

1 Introduction

Lack of savings and capital make it difficult for many poor people to become self-employed and to undertake productive employment-generating activities. Providing credit seems to be a way to generate self-employment opportunities for the poor. But because the poor lack physical collateral, they have almost no access to institutional credit. Informal lenders can be a source of credit, but poor households do not gain from investing in productive income-increasing activities because of high interest rates. Moreover, although informal groups such as the rotating savings and credit associations (ROSCA) or chit funds can meet the occasional financial needs of the poor, they are not reliable sources of finance for income-generating activities. In addition, the poor can rarely save enough to form and participate in such informal groups. Also village-based informal groups, as they are formed with people living in the same agroclimatic area, are risky sources of finance for business/enterprising activities because of covariate risk that affects equally every member of the group. A micro-credit programme which is able to pool risk across agroclimatic areas can provide credit to the poor at affordable cost and can help them become productively self-employed.

Micro-credit programmes have thus emerged as an antipoverty instrument in many low-income countries. They target the poor, especially women, with financial services to help them become self-employed in rural non-farm activities of their choice. In contrast, micro-credit programmes of the village banks supported by Accion International or Women's World Banking provide financial services in response to market failures in which formal financial institutions failed to cater financial services to small- and medium-scale enterprises. No matter whether they are instruments for poverty reduction or market failure, micro-credit programmes practice financial intermediation for their targeted clientele.

The article reviews the methodologies practiced to evaluate micro-credit programmes and provides a unified framework, and discusses future research

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Micro- Credit Programme Evaluation

*A Critical Review*¹

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directions. It is organised as follows: section 2 discusses the economic rationale for micro-credit programmes targeted to the poor which motivates that impact assessments are an integral part of micro-credit programme evaluation; section 3 reviews the current literature on micro-finance; section 4 discusses estimation issues concerning programme benefit assessments; the concluding section discusses policy implications and further avenues for research on micro-finance.

2 Why Micro-Credit Matters for Poor Households

Households may derive benefits such as income, employment, and consumption from access to micro-credit programmes. However, the benefits from programme participation must be at least as great as the costs for households to participate in a micro-credit programme. Possible benefits of participation include induced changes in income, employment and other welfare indicators. Explicit interest costs of borrowing and implicit costs associated with programme participation, such as attending group meetings and monitoring fellow members' activities, constitute the possible costs of programme participation.

Both benefits and costs are likely to vary depending on the gender of programme participants. For socio-cultural reasons, men's time (or that of other household members) is a poor substitute for women's time in many societies. Women are largely involved in the production of important non-market activities, such as child-care and food. Thus, for a woman to work a full day may entail forgoing the production and consumption of highly valued non-market household activities. Women's wage employment outside the home is thus not a viable option for many rural women, who spend most of their time producing non-market household goods.

However, rural households can produce home-based market goods such as handicrafts – goods for market sale that are not culturally frowned upon. Not only can these activities be produced using part-time labour, but they do not require production to be done outside the home. Although many of these activities can be performed at low levels of capital intensity, other home-based market goods require a minimum level of capital. This minimum

is often the result of the indivisibility of capital. Dairy farming, for example, requires at least one cow; hand-powered looms have a minimum size. For other activities, such as paddy husking, for which the indivisibility of physical capital is not an issue, transaction costs (or the high costs of information) establish a floor on the minimal level of operations. In many countries, including Bangladesh, household income and wealth are so low that the costs of initiating production at minimal economic levels are high.

When households have access to wage employment, they may choose between working for home-based non-market production and for wage employment. There is a trade-off between these two types of production – wage employment requires full-time involvement and, hence, there is a cost that households incur for undertaking wage employment. For socio-economic reasons, the transaction cost of wage employment is higher for women than for men, making the cost of employment for women higher. For both men and women, the opportunity cost of non-market production is equal to the market wage less the transactions cost of wage employment. That means, even if women are allowed to work outside the home, women's participation in the wage labour market depends on the size of the transaction cost of wage employment. Women are more likely to allocate more labour to home production if the transaction cost of wage employment is positive than they do if it is zero. In fact, the transaction cost of wage employment can be high enough to make the opportunity cost of non-market production zero, or even negative, and women will work exclusively for non-market production.

Even if market wage employment is restricted for women, they can be self-employed at home because micro-credit programmes enable poor women to engage in home-based market production. In this event, the shadow price of home-based non-market production is reduced by the value of the marginal product of time in home-based market production. However, the net cost to non-market production will depend on whether market-based production and non-market production are managed jointly. If home-based market and non-market production are not jointly managed, then the shadow price of non-market production is the net wage from wage

employment (i.e., wage less transaction cost of wage employment). This is similar to the case in which no market-based production takes place because of lack of access to credit to finance self-employment business activity. If home-based market and non-market production are jointly produced, then the shadow price of non-market production is reduced by the marginal product of labour of home-based market production. That means an increase in home-based market production can be accompanied by increase in home-based non-market production without incurring any cost for the former; the time devoted to non-market production also provides home-based market production with the same efficiency, because there is no opportunity cost in terms of home-based market production from the reallocation of time. Because non-market and home-based market production can be carried out in a flexible way, it is possible that households would benefit from withdrawing labour from the wage market if funds are made available to buy the minimum capital needed to initiate home-based market production.

For the very poor, especially for women, access to credit may thus alter the optimal time allocation from home production of non-market activities, such as child-care, to home-based market production. If household consumption is at or near the minimal levels necessary for survival, so that saving is almost infinitely costly, even a small quantity of credit can have a large impact on household welfare by shifting women's time from the production of non-market goods. This is clearly a welfare gain for poor households, as the non-market production may have a low shadow value compared to home-based market production, the marginal product of which is high. In addition, programme participation may alter the technology parameters by providing information and training, which may affect efficiency in both non-market and home-based market production and, hence, income and consumption.

Non-market production may rise or fall in households that borrow in order to start home-based market production. The direction of change in non-market production depends on the size of the income effects, the substitutability of market inputs for time inputs, and the degree to which the same unit of (women's) time can produce home-based

market and non-market goods. Micro-credit programme participation may also affect household allocations by altering women's bargaining power. Bargaining power may increase with women's participation in a micro-credit programme – the result of controlling additional resources through targeted credit and consciousness-promoting training.

Because of credit market imperfections, the poor's access to credit may make a large impact on their welfare. Credit market imperfections may again differ according to gender – women are more likely to be credit constrained than men. Micro-credit programmes often provide non-credit inputs such as consciousness-raising training and these inputs may empower the poor, especially women. Moreover, men and women may have different preferences. Thus, the impact of the programme may vary according to the gender of the programme's participants. This is a possible testable hypothesis for assessing programme impact which will have a bearing upon policies providing credit to the poor and women.

3 Review of Existing Literature

Micro-credit programmes are seen as financial intermediaries. Not surprisingly, a large body of the micro-finance literature dwells largely on the financial viability of targeted credit programmes. The primary concern of this literature is the cost efficiency of micro-finance institutions. That is, it addresses issues such as the amount it costs to deliver these services and whether the programmes providing them are cost-effective (that is, meet the programme costs with interest income). However, as many micro-finance institutions use grants or soft loans to provide services to target clients, micro-finance involves subsidies. Consequently, this body of micro-finance literature addresses questions such as how much subsidy these programmes enjoy, whether they are able to eliminate subsidy, and, if so, how (Yaron 1992b).

The literature also raises questions about the distribution of subsidies, namely, who benefits from these programmes. Program evaluation is based not only on self-sustainability but also on programme outreach, measured by the coverage of target households and the extent of services they receive (Yaron 1992a; Bennett and Cuevas 1995). Outreach

indicators are taken as proxies for development impacts of micro-credit programmes, assuming that self-sustainable financial institutions are likely to contribute to income expansion and poverty reduction – that is, the *output* of efficient rural financial intermediation leads to the desired development *impact* (Yaron, McDonald, and Piperk 1997). The twin criteria of outreach and self-sustainability become the yardstick of micro-credit programme evaluation (Yaron 1992a, 1992b; Christen, Rhyne, and Vogel 1994; Chaves and Gonzalez-Vega 1996; Mahajan and Ramola 1996).

The assumption that only an efficient financial institution produces a desirable development impact may be questioned. Under certain conditions, even an inefficient financial system which is not self-sustainable may merit the necessary government subsidies. For instance, the Indian formal financial intermediaries, which are unsustainable without government subsidies, are nevertheless contributing to the growth of the rural economy (Binswanger and Khandker 1995). On the other hand, programmes such as micro-finance institutions, even if they are effective in reaching target clients and are self-sustainable, may generate benefits that are not sustainable, or benefits that are marginal, so that they do not have an overall growth impact (Bouman and Hospes 1994). In other words, simple outreach of a self-sustainable financial institution does not guarantee that participants and society do benefit from such investments.²

A second body of literature, therefore, focuses on the direct impacts of micro-finance on poverty reduction and other dimensions of household welfare. Improved access to credit is expected to overcome credit market imperfections, which can smooth consumption and ease constraints in production, raising the incomes and productivity of the poor. Many studies have attempted to measure the impact of micro-credit on income, employment, and other socio-economic outcomes, including contraceptive use and fertility (BIDS 1990; Alam

1988; Amin *et al.* 1994; Amin and Pebley 1990; Hossain 1988; Hulme and Mosley 1996; Pitt and Khandker 1996; Schuler and Hashemi 1994). With the exception of Pitt and Khandker (1996), the major problem with this large body of literature is that it has failed to indicate whether the measured benefits are due to programme participation. Estimates usually fail to consider the self-selection process involved in programme participation and non-randomness of programme placement (Pitt and Khandker 1996). Another problem of the impact literature is that it ignores the cost of programme placement to indicate whether the induced benefits of programme placement are worth the cost.

Microcredit programmes are often subsidised and, hence, seen as transfer mechanisms. Even if this is so, micro-credit programmes must be able to transfer resources in a cost-effective way. But targeted micro-credit to the poor is one of many instruments for poverty reduction. Broad-based economic growth policies, Food for Work, and targeted wage employment schemes are some of the non-credit instruments that also help reduce poverty. Micro-finance institutions must thus be evaluated against the performance of alternative instruments for poverty reduction. Often, the poverty impact of these instruments is assessed in terms of the impact of programme participation on income, employment, and consumption. While this is a well-established approach, it overlooks the financial performance of banks or bank-like organisations delivering financial services to the poor or serving as a mechanism for social transfer.

Also, even if participants do benefit from micro-finance institutions, such programmes may hurt others in society or may achieve benefits less efficiently than alternative programmes. This raises the issues of externalities, income redistribution and the cost-effectiveness of alternative programme intervention. Because of programme *externalities*, it is possible that benefits accruing to the poor are generated at the expense of others in society so that

² Hulme (1997) provides a fascinating story from the United Kingdom that invalidates the argument of institutional sustainability and institutional outreach. The 1980s witnessed an unprecedented increase in outreach and profitability of financial institutions in the U.K. However, it turned out that it actually created a

'bubble' that destroyed many enterprises and impoverished hundreds of thousands of households. Hulme (1997) also reported a study that observed that programmes performing well in terms of outreach and repayment rates have negative impacts in terms of women's empowerment.

the programme intervention is not Pareto efficient.³ Pareto efficiency is more likely to be achieved in a regime in which economic growth permits the expansion of existing activities or the development of new activities that benefit participants without hurting others (World Bank 1994). On the other hand, since subsidised funds have alternate uses through which the poor can also benefit, programme evaluation of micro-finance institutions must be made on the basis of cost-effectiveness of alternative antipoverity programmes.

An ideal method for programme evaluation is, therefore, an integrated approach that carries out cost-benefit analyses of alternative programmes promoting welfare of both target and non-target households. Programme evaluation is, of course, subject to the social welfare function. If the objective is to promote society's welfare, then the impact must be assessed for both target and non-target households, as well as participants and non-participants. If the social objective function is distributionally neutral, then an evaluation of the target population is sufficient to justify programme intervention. But, such an evaluation is incomplete, because it ignores programme externalities. For example, agricultural development banks, which are subsidised in many countries, are evaluated on the basis of what happens to agricultural growth. A recent evaluation of formal financial institutions in India finds that, although credit programmes were targeted to reach farmers, it is the rural non-farm economy and not agriculture which is the principal beneficiary because credit is fungible across activities and households (Binswanger and Khandker 1995). Khandker (1998) provides estimates of the full costs and benefits of some micro-credit and alternative programmes to justify whether micro-credit programmes are worth supporting.

The third body of micro-finance literature addresses loan recovery rate and delivery mechanism of micro-credit programmes. Imperfect information and imperfect enforcement of loan contracts are two major sources of high loan default costs of formal

banks in many low income countries (Stiglitz and Weiss 1981, 1983). Thus, even if financial institutions are allowed to set their own interest rates as suggested by a number of studies (von Pischke and others 1983), the imperfect information literature argues that this would not necessarily improve the loan recovery rates, and targeted credit programmes would not reach the target households even if the price of loan is right (Hoff and Stiglitz 1990).

Varian (1990), Stiglitz (1990), and Besley and Coate (1995) have identified several credit market failures that group-based micro-credit programmes have overcome. In particular, group-based lending and other social mechanisms help resolve the problems of imperfect information and imperfect enforcement of lending. By relying on peer pressure to monitor and enforce contracts, group-based lending provides an incentive for borrowers to repay and helps avoid adverse selection of borrowers, thereby improving loan recovery rates (Rashid and Townsend 1994 and Wenner 1995). While group-based lending does not always improve loan recovery (Besley and Coate 1995), it constitutes a powerful incentive for repayment when it helps create 'social collateral' that works against loan default.⁴ Conning considers the implication of group lending as one of several optimal borrowing strategies and examines whether joint liability contracts can be designed to create the social capital required to replace physical collateral. This theoretical literature on group lending provides some testable implications about the nature of contracts required to generate social capital, the optimal size of group, and the sorting of individuals into groups on the basis of risk preference and other characteristics.

However, social collateral cannot be the sole reason for high loan recovery – social collateral can also be harnessed through involving community or village leaders in individual lending schemes such as the Badan Kredit Kecamatan (BKK) in Indonesia and elsewhere (Chaves and Gonzalez-Vega 1996; Patten and Rosengard 1991; Riedinger 1994; Yaron 1992a,

³ Interventions are Pareto efficient when they benefit at least one person while leaving everyone else at least as well off as before the interventions.

⁴ Group lending can have both positive and negative effects on loan repayments. It increases loan repayment

because successful borrowers may help repay loans of less successful borrowers unable to repay. Group lending may also reduce the repayment rate if the entire group defaults (i.e. when some borrowers who would have paid default because other group members have done so).

1994; Webster and Fidler 1995). For targeting and identifying the poor, group lending is better than individual lending because programme participation is self-targeting in a group-based lending (Khandker, Khalily, and Khan 1995), while individual lending can 'perpetuate and reinforce the existing socioeconomic inequities and access to scarce financial resources' (Yaron 1992a; p.12). Thus, group lending can lead to better targeting and better loan repayment through self-selection, peer monitoring, and creation of social collateral.

However, group-lending is not a panacea for loan default. Although group lending is found to deliver financial services to the poor en masse with little cost, such a loan delivery mechanism appears too simplistic to cope with difficult issues such as the low loan absorptive capacity of individual borrowers. In fact, when loan recovery rate is the basis for repeated loans in the case of group lending of Grameen Bank without examining the loan absorptive capacity of borrowers, the loan default cost can be quite high (Sinha and Matin 1998; Matin, 1998). Sharma and Zeller (1997) examined the factors influencing loan repayment rates in group-based lending programmes in Bangladesh. Among the determinants of loan default are loan size, the mean land owned by the group, the percentage of female groups, and a variety of other variables describing the group and its composition and attributes of the village. These characteristics are highly endogenous as they are part of the assortative group self-selection process. In other words, high risk borrowers would like to join groups with more land so as to reduce the risk of group default. Wenner (1995) regressed loan delinquency on the number of monitoring inspections, the average savings of the group, and the nature of group screening. Neither Sharma and Zeller nor Wenner used any statistical treatment for endogeneity. A recent study argues that the high loan recovery rate of Grameen Bank is not due to group lending or its attributes, but to staff morale and commitment (Jain 1996). These are casual observations and difficult to quantify. A study based on branch level data that uses fixed-effects methods observed that local economic conditions influence the economic viability of projects and, hence, the loan recovery rate of Grameen Bank's branches in Bangladesh (Khandker *et al.* 1995). Group-lending matters for loan recoveries, but so do the characteristics of borrowers and

organisers as well as agroclimatic and local economic conditions.

4 How to Assess the Impact of a Micro-Credit Programme

The most effective tool for assessing the benefits of a micro-credit programme is the measurement of its impact on the poor in terms of employment, income, consumption, assets, net worth, nutrition, contraceptive use, fertility, and children's schooling. The immediate impact of having access to credit from a micro-credit programme is on employment and, consequently, income. The induced income and employment effects may have impact on other outcomes such as consumption, nutrition, contraceptive use, fertility, and education. In addition, asset accumulation and hence household net worth may increase if incomes generated from self-employment are sufficient to cover the costs of participation. But identifying the credit impact is problematic because of: (a) fungibility of credit; (b) non-randomness in programme participation; and (c) non-randomness of programme placement.

Since money is fungible, it is very difficult to identify the credit impact. However, unlike in formal credit institutions, the cost of credit in a group-based credit programme includes not only the interest rate but also the timing of repayment and the penalties associated with default. Group-based credit is packaged with responsibilities (meeting attendance, forced saving, shared default risk) and benefits (training, insurance, consciousness-raising). If there were no monitoring of the use of borrowed funds and no group responsibility and decision-making in the lending programme, individuals would want to borrow much more than they actually do in order to capture the premiums associated with the soft terms of the loan. Monitoring credit use makes all programme participants 'credit constrained', in that the notional demand for credit always falls short of supply. For these reasons all participating households are presumed to be in the same credit demand regime, which means that the amount of credit may directly enter into the production and consumption decisions (Feder *et al.* 1988). The close monitoring of group-based credit partly resolves the problem of fungibility.

This, of course, does not mean that the amount of credit borrowed from a group-based micro-credit programme can enter directly as a regressor in explaining household and intra-household behaviour. It involves a household's decision as to whether it participates and borrows. It also involves whether a micro-credit programme is available in the area where the household resides. Both programme placement and programme participation may not be random. Programme organisers have the objective of poverty alleviation so they would like to initiate a programme based on the beneficiary's need for credit and the extent of her poverty. On the other hand, even if a programme is available and the household eligible to participate, the household would decide not to participate if participation costs outweighed the benefits. If the household does decide to participate, the question is whether a male or female should represent the household. These are all choice variables likely to be conditioned by individual, household and community characteristics.

Lack of panel data or natural experiment creates serious problems in estimating programme impacts. However, the exogenous eligibility rule⁵ that precludes some groups from participating in a programme may make identification easier. This identification strategy was used in Pitt and Khandker (1996; 1998a) in the case of impact evaluation of Grameen Bank, BRAC and RD-12 in Bangladesh. In a household sample drawn from both programme and control villages with both types of household (target, who meet the eligibility criteria, and non-target) Pitt and Khandker used the survey data to identify programme effects.

In the same fashion one can estimate programme impact by the gender of programme participants. Introducing gender-specific credit involves a number of estimation problems (Pitt and Khandker 1996; 1998a, 1998b; Pitt, Khandker, McKernan, and Latif 1995). First, it is likely that the errors of the women's participation equation are correlated with the errors of the men's participation equation; that is, common unobservable variables influence the credit programme behaviour of both women and men in the household. Second, additional identification restrictions are required when both men's

and women's credit programmes exist, possibly having different effects on behaviour. The first issue is computational – bivariate probability distributions must be evaluated when estimating separate credit or programme participation equations. The second issue – that of identification – can be handled by an extension of the exogenous exclusion restriction. Group-based credit programmes of BRAC, Grameen Bank, and RD-12 have single-sex groups. Identification of gender-specific credit is achieved in the Pitt and Khandker study by the survey design that includes some households from villages with only women's credit groups and some households from villages with only men's credit groups.

5 Conclusion and Scope for Further Research

Micro-credit programmes are expected to raise the welfare of the poor, especially women. They would help raise social welfare by promoting human capital investment in child-care and education. However, micro-credit programmes cannot be the sole instrument for poverty reduction. Micro-credit requires an entrepreneurial skill that few poor people may have. No wonder micro-credit programme participation is highly self-selective. Data from Bangladesh shows that only 40 per cent of the poor households eligible for participation in such targeted programmes actually participate in villages where programmes have been in place for more than three years. Further results indicate that few landless people holding zero land participate; people with very low accounting ability measured by oral mathematical skill also do not participate in Grameen type operations (Khandker 1998). Hence, micro-credit is not relevant for the poorest of the poor and the most illiterate of the illiterate. For them wage employment is necessary for poverty reduction. Of course, for those who can afford to bear the risks of self-employment, the availability of micro-credit enhances the options of the poor. In particular, micro-credit programmes are quite helpful for opening up economic opportunities for rural women who cannot afford to be wage employed outside the home, or do not have the requisite ability to join the formal labour force. They are the winners in the micro-credit movement.

⁵ That is, households with more than half of an acre of

land are not eligible to participate in the programme.

However, often the socio-economic impacts are only the short-term impacts. It is an open question whether these impacts can be sustained over time. In fact, many of the programme benefits from micro-credit financing self-employment take time to be fully realised. For example, the programme impact on children's schooling or health status would take a long time to be fully captured. To capture the full impact of credit on long-run behaviours, including the value of consumption and assets, one needs to evaluate behavioural impacts over a relatively longer period. Thus, panel data analysis is relevant for long-run programme impact evaluation.

Panel data impact analysis is also necessary for identifying how the participant behaviour changes over time with respect to the length of programme participation. It is possible that returns may fall as rents that accrue to early programme participants get competed away so that the overall impact will diminish as more participants join the programme. Panel data analysis is also desirable to make the impacts more reliable. When programmes are available, those households with the most to gain from access to micro-credit programmes were the first to join them and their success reflects, to some extent, positive selection. Later recruits may lack such ability so that rates of returns may fall over time. Panel data analysis would help resolve this changing nature of benefits of micro-credit programmes.

Programme impacts reported in earlier sections from Bangladesh measured the influence of three factors: (i) credit, (ii) length of programme participation, and (iii) non-credit. Micro-credit programmes offer both credit and non-credit inputs. These non-credit inputs may be important to change individuals' behaviour and hence, household and intra-household outcomes. The non-credit impacts may also change the villagers' behaviour, even if many of them do not join micro-credit programmes, because of demonstration effects. These non-credit impacts may be substantial and should be identified to justify if they are at all necessary.

Finally, an important future research question is whether and how the group matters. Does it matter that the group is the mechanism through which credit is distributed and monitored, or would credit provided through other means, such as individual-based lending schemes, achieve essentially the same results? How are groups formed? How important is the group in facilitating information flows, consumption smoothing, insurance and consciousness-raising among the borrowers? How effective is the group in loan repayment? These are some of the unresolved issues concerning group-based micro-credit programmes.

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