and with faster results in the developing world than similar products in industrialized nations?

VI. CONCLUDING THOUGHTS

Noted previously in this paper, the divergence of inputs and outcomes measured by studies evaluating microfinance makes a thorough evaluation of the impact on poverty extremely difficult. While there does seem to be some convergence in microfinance evaluation, it appears to be concentrated in the market structure and participant growth aspects. There seems to be no systematic effort being undertaken to see whether or not these anti-poverty programs are actually alleviating poverty.

This is symptomatic of a “silver bullet” mentality that is prevalent in the international development community at large. It seems to be taken as an article of faith by many that microfinance (as currently structured) will work (eventually) and program evaluation measuring direct changes in poverty is not necessary.³⁵ The mentality seems to be that research should focus instead on what needs to be done to coax and cajole the impoverished into microfinance programs and keep them there, without enough thought to whether they should be there. This dangerously ignores the fact that poverty is a multi-faceted, complex, and complicated problem that has existed since the dawn of civilization. For wicked problems such as poverty there are no silver bullets, only coordinated multi-pronged, very gradual, resource consuming, intensive efforts. In his book *Naked Economics*, Charles Wheelan notes that in order for financial markets (and by extension MFIs and microfinance) to work, many other things need to be in place: consumers need to fully understand the benefits and risks of financial products (and what forms they will take), government must have a strong (but not burdensome) regulatory framework to guard against moral hazard & information asymmetries, and most importantly there needs to be real, existing, underlying economic growth & activity.³⁶ At best

34 Irwin, *So Why Hasn't Poverty Declined?*

35 Sanga, *The Challenges of Monitoring and Reporting on the Millennium Development Goals.*

36 Wheelan, *Naked Economics*, 54-60, 148-53, 294-316.

microfinance is just one prong in a larger intervention; while potentially beneficial on its own, it would likely work best as an accelerant for other impacts.

The results of this analysis are not necessarily evidence of the failure of microfinance to alleviate poverty, even in the short-term. Again given the signs for the program variables were all in the expected direction, it is more likely than not these programs do have an impact. This paper fails to reject the null hypothesis, it does not imply that MFIs fail to reduce poverty. Instead it only confirms that microfinance is still unproven (as is what form the products & services should take). However, given the opportunity costs associated with funding and participating in MFIs, it is imperative to remedy this sooner rather than later. Failure to do so will likely mean more people will live in poverty longer because stakeholders are essentially “flying blind.”

But this raises another important question for which there is no consensus: How long should we wait after the introduction of a microfinance program to evaluate its success? Given the difficulties of reliably and consistently collecting data in the field, this is as much a technical question as it is a theoretical or political one. This challenge, to borrow from Atul Gawande, “Doesn’t mean that ambitious reform is beyond us. But we have to start with what we have.” To get to Millennium Development Goal 1, we have to start by consistently, objectively, systematically, and directly evaluating the impacts of microfinance on poverty; and to make sure we are using this tool the right way and in conjunction with others.

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