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REPAYMENT PERFORMANCE IN GROUP-BASED CREDIT PROGRAMS IN BANGLADESH: AN EMPIRICAL ANALYSIS

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ABSTRACT

This paper analyzes the repayment rates of credit groups belonging to three group-based credit programs in Bangladesh: the Association for Social Advancement (ASA), the Bangladesh Rural Advancement Committee (BRAC), and the Rangpur Dinajpur Rural Service (RDRS).

Hypotheses are drawn from economic theory relating group responsibility, and the resulting monitoring by peers, to a more effective enforcement of contractual obligations as well as to improved ability of the group as a whole to repay loans. Specific tests are performed on the following hypothesized determinants: group size, size of loans, degree of loan rationing, enterprise mix within groups, demographic characteristics, social ties and status, and occurrence of idiosyncratic shocks. Analysis is conducted using TOBIT maximum likelihood procedures. Implications for policy and institutional design are discussed.

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1. INTRODUCTION

Lending is a risky enterprise because repayment of loans can seldom be fully guaranteed. For this reason, lenders devise various institutional mechanisms aimed at reducing the risk of loan default (pledging of collateral, third-party credit guarantee, use of credit rating and collection agencies, etc.). In the context of providing credit to the rural asset-poor, what is required is institutional innovation that combines prudent and sustainable banking principles with effective screening and monitoring strategies that are not based on physical collateral (such as land). A good example of this kind of innovation is found in Bangladesh, where nongovernmental organizations (NGOs) have designed credit programs that employ group responsibility and peer monitoring as the core principles guiding financial transactions. This has resulted in repayment rates that are very high compared to traditional physical collateral-based financial institutions. However, repayment rates are not uniformly high for all groups or for all institutions. What important factors affect group repayment rates within these new financial institutions? This paper attempts to provide some answers to this question and to shed light on ways in which further innovation can further enhance repayment rates and, hence, contribute to the ultimate sustainability of these new institutions. It does so by examining the repayment records of 128 groups belonging to group-based credit programs of three institutions in Bangladesh: the Association for Social Advancement (ASA), the Bangladesh Rural Advancement Committee (BRAC), and the Rangpur Dinajpur Rural Service (RDRS). The rest of this paper is divided into four sections. Section 2 briefly highlights repayment performance of traditional state-owned banks and those of the newer group-based institutions in Bangladesh. Section 3 outlines the institutional structure of ASA, BRAC, and RDRS, while Section 4

presents the results of an econometric analysis of repayment behavior. Conclusions and recommendations are presented in Section 5.

2. FINANCIAL SERVICES FOR THE RURAL POOR: INSTITUTIONAL RESPONSES, SETBACKS, AND REENGINEERING

A full appreciation of the recent innovations in Bangladesh's rural financial sector is not possible without an understanding of past efforts, actions, and failures. This section describes repayment rates of traditional commercial banks and the newer group-based lending organizations, and highlights factors that have enabled group-based systems to achieve high rates of repayment even when traditional commercial banks failed miserably.

RURAL BRANCHES OF COMMERCIAL BANKS: LESSONS ON HOW NOT TO DO IT

During the 1970s as well as in the 1980s, a basic assumption driving government policy seemed to be that replicating the then existing urban-based banking structure in rural areas, and fortifying it with subsidized capital and a package of lending directives, would be sufficient to kick-start a viable financial sector in the rural areas.[1] In 1977, for example, the replication effort took the form of the so-called "two-for-one" banking policy, requiring commercial banks, then all government-owned, to open two rural branches for every urban branch (Khalily and Meyer 1993). This period also saw the establishment of two specialized agricultural development banks—the Rajshahi Krishi Unnayan Bank (RAKUB) and the Bangladesh Krishi Bank (BKB), which had specific mandates to deliver agricultural credit. In addition,

[1] More detailed reviews are contained in World Bank (1994, 1995), and Cookson and Alamgir (1993).

networks of rural cooperatives were established by Bangladesh Sambaya Bank (BSBL) and the Bangladesh Rural Development Board (BRDB).

Implicit in these latter two actions was the realization that *some* change in the organizational structure of the banking system was indeed necessary to make the carryover to the rural sector. However, in reality, the basic principles of banking remained more or less unchanged and the rural financial sector suffered the same fate as its urban counterpart: loans continued to be strictly collateral-based; incentive structures within banks provided little incentive for managers to screen borrowers for creditworthiness, or to evaluate loan projects objectively, or to enforce contract compliance. In addition, the banks' oligopolistic hold of the market, and the ready and continuous availability of subsidized funds from the central bank, encouraged inefficiency and impeded innovation at the institutional level. There were other factors exogenous to the banking system that contributed to this environment of lax credit discipline. First, legal recourse to foreclose and liquidate collateral was, in practice, nearly impossible (World Bank 1994), especially in the agricultural sector. This greatly lessened the cost of default to the borrower. Second, confusing signals created by frequent announcements of loan amnesty and interest remission programs—results of direct political interference (Khalily and Meyer 1993)—increased incentives to default (in the hope of a future amnesty program), even among creditworthy borrowers. Third, despite eloquent directives to the contrary, there was, in reality, very little incentive for managers of rural branches to service the poor. To start with, transactions costs involved in servicing a large number of small borrowers were much higher than those involved in servicing a fewer number of large borrowers. Further, there were additional non-economic incentives—even direct pressures— on program managers to lend to or collude with big borrowers who received favorable political patronage. For the small borrowers, on the other hand, these extraneous considerations in routine lending decisions coupled with high transactions costs involved in dealing with the formal banks (high

time and travel costs) made the banks less attractive long-term partners. This perceived short-term association further lessened incentives to repay loans.

Because of these reasons, the end of the 1980s found rural branches of the state-owned banks utterly failing in carrying out their mandates. Instead, the entire network of branches had metamorphosed into a structure that was no longer sustainable. A telling evidence of this was to be found in the pathetic state of loan repayment rates. Recovery on rural-sector loans (Table 1) were not only low, but were steadily declining through the 1980s: from about 51 percent during 1981-82 to under 19 percent during 1992-93 (Khalily and Meyer 1993; World Bank 1995).

In the late 1980s, a series of actions were taken by the government to liberalize and reform the financial sector, especially under the Financial Sector Reform Project initiated in 1989. Though the impact of these reforms is not fully clear, some improvements are now starting to be discernable. For example, some check seems to have now been imposed on the unwieldy expansion of lending

Table 1 Recovery rate on target rural loans of traditional commercial banks: 1980-81 to 1988-89

Year	Recovery Rate[a]
	(percent)
1980-81	51.6
1981-82	50.6
1982-83	42.1
1983-84	42.8
1984-85	42.3
1985-86	26.5
1986-87	42.3
1987-88	24.3
1988-89	18.8

Source: Khalily and Meyer (1993).

[a] Recovery rate is defined as percent of target loans recovered relative to total target loans including principal and interest.

volume (World Bank 1995), and provisional data for 1993-94 for nationalized commercial banks indicate that recovery from *current* year's realizable loan from the agricultural sector had increased to 56.7 percent. In spite of this, traditional commercial banks continue to be financially weak, largely due to their earlier imprudent expansion, their inefficient and unresponsive organizational structure, and their lack of expertise in making sound project loans.

INNOVATIVE GROUP-BASED LENDING ORGANIZATIONS: COMMON THREADS AND REPAYMENT RATES

In the late 1970s, even as the traditional commercial banks were mounting huge losses, a few group-based credit institutions like BRAC and the Grameen Bank were already beginning to challenge the basic paradigm of rural finance in Bangladesh. In fact, by the end of the 1980s, a number of such institutions had already gone a significant way toward demonstrating that the task of financing the poor could indeed be made feasible. The basic institutional structures of three group-based banking systems are described in some detail in the next section. Below, five common threads that weave around the institutional structures of most NGO-based credit organizations are discussed.

First, services are strictly targeted to a well-defined set of clients, the most common criterion being the amount of land owned. Second, credit is always provided to small groups of borrowers on the basis of joint liability and without the pledging of any physical collateral. Third, at any time, the entire group is denied further credit when outstanding arrears exist for any one of the members. Fourth, lending activities are supplemented by training activities in areas ranging from entrepreneurial skill development, management of microenterprises like shopkeeping, crafts production, etc., to education on social awareness and family planning activities. Fifth, groups are required to contribute to an emergency fund that may be used when members experience household and other emergencies.

Loan recovery rates of such group-based institutions are astounding when compared to those of the commercial banks. Jahangir and Zeller (1995) have noted the recovery rates for six of them during the period 1992-93: 100 percent for ASA (1993); 98 percent for BRAC (1933); 98 percent for the Grameen Bank (1993); 93 percent for PROSHIKA (1993); 77 percent for Swanirvar Bangladesh (1993); and 100 percent for UDDIPAN.

WHY ARE REPAYMENT RATES OF GROUP-BASED ORGANIZATIONS SO GOOD? INSIGHTS FROM ECONOMIC THEORY

Fairly recent work in institutional economics has shed considerable light on why the new group-based institutions have been able to perform so well, while others failed. This is reviewed below.

In group-lending programs, the functions of screening, monitoring, and enforcement of repayment are to a large extent transferred from the bank's agent to the borrowers—the group members themselves. It is argued that groups accomplish these tasks better than the banks and therefore lead to higher repayment rates. Stiglitz (1990) and Varian (1990) discuss these perceived advantages of collective action in the screening of loan applicants and monitoring of borrowers. The incentives for screening and monitoring the actions of peers arise from joint liability and the potential loss of access to future loans. The main argument is that, compared to socially and physically distant bank agents, group members can obtain, at low cost, information regarding the reputation, indebtedness, and wealth of the loan applicant, and about his or her efforts to ensure the repayment of the loan. Zeller (1994), for example, shows that members of formal groups—like informal lenders—consider peer's indebtedness in the informal market as a major determinant of credit rationing. Thus, group members are found to be able to access complex and sensitive information just like informal lenders. It is this informational advantage that drives the suggestion of Stiglitz (1990) and Devereux and Fishe (1993) that there exists more

incentive for similar individuals to form groups. In addition, groups may also have a comparative advantage in the enforcement of loan repayment. While the formal lender has usually limited options to compel repayment from delinquent borrowers, group members can potentially employ social sanctions or seize physical collateral of the defaulter (Besley and Coate 1995). In many rural societies, including the ones in Bangladesh, nonresident bank agents have little leverage in actually going to a village and seizing collateral. Furthermore, group members appear to be in a better position to assess the reason for default, and to offer insurance services to members experiencing shocks beyond their control, while sanctioning willful defaulters.

However, it is important to note that group lending may not ensure higher repayment rates at all times. First, since the risk of loan default by an individual is shared by his peers, a member may choose a riskier project compared to the project chosen in case of an individual contract and therefore increase the probability of unwilling default. This is because the individual borrower may count on other members to repay his/her loan in their efforts to secure future loans. In other cases, it may be that the borrower's assessment of his/her peers' likelihood of defaulting triggers the borrower's own decision to default (Besley and Coate 1995). Bratton (1986), for example, analyzes the repayment record of credit groups in Zimbabwe and shows group loans performed better than individual loans in years of good harvest (when peers were expected to repay), but worse in drought years (when peers were expected to default). There is also the added problem of covariate shocks, especially after a drought or a flood, when impaired repayment capability of some members coincides with the equally impaired capacity of other members to bail the former out. For this reason, as Zeller (1995) emphasizes, individuals may attempt to exploit economies of risks by grouping with others whose income streams are negatively correlated with theirs. Also, sustainability of group-lending programs in areas with high covariate risks depends on the ability of the financial intermediary to reschedule the loan of defaulting members or to raise funds from borrowers during a normal year

to cover such contingencies. Lastly, there is also the question of optimal group size, since groups beyond a certain size may experience increased difficulty of informational exchange and coordination; further, disincentives attached to reneging on contracts diminish as each member may expect that the effect of his/her action on other members will be diluted (Glance and Huberman 1994).

To sum up, while evidence suggests that repayment records of group-based credit systems are almost incomparably shinier than those of the traditional commercial banks, economic theory is still suggestive of situations where groups may actually perform badly. From the policy point of view, it would be important to know more about these types of situations, so changes in institutional design that minimize their occurrence can be made.

3. STRUCTURE OF GROUP-BASED SYSTEMS: THE CASES OF ASA, BRAC, AND RDRS

This section provides some pertinent information on key institutional characteristics of ASA, BRAC, and RDRS[2] whose repayment structures are analyzed in the next section.

ASSOCIATION FOR SOCIAL ADVANCEMENT (ASA)

Credit services provided by ASA, an NGO with a large and diversified portfolio of activities, are administered through its Income Generation through Credit Program (IGDP), which was launched in 1989 (ASA 1992, 1993). Only members of ASA's village groups qualify for loans. Only the landless poor, defined as someone owning up to 0.50 acres of cultivable land and whose income does not exceed Tk 1,200 per month, and who also sells his labor for at least 200 days in a year, qualify for group membership. Loans are for a one-year term, repayable in 50 equal weekly

[2] Those interested in a greater level of detail are referred to Jahangir and Zeller (1995).

installments. The size of an individual loan ranges between Tk[3] 1,000-Tk 5,000, with the average being Tk 2,500. All loans are charged an interest of 15 percent per annum, repayable along with principal. Borrowers were required, until recently, to contribute 1 percent of the loan amount to an Emergency Fund maintained with ASA. This fund has now been converted to a life insurance fund. As with credit programs of other NGOs, there is a strong emphasis on savings. Saving a minimum of Tk 4 per week is mandatory.

BANGLADESH RURAL ADVANCEMENT COMMITTEE (BRAC)

BRAC, one of the largest NGOs in Bangladesh, initiated its credit program in 1976 (BRAC 1991). The cumulative amount of loan disbursed from 1990 through 1992 stood at Tk 1,745 million. Special priority is given to women: 80 percent of the borrowers were female. As of June 1993, 70 branches of the Rural Credit Project were in operation, with a coverage of 379,000 members. An interest rate of 20 percent per annum is charged to all loans. Membership of a BRAC's Village Organization (VO) is mandatory to attain eligibility. Only the landless poor, defined as people owning less than 0.5 acres of land, are eligible for membership to such organizations. Though each VO has 45 to 55 members, they are split into a number of functional groups comprised of five to seven members each. There are also other stipulations; important among them are rules regarding compulsory savings that are collected along with weekly loan repayment installments. An important part of the savings mobilized goes to an emergency fund, accessible to groups or households under special stress.

[3] Tk 40 = US$1.

RANGPUR DINAJPUR RURAL SERVICE (RDRS)

The credit program of RDRS is the product of a collaboration between the Government of Bangladesh, Deutsche Gesellschaft Für Technische Zusammenarbeit (GTZ), and the International Fund for Agricultural Development (IFAD). Unlike other lending organizations, RDRS does not lend from internal funds; rather, the program serves as a "link" between borrower groups and branches of four commercial banks. The current form of the program was initiated in 1989 and the first 300 groups were declared to have reached their "bankability status" in 1991. Two categories of groups are formed: groups for marginal farmers (cultivating up to 1.5 acres) and groups for small farmers (cultivating between 1.5 to 2.5 acres of land). Loan disbursement started in 1992. Total outstanding loans by the end of June 1994 was Tk 25 million. After a group is formed, RDRS trains and eventually certifies them as being bankable. Certification of creditworthiness granted by RDRS is recognized by the participating banks and lending begins. Participating banks include three nationalized commercial banks and one agricultural development bank. The first loan is given to only 50 percent of the households. Loans are extended to the other 50 percent only when the group has correctly paid the installments for the first set of loans. The interest rate is linked to market rates and was 12.5 percent per annum during December 1994. Considerable emphasis is placed on savings. A minimum Tk 1,000 needs to be deposited in the bank before the first loan application is made. An additional 4 percent up and above the interest rate is collected on loan until a special fund, the group-owned guarantee fund, reaches 10 percent of outstanding loans.

4. EMPIRICAL ANALYSIS

DATA

During 1994, the International Food Policy Research Institute (IFPRI) conducted a survey of 128 groups participating in group-lending programs of BRAC, ASA, and RDRS (Zeller, Sharma, and Ahmed 1996). These groups were randomly selected from 41 villages in 11 *thanas* and a formal questionnaire was administered to the chairperson of each group.[4] Information was collected on a range of group and community characteristics, including all loan transactions of the group. Each loan transaction refers to a particular loan received by the group from the relevant NGO institution; however, the actual individual recipient or the number of recipients per loan received by the group is not known. A total of 1,725 loan transactions were recorded. For this analysis, the subset of 868 transactions for which the contracted repayment date had passed at the time of the interview was chosen. These numbered 868. Out of these, there were 116 cases where delinquency in repayment was observed. Delinquency is defined as the failure to meet repayment obligation at the date complete repayment was promised. The rate of delinquency is measured by the proportion of the total loan amount in arrears at this promised date.

The dependent variable used in this study is the delinquency rate (DELIQ) defined as the proportion of the total loan amount in arrears at the date when complete repayment was promised. DELIQ = 0 implies complete repayment on time, whereas DELIQ = 1 would imply complete delinquency. There were no cases of the latter. The repayment function is defined as follows:

$$\text{DELIQ} = f(\text{LNSIZE}, \mathbf{X}, \mathbf{Z}, \mathbf{M}), \qquad (1)$$

[4] The sampling technique used is fully described in Zeller, Sharma, and Ahmed (1996).

where LNSIZE is the loan size, **X** is a vector of group characteristics, **Z** is a vector of community characteristics, and **M** is a vector of lender characteristics. Note that this function is defined only for LNSIZE > 0. We specify a function with the property that $\lim_{Lnsize} DEFAULT = 0$. This is a reasonable assumption, since defaults on small amounts of loans are indeed likely to be zero. When equation (1) is a linear function, this specification is achieved by interacting **X**, **Z, M** with LNSIZE, as in equation (2). A corollary of this assumption is that the effects of **X**, **Z, M** on the default rate are, quite reasonably, made conditional on the loan size, i.e.,

$$\frac{\partial(\text{Deliq})}{\partial \mathbf{X}} = g`(\text{LNSIZE}),$$

and similarly for **Z** and **M**.

Also, because the dependent variable is truncated at zero (group repays fully), the estimating equation is specified more generally as (for the I-th group) :

$$\text{DELIQ}_i^{*} = {}_1(\text{LNAMT}) + (\text{LNAMT})\mathbf{X}_2 + (\text{LNAMT})\mathbf{Z}_3 + (\text{LNAMT})\mathbf{M}_4 + e_i, \quad (2)$$

where

$$\text{DELIQ}_i = 0 \qquad \text{if } \text{DELIQ}_i^{*} \leq 0$$

and

$$\text{DELIQ}_i = \text{DELIQ}_i^{*} \qquad \text{if } \text{DELIQ}_i^{*} > 0.$$

In this framework, DELIQ_i^{*} is a latent variable observable only when it takes a positive value. Equation (2) is estimated by using the TOBIT maximum likelihood technique (Maddala 1983). Since heteroskedasticity results in a highly inconsistent maximum likelihood estimator, the model was tested, and subsequently corrected for

heteroskedasticity, based on the method proposed by Greene (1993). The variance of the error term, $_i$, is specified multiplicatively as

$$_i = e^{z},$$

where **Z**, in this study, is the loan size (LNSIZE). The likelihood ratio test (comparing the unrestricted heteroskedastic model with the restricted homoskedastic model) led to the rejection of the null hypothesis that = 0 at the 5 percent confidence interval ($^2_1$ = 467.85).

REGRESSORS, HYPOTHESES, AND DISCUSSION OF RESULTS

Table 2 provides the means of variables used and also presents results of the TOBIT estimation of the default equation. Below, we define regressors, present hypotheses, and interpret results.

GROUPSIZE represents the number of people in the group. The hypothesis is that the bigger the group, the more imperfect are flows of information likely to be between members. Hence, problems arising out of asymmetric information make monitoring and enforcing costly and less effective. Rates of default are therefore expected to increase with group size (+). The sign of the coefficient is positive as expected; however, it is marginally insignificant at the 10-percent level.

LNAMNT and $(LNAMNT)^2$ are the value of a loan, in Taka, and its square, respectively. We see two factors at work. First, the greater the loan size, the greater the probability of the UNWILLING default(+). However, the bigger the loan, the higher is the penalty cost associated with any delinquency rate [=(1+r+p)*LNAMNT, where p is the incremental penalty rate of interest]. The second factor puts pressure on the borrower to reduce the delinquency rate. Consideration of the latter is important, since most arrears that are eventually paid, even if late (as opposed to complete default). It is for this reason that a squared term is included. The coefficient on LNAMNT is positive and significant and

Table 2 Determinants of default on group loans (TOBIT)

Variable[a]	Mean	Units	Coefficient	T-Ratio
LNAMNT	12.031	Taka	0.11×10^{-4}	4.922**
$(LNAMNT)^2$	25.5×10^{7}		-0.35×10^{-11}	-0.23
GROUPSIZE	12.5	number	0.18×10^{-7}	1.48
M_LAND	0.50	acres	-0.14×10^{-7}	-2.06**
VARLAND	1.62		-0.33×10^{-6}	-0.73
RATION	25.0	percent	-0.54×10^{-7}	-3.85**
$(RATION)^2$	5,140.0		0.46×10^{-10}	2.26**
RELATIVES	51.5	percent	0.19×10^{-7}	1.82*
SHOCKS	22.0		-0.46×10^{-7}	-2.68**
AG_PROP	0.3	percent	-0.56×10^{-5}	-2.88**
M_DRT	0.35	percent	-0.19×10^{-4}	-4.43**
PCFEMALE	87.0	percent	-0.57×10^{-7}	-6.73**
DUMINTD	0.30		0.15×10^{-5}	3.60**
LN_AGE	1.55	years	-0.35×10^{-7}	-0.15
DISTANCE	12.0	miles	-0.18×10^{-6}	-2.19**
SAMITY	0.23	number	0.97×10^{-6}	1.612*
FFW	0.23	dummy variable	-0.11×10^{-5}	-1.63*
IRRI	30.0	percent	0.18×10^{-7}	1.88*
PARTRATE	200.0	per '000	-0.69×10^{-8}	-3.86**
DUMGTZ	0.013	dummy	-0.18×10^{-5}	-0.26
DUMBRAC	0.71	dummy	0.41×10^{-5}	2.71

Note: Log likelihood = -438.27.

[a] Each variable is interacted with loan size.

* = significant at the 10 percent interval.
** = significant at the 5 percent interval.

therefore supports the first part of the hypothesis. Though the sign of the coefficient on the squared term is as expected (-), it is not significant.

M_LAND is the mean level of land owned by the group. Since it reflects ownership of an important asset, it was expected that it would enhance the capacity of the group to repay loans on time (-). In the equation, the effect of land ownership on the delinquency rate, essentially an wealth effect, is found to be negative and significant, as expected. This indicates the importance of even a *marginal* difference in land owned, since all three programs, especially BRAC and ASA, limit their

lending to persons belonging to households that own less that 0.5 acres of land. This result may be partly due to the high marginal productivity of land at such low levels.

VARLAND is the variance of the land owned by members of a particular group. This variable was used as one indicator of the portfolio diversity among members of a group. It was hypothesized that the greater the diversity, the less covariant the incomes within the group. Hence, a higher variance was expected to be associated with a higher rate of repayment, as it would enable a better pooling of risk among members. However, the coefficient is not significantly different from zero, indicating, probably, that it was not a good indicator of portfolio diversity. It may also be due to the fact that both ASA and BRAC use a strict criterion for land ownership of 0.5 acres or less as one of their eligibility requirements; this reduces the variable's variability in the sample.

RATION is computed as the difference between the value of the loan applied for by the group and the actual value of the loan received, expressed as a percent of the total loan amount. A higher degree of rationing implies a higher level of unfulfilled credit demand. If this generates a greater concern for protecting future borrowing privileges, groups can be expected to increase efforts to lower delinquency rates (-). However, if the degree of rationing is too high, it is likely to render the loan amount more and more trivial (in comparison to the needs of the groups), so that the lender may not be considered as a feasible long-term partner. This may decrease incentives to adhere to the contracted repayment schedule (+). In the regression, coefficients of both RATION and $(RATION)^2$ are significant and carry the expected sign, supporting both the hypotheses.

RELATIVES measures the proportion of members in the group that are related to each other. Since information flows are expected to be better among relatives, there would be less moral hazard associated with bailing out a relative who is unable to meet the repayment requirements (-). However, cultural factors are important as they may make it difficult to impose sanctions on relatives and in this way dilute the

enforcement process (+). The coefficient in the regression is positive and significant, implying that the latter effect outweighs the former.

SHOCKS is the number of different types of shocks (family emergencies, crop/income loss, major social events) in the last 18 months, reported by members of the group. The coefficient is obviously expected to be positive (+). However, our results show that it is negative and significant and, therefore, contrary to expectation. This result is most likely due to the fact that the SHOCKS variable contains only incomplete information on the shocks received by groups. What is as important as the number of shocks, it seems, is their severity; SHOCKS does not contain any information on magnitudes.

AG_PROP is the proportion of members of a group reporting agricultural production as the principal occupation. It is therefore another indicator of asset portfolio diversity within groups. An important eligibility criterion, used especially by ASA and BRAC, is that members do not possess land in excess of 0.5 acres. The base scenario is therefore one in which most members derive a major part of their income as wages (as on- and off-farm laborers) or as profits from off-farm microenterprise. Hence, as AG_PROP increases from this base scenario, incomes within groups are, to some point, likely to be less covariant (a better mixture of agricultural production and wage earning activities), making it easier to bail out errant members (-). Further, since most households generally *own* very little land to begin with, those that report agriculture as their main occupation are likely to be tenant farmers who rent in land. Given this, they are likely to have other borrowing privileges (e.g., from a landlord) that may be used to meet the repayment schedule of group loans. Also, nonagricultural incomes are likely to be more risky, especially income from casual laboring. Therefore, unwilling default, on the average, is likely to be greater for those groups that have a greater share of nonagricultural income. Our result supports these hypotheses, since the coefficient is strongly significant with a negative sign.

M_DRT is the group-wise mean dependency ratio (proportion of children in total household size). In general, the higher the dependency ratio, the more risk averse the household, since the consequence of adverse shock is likely to be relatively serious as it affects children who are more vulnerable. Hence, ceteris paribus, the higher the dependency ratio, the better the repayment rate, since such groups would want to avoid risking reduced future borrowing privileges or reduced access to special emergency funds(-). The coefficient in the estimated model is significant with the expected sign, supporting the hypothesis.

PCFEMALE is the percentage of group members who are female. This variable generates considerable interest as many of the group credit schemes in Bangladesh especially target women who, because of their relatively low social status, bear a greater burden of the hardship arising out of poverty than do men. At the one extreme, it may be argued that because females are merely agents of their principals–the males (who make all the decisions), no significant difference in repayment rates can be expected. The argument changes somewhat if limited autonomy is allowed in loan use and enterprise management. Under this scenario, repayment rates may be expected to be higher for women because they are likely to choose less risky projects and default arising out of project failure is low. There are two possible reasons for this. First, given that women have very limited experience in the market economy to begin with, they are extremely cautious in their business ventures and are likely to choose projects that are relatively less risky. Women may also choose less risky projects for a second reason: the cost of project failure is likely to be higher for females than for males. This is because, given pervasive gender inequities, project failure may lead to reprimand and significant negative sanctions against the woman within the household, and she takes account of this eventuality in her decisionmaking. If these two factors indeed result in choice of safer projects, then the delinquency rate can be expected to decline with PCFEMALE. The coefficient is

negative and significant, suggesting that the default rate decreases as PCFEMALE increases.

DUMINTD is a dummy variable that equals one when the group is initiated by an NGO agent and zero if the group formed on its own. It may be hypothesized that screening is more effective within groups that form on their own than within those groups that depend on the intervention from an outside agent. However, it is difficult to place an a priori expectation on the sign and the interest here is to examine whether the manner in which the group was formed makes a difference at all. The coefficient is significant and positive, indicating that delinquency rates are lower for groups that form on their own.

LN_AGE is the number of years from the date of the interview that the loan was procured. If each subsequent transaction reinforces the value of the credit service to the borrower, then one may expect the delinquency rate to decrease at each successive transaction. If this is indeed so, the delinquency rate on more recent loans would be lower than ones in the past (+). However, if borrowers perceive the relationship to be only transitory, then one can expect delinquency rates on later-date loans to increase. Hence, prediction on the sign of coefficient is ambiguous. In our result, the coefficient is negative, but very insignificantly different from zero.

DISTANCE is a community-level variable computed as the mean distance from the village to nine types of service centers, ranging from a post office to a health post to the nearest agricultural input dealer. The closer the village is to the service centers, the less remote and more buoyant the local economy is likely to be. Hence, delinquency rates are likely to be low (+). However, the coefficient is negative and significant and therefore does not support the hypothesis. A possible explanation is the following: the more remote the village, the greater the value placed on the credit services of the group programs, since other alternatives are less available (e.g., like loans from traders, employers); delinquency rates therefore are low to avoid a loss of future borrowing privileges from this important source.

SAMITY is the number of mutual insurance groups in the village. The less the number of such groups, the more the value of an outside agency that provides insurance services. Therefore, lower delinquency rates can be expected (+). The coefficient is positive and just significant at the 10-percent level.

FFW is a dummy variable that equals one if the village has a food-for-work (FFW) program in place. Since FFWs are likely to be placed in relatively depressed areas, poverty-related unwilling arrears in repayment are likely to be relatively large. However, the more impoverished the village the greater the likelihood that its residents are rationed by other informal and formal lenders. Hence, the greater the likelihood that a greater value is placed on preserving continued access to these credit programs. Thus, the net effect on the delinquency rate is not clear. The coefficient is negative and significant at the 10-percent confidence interval, implying that the second effect is dominating and carries the important implication that areas with above average poverty rates can have better repayment records.

IRRI is the proportion of the cultivated area in the village that is irrigated. Higher levels of irrigation not only increase the income levels that the group is in, but also reduce the riskiness of agricultural incomes. Hence, unwilling default is likely to be lower(-). However, the coefficient is positive and significant. Though this is a result that cannot be satisfactorily explained, it should be noted that poorer households may actually own little irrigated land, even in villages that have high irrigation rates.

PARTRATE is another community-level variable indicating the number of persons participating in group-based institutions per 1,000 inhabitants of the village. The greater the participation rate, the greater the demonstrated benefits of group-based lending in the community. This contributes importantly to the viability and the perceived permanence of participating institutions. Hence, delinquency rates are likely to be low as groups act to preserve transactions well into the future (-). The coefficient is negative and significant.

Lastly, DUMGTZ and DUMBRAC are dummies for RDRS and BRAC, respectively, indicating whether delinquency rates vary across the institutions, even when all the other variables are controlled. Our results show that while there is no significant difference between ASA and RDRS, BRAC has a significantly higher delinquency rate than the other two, at least in the sample of the group selected for the analysis.

5. CONCLUSIONS

This study examined repayment rates in traditional commercial banks operating in the rural sector in Bangladesh. It also analyzed delinquency rates among 128 groups belonging to three well-known group-based NGO institutions that have made major advancements in delivering financial services to the rural poor. A number of conclusions are in order.

To begin with, there is a heartening discovery in the repayment records of group-based financial systems, namely that once the right institutional structures are in place, there need not be any major conflict between prudent financial management and lending to the asset poor. We observed that repayment rates of group-based systems are especially good in relatively remote communities, and even in communities that are likely to have higher than average rates of poverty. The secret seems to lie not just in innovations that reduce the cost of screening, monitoring, and enforcing loan contracts, but also in the successful demonstration to transactors in small rural communities that these innovations and institutions were not transitory phenomena, that they addressed their financial concerns, and that it was worthwhile for them to invest in a profitable long-term association. In fact, it is precisely this type of realization among borrowers that has contributed to the building up of a critical mass of social capital that supports these institutions. Without this critical mass, the joint liability would quickly flounder. Understanding the financial concerns of the

poor is therefore indispensable; after all, there is little incentive for borrowers to build a lasting relationship with institutions that do not address their requirements. Also, when new activities or new technologies are introduced, it is important that steps be taken to ensure that they are properly understood by borrowers. The general practice of the NGO institutions to combine lending services with a range of personal, social, and entrepreneurial education is a good example.

However, having said this, it is suggested that steps now be taken to make the process of group formation more endogenous to members themselves and less subject to external rules, once the minimum eligibility conditions have been met. Our analysis indicates that factors such as portfolio diversity within groups significantly affect repayment rates. A good mix of income activities, including agricultural production activities, is thus a desirable group characteristic. In general, potential members are in a better position to screen and select the best partners for group formation, giving due consideration to factors such as potential risk-pooling benefits.

Finally, the experience of group lending shows that the basic principles of prudential banking have to be adhered to at all times. Delivering finance to the poor should not be taken to mean that loan evaluation or rationing should be entirely dispensed. On the contrary, loan size has to take into consideration limited investment capacities and the limited risk-taking abilities of the rural poor. In fact, our analysis indicated that delinquency rates do appear to increase with loan size. Hence, objective and realistic project evaluation is necessary prior to loan approval. A policy of graduated lending whereby increases in group credit lines are made conditional upon satisfactory repayment performance appears to be a sound approach. However, it is important to ensure that this evaluation of loan applications not be based on traditional forms of gender or age bias. As the results of our analysis indicates, these biases, however deep-rooted, are totally misplaced.

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