

Determinants of Microcredit Repayment in Malaysia: The Case of Agrobank

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Abstract: The aim of this paper is to investigate the determinants of loan repayment among microcredit borrowers in Malaysia. Here, we investigate the determinants of microcredit repayment among borrowers in the case of Agrobank, which is a commercial bank that focuses its lending in the agriculture sector. The data used in this study is gathered through a survey on 2630 respondents that is carried out in 86 branches of Agrobank throughout Malaysia. We employ the probit and logit models to identify the main determinants that influence microcredit repayment. The determinants are divided into three categories – characteristics of the borrowers, characteristics of the project or business and the characteristics of the loan. The result of this study shows that the probability for loan repayment default is influenced by the gender of the borrower, type of business activity, amount of loan, repayment period and training.

Key words: Microfinance institutions • Microcredit • Repayment

INTRODUCTION

The question of repayment of microcredit loan is one of an important questions in microfinance since the borrowers are predominantly the poor and the lower income group, where most of them are self-employed and without having any collateral assets. Their lack of financial records, limited credit history and lack of assets for collateral has made lending to them not only costly but also very risky since it involves high screening, monitoring and enforcement costs. These explain why it is almost impossible for them to obtain credit from the formal financial institutions. Thus, we find that despite the argument that financial services should be inclusive to all levels of society, the poor and the lower income group usually find it very hard to have access to credit from the formal financial sector.

The existence of microfinance institutions, nevertheless, has made it possible for the poor and the lower income group to have access to the much needed credit. What is interesting is that, while the poor has been generally perceived to have low credit worthiness, their repayment rates of the loan has been generally very impressive. Thus, the performance of the microfinance institution in terms of loan repayment has been considerably very good ⁽¹⁾. The low default rates of these microcredit programs have led observers to believe that lending to the poor and the low income group of microentrepreneurs might not be as risky as it has been conventionally presumed. Indeed, contrary to the common believes, microcredit seems to be a potentially viable and profitable business. Consequently, this has induces the commercial banks to also offer microcredit services.

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¹It has been reported that the loan repayment rates of Grameen Bank in Bangladesh are almost always above 95% (Morduch, 1999). In Malaysia, the repayment rates of Amanah Ikhtiar Malaysia (AIM), which is a modified replication of the Grameen Bank, is about 97% (BNM, 2006).

The participation of commercial banks in offering microcredit services raises the question on how can a commercial banks ensure good repayment rates of their microcredit program? This is an important question since the way commercial banks operate is somewhat different from most microfinance institutions operated by the non-governmental organisations (NGOs) such as the Amanah Ikhtiar Malaysia (AIM). Indeed, one of the main reasons argued for the low default payment among the poor is that lending to them is based on group lending model, as practiced by most NGOs. In group lending model, the borrower and the group are jointly responsible for the loan. This joint responsibility (or joint liability) has been argued induces group members to self-select each other and also provides incentive to borrowers and the group members to choose a safe investment project [1]. Thus, group lending reduces not only the problems of moral hazard [2,3], but also provides the incentive for peer-monitoring or peer-pressure among group members, which leads to good rates of repayment of the loan. Group pressure and monitoring thus seems to be a substitute for collateral and reduces the probability of loan default.

Unlike most NGO-based microcredit programs which based their programs on group lending model, commercial banks lending program to a certain extent is different. Microcredit lending to the lower income group carried out by the commercial banks is usually based on the perceived prospect of the individual project and without any collateral requirement. In the NGO-based microcredit institutions such as the Amanah Ikhtiar Malaysia, group dynamics, i.e. peer-monitoring or peer-pressure as well as peer enforcement act as a substitute for collateral and among group members which leads to good rates of repayment of the microcredit loan. As commercial banks microcredit lending program lacking of the forces of group dynamics to ensure good repayment of the loan, it raises the question on how can a commercial banks ensure good repayment of their microcredit program. This in turn, entails the question on what are the determinants of good repayment of microcredit loan for a commercial bank which is a non group-based lending?

It is thus important to investigate and provide empirical evidences on the determinants of the loan repayment performance for the non group-based lending, so that we can better understand the common reasons for good microcredit loan repayment and hence provide some guidelines to increase the probability of success and good performance of microfinance programs (in terms of repayment of the loan) carried out by the commercial banks. This paper attempts to offer an insight into this matter. Towards this end, we investigate the determinants of credit repayment among microcredit borrowers of Agrobank in Malaysia, where its microcredit program is a non group-based lending with flexible repayment schedule and longer repayment period.

The paper is organised as follows. Section II provides a brief overview of Agrobank and its microcredit program. Section III discusses the methodology used in this study, while Section IV describes the data sources. Section V provides the results, while Section VI concludes.

Brief Overview of Agrobank Microcredit Services: The involvement of Agrobank⁽²⁾ with microfinance activities started in May 2003, when the government announced an economic package to spur the slowing down Malaysian economy. Among the main features of this economic package is the setting up of a Micro Credit Scheme for small traders which will be channelled through three institutions - Agrobank, Bank Simpanan Nasional (BSN) and Amanah Ikhtiar Malaysia (AIM). The Bank Pertanian Malaysia therefore has been directed and given the responsibility to implement the economic stimulus package where an initial fund of RM500 million was allocated to the bank for carrying out the Micro Credit Scheme.

The objective of the Agrobank Micro Credit Scheme is to provide working capital to small entrepreneurs who undertake agricultural activities, covering all agricultural activities involving production, processing and distribution. The target group is entrepreneurs at all level of agricultural activities including part-time entrepreneurs who are government or private sector employees. The maximum loan amount is RM20,000. The general features of BPM micro credit scheme is given in Table 1.

²Formerly known as Bank Pertanian Malaysia (BPM).

Table 1: General Features of BPM Micro Credit Scheme

| ITEM | DESCRIPTION |
|------|---|
| 1 | Objective To provide working capital to entrepreneurs who undertake agricultural activities. |
| 2 | Financing Scope All agricultural activities involving production, processing and distribution. |
| 3 | Basis of Financing Viable projects Financing is dependent upon project requirement and cash flow Financing is dependent upon household income |
| 4 | Target Group Entrepreneurs at all level of agricultural activities including part-time entrepreneurs who are government or private sector employees. |
| 5 | Eligibility Status Individual, Sole proprietor, individuals group Age 18 – 60 years old Citizenship Malaysian citizen only Business License Must possess the necessary licences |
| 6 | Long Terms and Condition Loan Amount Maximum of RM20,000 (USD5263) Loan Term Not more than 4 years Interest rate 4% per annum Financing margin 100% Insurance coverage Is a must Loan Disbursement All funds will be disbursed based on project progress and cash flow requirements. Funds will be credited to customer's "Patriot Perdana" account or direct to suppliers, vendors or other third parties Repayment Based on customer or project cash flows and following the schedule fixed by the bankSource: Agrobank |

The mechanism employed by Agrobank to deliver its microfinance facilities is simple. A client has to fill up an application form as well as to submit a business proposal ⁽³⁾. A client does not have to provide any collateral to support the application. He or she then will have to wait about one week to get the approval. The approval is mainly based on the viability of the project, particularly in regard to the project's securitisation of cash flow. Furthermore, the chances of getting approval are usually higher if the client already has a project underway. Disbursement of the loan funds is made lump-sum into the clients account at the Agrobank. A client can borrow up to a maximum of RM20,000 at 4.0% interest as directed by the government. The maximum repayment period is four years. The repayment is on a monthly basis, but flexibility is given to clients whose earnings depend on their harvests.

Agrobank Micro Credit Scheme has reaches 17,613 borrowers, with the total loan disbursed of about RM200 million. The Micro Credit Scheme has been terminated in 2007 and substituted by another microcredit program called Modal Usahawan Tani or MUST.

MATERIALS AND METHOD

This paper investigate the the effect of of borrowers characteristics, project characteristics and loan characteristics on loan repayment of Agrobank Micro Credit Scheme. These characteristics have been hypothesized in the literature to be important determinants of loan repayment in microcredit. The characteristics of the borrowers are (i) gender; (ii) marital status; (iii) race; (iv) level of education; (v) age; (vi) occupation; (vii) number of dependents; (viii) experience; (ix) membership in business society and (x) training; the characteristics of the project are (i) ownership structure of the project; (ii) types of project; (iii) distance of the project to nearest Agrobank office; (iv) revenue from project; the loan characteristics are (i) amount of loan and (ii) length of repayment period.

³ For those clients who have no experience in preparing business proposal, particularly among the less educated farmers, the Agrobank officer will help prepare the proposal.

The Explanation of Each of the Variables Are as Follows

Characteristics of Borrowers:

- Gender. Gen = 1 if male and 0 if female. It is argued that lending to women can lead to their economic empowerment and inculcate in them a culture of hard work and financial discipline, which can lead to high loan repayment rates. Thus, women borrowers may have high loan repayment rates.
- Level of Education. Educ = 1 if high school and 0 if higher than high school. Higher educational levels enable borrowers to comprehend more complex information, keep business records, conduct basic cash flow analysis and generally speaking, make the right business decisions. Hence, borrowers with higher levels of education may have higher repayment rates.
- Age. It is argued that older borrowers are more wiser and more responsible than younger borrowers. On the other hand, younger borrowers are argued to be more knowledgeable and more independent. Hence, age might have positive or negative effect on loan repayment rates.
- Other jobs. Ojob = 1 if borrower has other jobs and 0 otherwise. Borrowers that have other sources of incomes may use it to make loan repayments. Thus, borrowers with other source of income may have higher repayment rates.
- Experience. Borrowers who have been in business longer are expected to be more successful with their enterprise. They have more stable sales and cash flows than those who have just started. Thus, those who are more experienced may have more high repayment rates.

Characteristics of Project:

- Distance of project to nearest agrobank office. If a borrower's business is located near to the lender, it is easier for the lender to monitor by getting information on the borrowers and providing appropriate technical assistance. Thus, borrowers with businesses closer to the lending agency have higher repayment rates.
- Ownership structure of projects. It is argued that partnership type of ownership instills more discipline and positive behaviour to the owners compared to single ownership. Hence, projects with different types of ownership may have different repayment rates.
- Types of projects. It is argued that different types of projects have different levels of risks hence, profitability. Thus, borrowers with different types of projects may have different repayment rates.

Characteristics of Loan:

- Amount of loan. It is argued that institutions study loans implying a larger amount of money progressively more carefully. As the absolute amount of the loan increases, the authority to delegate responsibility for it is more limited and the decision is made further up the management hierarchy of the bank. Furthermore, it is also argued that smaller amounts of loans are insufficient creating cash flow problems for the borrowers, significantly affecting the projects. Thus, the larger the amount, the lower the default rate.
- Repayment period. It refers to the period of time during which the entire loan must be repaid. Ledgerwood [4] demonstrates that cashflow in part determines the debt-servicing capacity of borrowers. Shorter repayment periods might cause the borrower not to have generated enough revenue for the borrower to make loan payments. On the other hand, longer repayment periods are detrimental to borrowers if they cannot access future loans until the existing loans are paid back. Hence, both shorter or longer repayment periods can have negative effects on the default rate.

Besides the above variables, we also include marital status, race, number of dependents, training, membership in business society and revenue from projects as the independent variables.

For the purpose of determining the effect of borrowers characteristics on the probability of default, we employ the econometric approach that relies on both probit and logit models. The endogenous variable, y_{it} , is dichotomous, where $y_{it} = 1$ if there is loan default and 0 otherwise. To the extent that this variable is related to another latent non-observable random variable, y^*_{it} , which takes the form:

$$y^*_{it} = \alpha + x'_{it} \beta + z'_t \gamma + \varepsilon_{it} \quad (1)$$

where ε_{it} conditional upon (x_{it}, z_t) follows a normal or logistic distribution, i.e., $F(a) = 1/(1+\exp(-a))$ and if also, the relationship is of the type: $y_{it} = 1$ if $y^*_{it} > 0$ and zero otherwise; we obtain:

$$\text{Prob}(y_{it} = 1 / (x_{it}, z_t)) = \text{Prob}(y^*_{it} > 0 / (x_{it}, z_t)) = F(\alpha + x'_{it} \beta + z'_t \gamma) \quad (2)$$

where, therefore, $\text{Prob}(y_{it} = 1 / (x_{it}, z_t))$ is the probability of default of the loan i . The variable y^*_{it} can be understood as a function of the borrower's losses, such that if this function is greater than zero (or if the losses exceed a given threshold) the borrower defaults. Along the same lines, default could also arise out of a borrower's assessment of the various options it faces, thus turning it into a business decision. Thus, another way of understanding y^*_{it} is to see it as the expected difference between the utility of defaulting on the loan and that of not defaulting, given a series of variables in the context of the information on the borrower and other macroeconomic factors. From this point of view, a borrower will default if the utility it obtains thereby is greater than that which it would obtain if it did not, in terms of its expectations. In other words, the borrower will default if $y^*_{it} > 0$.

As shown in (2), the probability of default is considered to be a function of the characteristics of the borrower. The estimates of the parameters have been obtained by maximizing the log-likelihood function of y_{it} .

The Data: The data used in this study is a primary data which is gathered through a survey carried out among Agrobank Microcredit Scheme borrowers in 86 branches of Agrobank throughout Malaysia. The survey were carried out between the month of Jun and August 2007. A self-explanatory questionnaire were provided to the respondents, where they were chosen by a simple random sampling method. A total of 2688 borrowers from the 86 Agrobank branches throughout Malaysia involved in this survey. However, due to incomplete information, only 2630 is chosen for the analysis.

RESULTS AND DISCUSSION

Table 2 shows the results of the maximum likelihood estimate of the probit and logit models. The results shows that the probability for default is influenced by the gender of the borrower, type of business activity, amount of loan, training and the repayment period.

The results of the study shows the dummy Gen variable is positive and significant. This implies that the probability to default is higher for male than for female borrowers. The result support the argument that lending to women leads to their economic empowerment and inculcating in them a culture of hard work and financial discipline, which leads to high loan repayment rates. The result also support the argument that women are better borrowers. However, some studies found no difference in repayment male and female (e.g., [5]).

The coefficient for dummy Type2 variable is negative and significant. The result implies that the probability to default is lower for borrowers that involve in services/support activities as compared to those in production activities. The results indicate that businesses in the services/support sector incur less risk than production. Hence, probability of default is less for borrowers that are involved in the services/support sector.

Table 2: Estimated Parameter of the probit and logit Model

| Variables | probit | | logit | |
|----------------|-------------|--------------|-------------|--------------|
| | Coefficient | t-statistics | Coefficient | t-statistics |
| Constant | 0.243 | 1.054 | -3.263 | -3.267** |
| Gender | 0.0651 | 2.000** | 0.475 | 1.953** |
| Mstatus | 0.002 | 0.228 | 0.005 | 0.215 |
| Ras1 | -0.066 | -0.698 | -0.131 | -0.724 |
| Ras2 | 0.068 | 0.715 | 0.135 | 0.745 |
| Educ | -0.392 | -1.326 | -0.752 | -1.229 |
| Age | 0.003 | 0.460 | 0.005 | 0.471 |
| ExperOJob | 0.081 | 0.729 | 0.154 | 0.713 |
| Depen | 0.014 | 0.518 | 0.024 | 0.457 |
| Own1 | 0.121 | 0.460 | 0.233 | 0.419 |
| Own2 | 0.209 | 0.764 | 0.400 | 0.734 |
| Type1 | -0.103 | -0.855 | -0.202 | -0.874 |
| Type2 | -0.265 | -1.884** | -0.500 | -1.824** |
| Distp | 0.005 | 0.204 | 0.001 | 0.246 |
| Orgn | 0.159 | 1.150 | 0.269 | 1.035 |
| Train | -0.178 | -1.646* | -0.347 | -1.591* |
| Amount | -0.0003 | -1.967* | -0.0003 | -1.929** |
| Payper | 0.091 | 1.596* | 0.182 | 1.646* |
| Revenue | -0.0007 | -0.429 | -0.00005 | -0.451 |
| Log-likelihood | -362.508 | | -362.622 | |

Note: *** significant at 1% confidence interval, ** significant at 5% confidence interval,

* significant at 10% confidence interval.

The coefficient for Train variable is also negative and significant. This shows that borrowers that did not have any training (in relation to their business/project activity) has a higher probability to default compared to those borrowers who had some training. The provision of training and advice together with the loan by the same organization positively affects the loan repayment. Agrobank is thus encouraged to provide training and advice together with the provision of loans.

The coefficient for Amount variable is also negative and significant. The result suggests that in terms of amount of loan, the higher the loan amount, the lower the probability for default. This result is in contrast with the finding of Sharma and Zellar [6] which looks at repayment performance in group-based credit programmes in Bangladesh but support the finding by Jimenez and Saurina [7]. Based from the survey, we found out that for this Agrobank scheme, significant portion of the borrowers indicate that the loan amount given are small and insufficient. Hence, it is argued that the negative relationship arise is due to this small loan size. Lending very small loans could lead to high default rate. Agrobank need to have a lower limit to the amounts they lend which should be calculated carefully, so that it is not too high as to exclude the people it set out to serve, yet not too low as to attract people who may not be able to repay and may need grants.

The coefficient for Payper variable is positive and significant. This give an indication that the probability to default is higher, the longer the repayment period. This support the argument that cashflow in part determines the debt-servicing capacity of borrowers. Repayment period that is longer than the project's business cycle can be detrimental to borrowers. A borrower might be tempted to spend the higher net income in the early months of the loans resulting in potential difficulty making loan payments during the later months.

In general, the estimated result from the Probit model is found consistent with the estimated result for the Logit model. The estimated result from both Probit and Logit models suggest that the probability to default is not influenced by race, education, age, previous occupation, number of dependency, experience, membership in business society, the distance of the business/project to the nearest Agrobank office and revenue from the business/project.

The insignificant of the revenue variable and the positive coefficient for repayment period also suggest that there might be other factors that we are not able to capture, such as borrowers attitude, that influence the probability to default.

CONCLUSION

This paper examines the determinants of loan repayment among borrowers of Agrobank, which is a commercial bank. Unlike most microcredit scheme offered by the NGOs, Agrobank Microcredit Scheme is a non-group lending based with flexible repayment schedule and longer repayment period. We believe investigation on the determinants for a non-group based lending is important since the mechanism of group dynamics or peer pressure for ensuring loan repayment is almost non-existence. Our analysis uses data from a survey of 2630 borrowers from 86 Agrobank branches throughout Malaysia. We employ the probit and logit models to identify the main determinants that influence microcredit repayment.

Our study discovers that the probability for default is influenced by the gender of the borrower, type of business activity, amount of loan, training and the repayment period. With regards to the gender of the borrower, our analysis reveals that the probability to default is lower among female borrowers as compared to male borrowers. This findings appears to support the argument that women are better borrowers. Besides, this study also discovers that the type or the nature of the business in which the borrowers involved in is also important to be taken into consideration for an effective understanding of the determinant of loan repayment. We found that borrowers that involve in services/support activities has a lower probability to default compared to those in production activities. This might be related to the fact that businesses in the services/support sector probably incur less risk than businesses in production activities.

This study also discovers that the loan characteristics itself is also important to avoid loan repayment delinquency. We found that two of the loan characteristics that included in the analysis, which is the size of the loan and the loan repayment period, have to be taken into consideration for an effective understanding of the determinant of loan repayment. Our analysis suggests that, the larger the size of the loan, the lower the probability for default. Besides, we also discovers that the probability to default is higher, the longer the repayment period. Thus, while shorter repayment period would dampen loan repayment default, longer repayment period would deepens it. In addition, this study also found that training is also an important determinant of loan repayment. Our analysis shows that borrowers that did not have any training (in relation to their business/project activity) has a higher probability to default compared to those borrowers who had some training. Thus, the provision of training to the borrowers with regards to their business activity has a positively affects on the loan repayment.

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