The Welfare Impacts of Microfinance on Rural Households: Evidence from Boyolali of Indonesia

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Abstract

This paper examines the welfare impact of microfinance on rural households in four villages of Boyolali, Indonesia. It is found that access to microfinance services of formal microfinance institutions (MFIs), such as micro banks, contribute to higher levels of child education, greater confidence in dealing with others, and reducing the probability of facing household financial problems. This is the case as the disbursement of loans helps to finance education-related expenditures of children. The utilization of loans for productive purposes has the potential to increase income, leading to greater self-confidence in dealing with others. Similarly, greater incomes resulting from loans can also enhance the capability to cope with risk and vulnerability and hence, reduce the likelihood of facing financial distress. However, borrowing from moneylenders has little welfare impacts on rural households. Access to loans from moneylenders cannot reduce the probability of having financial difficulties, and failing to enhance self-confidence in dealing with others.

Keywords: microfinance; welfare impact; poverty

JEL Classification: G21; C31; I31

1. INTRODUCTION

This paper aims at investigating the extent that access to microfinance services contributes to the welfare of rural households. For instance, having access to micro credit has the potential to enhance production through the use of such loans for productive purposes. It could also smooth consumption against unpredictable shocks, such as sickness, death and harvest failures (Matin et al. 2002; Christen et al. 2003; Hulme and Mosley 1996a). It is also evident that the utilization of loans could help to finance a wide array of social-related expenditures, such as religious ceremonies and funerals. However, access to microfinance could lead to a deterioration of the welfare of rural households. This can be the
case as the use of such loans for consumption purposes can lead to loan defaults, causing rural households to indebtedness and social embarrassment. In the dense network of rural communities, a failure to repay loans could create social punishment, such as rumors of being loan defaulters, and thus leads to lower confidence in dealing with others. In this regard, this study seeks to analyze the impact of microfinance on the capability of rural households to improve (1) child education, (2) coping with household finance difficulties, and (3) enhancing self-confidence in dealing with other people. Such confidence is vital to enhance networks and communication, through participating in various community organizations (Holvoet 2004) and Zeller et al. (1997) claim that microfinance services can lead to an increase in the level of child education and the nutrition of the rural poor. Access to microfinance could lead the poor to cope with household finance difficulties, so that it could smooth consumption against unpredictable shocks, such as sickness and death (Christen et al. 2003).

The data and information for this study were obtained through questionnaire-based interviews with respondents in the rural areas of the Boyolali district in the Central Java province of Indonesia. The interviews were undertaken during the period from June to December 2006 in the villages of Sudimoro, Karangkepoh, Musuk and Tumang. In selecting a sample of microfinance clients, the stratified-randomly sampling method was preferred over a simple random sample technique, due to the poverty classification and their accessibility to microfinance services. Hence, the respondents were sub-divided into three homogenous groups of households: the very poor, the moderately poor, and the non-poor. 231 respondents were surveyed, covering 34.2 percent of the very poor, 35.5 percent of the moderately poor, and 30.3 percent of the non-poor people.

This paper is structured as follows. In the next section we review the literature background of this study. Section 3 presents the statistical model and the property of data used in the analysis of the model. Section 4 examines the welfare impact of microfinance on rural households. Three important aspects of the welfare were considered: the improvement in child education, the probability of facing household financial problems, and the confidence in dealing with other people. Section 5 concludes this paper.

2. THEORETICAL BACKGROUND

Microfinance has been seen as a major strategy for fighting poverty across developing nations. Not surprisingly, the UN declaration of 2005 as the International Year of Microcredit suggested that a significant increase in worldwide access to microfinance could lead to the
achievement of the Millennium Development Goals (MDGs) by 2015 (Dehejia et al. 2005). Awarding the Nobel Peace Prize in 2006 to Dr Muhammad Yunus, the founder of the Grameen Bank, indicated the global support for employing microfinance strategies to alleviate poverty (Hermes and Lensink 2007).

MFIs are heterogeneous and cover a wide array of institutions which can be classified into four types of institutions: formal, semi-formal, informal, and microcredit programs. Formal MFIs include microbanks, and microfinance units of commercial banks, and development banks. Financial services of formal MFIs are subject to all relevant laws including banking supervision and regulations. Microfinance services of semi-formal MFIs are subject to relevant laws, but they are excluded from banking supervision and regulations. They include microfinance NGOs, credit cooperatives and pawnshops. Informal MFIs consist of various institutions, including lending from relatives, friends, neighbors, moneylenders, and rotating saving and credit associations (ROSCAs). Microcredit programs include various microcredit programs of NGOs and the government (Charitonenko & Afwan, 2003).

The microfinance movement is not a recent phenomenon. It emerged in the 1960s, when developing nations were actively engaged in agricultural modernization through delivering microcredit-subsidized programs to poor farmers. However, the results of such subsidized credit schemes were disappointing. They contributed to agricultural production, but failed to increase the income of poor farmers. Several studies have revealed massive defaults in subsidized credit programs across developing countries (Morduch 1999a; Hulme and Mosley 1996; Adam and Vogel 1986). Considering such failures, by the mid-1980s the ‘Ohio School’, as they came to be known, was promoting a demand-side approach in which microfinance services were to be client-responsive and not supply-driven. In this approach, microfinance scholars emphasize the importance of the commercial practices of microfinance operations. This can be achieved by transforming microfinance NGOs into banking-type microfinance institutions, such as the successful metamorphosis of PRODEM into Banco Solidario (BancoSol), in Bolivia in 1992 (Ledgerwood and White 2006). The success of the BRI-unit system in Indonesia also empirically supports the functioning of the commercial approach to microfinance (e.g., Robinson 2001; Charitonenko et al. 2004). Microfinance commercialization has also gained support from international aid organizations, such as the World Bank and the Asian Development Bank, and has become a mainstream development of the microfinance industry in many countries.

However, the extent to which microfinance can contribute to poverty alleviation remains debatable. Pessimistic views argue that
microfinance alone is unlikely to alleviate poverty. Coleman (1999) points out that access to loans does not significantly contribute to the income of poor clients, while it has a greater income impact on non-poor people. A study of the Grameen Bank in Bangladesh by Islam (2007) also reveals that poor clients fail to improve their welfare. This is the case as most poor people tend to use such finance for consumption purposes, while the non poor use them for productive purposes. In contrast, the optimistic views propose a positive impact of microfinance on the welfare of poor people. For instance, Holvoet (2004) reveals that access to microfinance services can increase the level of child education. This can be the case as access to loans helps the poor to finance expenditure-related to child education. In case of the Philippines, Kondo (2007) reveals that access to microfinance could smooth consumption of rural households and increase their food expenditures. Nevertheless, such impact tends to be regressive in household's income.

The ability of the rural poor to access finance is the key issue of poverty alleviation through microfinance. Morduch (2002) recognizes that greater access of the poor to microfinance programs can be an effective way to reduce poverty through the ability to finance basic education and health services. The question arises as to what extent MFIs can provide financial services to the poor. Hulme and Mosley (1996a p.113) present an economic framework of poverty alleviation through microfinance. They claim that lending for promotional activities can enhance production, leading to an increase in the income of the poor. Similarly, Zeller et al. (1997) and Zeller and Meyer (2002, p.) propose that microfinance can help the poor through strengthening their ability to cope with the insecurity of food production and consumption. This can be achieved in three ways, including financing necessary inputs of production (e.g., raw materials and equipment); enhancing their capacity to bear the risks of investments in non-farm enterprises; and financing household expenditures on subsistence items and other expenses (see also Matin et al. 2002). However, the weakness of this line of analysis is that it narrowly focuses on microfinance's impacts on production of the poor at the household level. Here, the incidence of poverty is also solely viewed as the poor being incapable of generating sufficient income due to a lack of financial inputs.

As has been widely accepted, a more holistic approach is required to comprehend the socioeconomic dimensions of poverty (Myrdal 1968; Sen 1992). Such a holistic approach recognizes that the poor are trapped into poverty cycles not only due to the deprivation of physical capital (e.g., productive assets), but also due to the alienation from the (re)production processes of social capital, such as social and business networks. For instance, low skills and education can lead the poor to lack
self-confidence in participating in social and business networks. In this regard, the present study hypothesizes that microfinance contributes to the improvement of the welfare of rural households. To investigate this general hypothesis, we critically examine the extent to which microfinance impacts the welfare of the poor through (1) improving their children's education, (2) giving rural households greater confidence in dealing with other people, and (3) equipping rural households to be more capable of coping with household financial problems.

This study considers the 'circuit' of social capital as a framework for analyzing the microfinance impacts on the welfare of rural households. Central to the circuit of social capital is that the reproduction of (social) capital is not only affected by economic factors, but also by socio-cultural aspects of the community (O'Hara 2007). At the household level, familial factors may contribute to the reproduction of social capital through improvements in the quality of human capital. As O'Hara (2007) points out, emotional as well as financial support from parents can help children to pursue higher education, leading to higher quality human capital of the children. At the community level, social capital has been widely recognized as potentially contributing to economic performance. For instance, strong bonds of trust can enhance self-confidence and wider networks of interaction among community members. As a result, such trust and networks can give rise to economic outcomes, as both are key foundations of many economic transactions.

The circuit of social capital can comprehend the process of poverty alleviation through linking socioeconomic activities of rural households with microfinance. For instance, access to microfinance services can accelerate social capital reproduction (accumulation) of rural households through an increase in labor productivity, wider networks, and the reactivation of surplus product. There is no doubt that access to loans can help rural households to reactivate their (meagre) surplus product for the expansion of their output. Similarly, savings help to accumulate the surplus value of labor, which is perceived as being important for risk-coping strategies against household financial difficulty. Savings are also useful to support human resource investment through children's education.

At the community level, trust, friendship, and association play a vital role in microfinance practices. As has been explored widely, lending provisions with strong social cohesion benefit MFIs by exploiting the ability of community members to enforce repayments and monitor one another. From the borrowing point of view, strong trust, reliable friendships and networks can increase the access of the poor to informal finance, such as loans from relatives, friends, neighbors, ROSCAs and moneylenders. This is because such informal lending is mainly delivered
on the basis of social collateral (e.g., friendships and reciprocity) rather than physical collateral.

The question arises whether microfinance can help alleviating poverty. Considerable research has investigated whether microfinance contributes to poverty alleviation. Yet studies on the impact of microfinance on poverty alleviation have come to mixed conclusions. For instance, a study of MFIs in Bangladesh by Khandker (1998) shows that five percent of poor clients have escaped from poverty annually through microfinance. Similarly, Khandker (2003) reveals that microfinance can reduce extreme poverty. One important aspect of the contribution of microfinance to poverty alleviation is through its enabling impact on increasing female participation in labor markets and schooling (Pitt and Khandker 1998). In India, Chen and Snodgrass (2001) reveal that microfinance can increase the income of poor clients above the poverty line. In Thailand, Kaboski and Townsend (2005) show that microfinance services has accelerated the asset growth of the poor and help them to smooth household consumption. In Bolivia, Mosley (2001) has found that microfinance reduces poverty through the growth of the incomes and assets of the poor. A similar finding can be found in Dunn and Arbuckle (2001) for the country of Peru and Banegas et al. (2002) for Ecuador.

However, Coleman (1999) reveals that microfinance has had no impact on assets and incomes of the poor in Thailand. Further, he suggests that the positive economic impact of microfinance tends to be greater for the non-poor than the poor (Coleman 2002). Duong and Izumida (2002) reveal that the poor often face various difficulties in accessing microcredit in Vietnam. Amin et al. (2003) show that microfinance tends to exclude the poor and very poor clients, but it is successful at reaching the relatively better-off poor. In Bangladesh, a study by Datta (2004) shows that many microfinance schemes tend to exclude the poor, as they are deemed to be risky borrowers. Islam (2007) emphasizes further that the microfinance services of the Grameen Bank has failed to improve the welfare of their poor clients. He calculates that about 77 percent of poor clients of the Grameen Bank could not improve their welfare.

Looking at the impact of microfinance on education, we propose a study hypothesis that access to microfinance services potentially increases the level of children's education among rural households. This can be the case for two reasons. The first is that an increase in income resulting from loans can enhance the ability to finance their children's education. The second is that access to loans can facilitate investment in childhood education through the disbursement of loans to finance such expenditure. The willingness to invest in children's education is related partly to the higher future earnings of children, which also benefits
parents (King and Hill 1993). Greater access to loans can improve the level of children's education because rural households can allocate budgets to support this education (Pitt et al. 2003). In Indonesia, Panjaitan-Drioadisuryo and Cloud (1999) reveal that access to loans can improve income, influencing household decision-making to provide better education of children, improved nutrition and smaller family size.

It is evident that rural households are highly prone to external shocks, such as sickness, death, and natural disasters, leading to financial distress. As loans can help to finance emergency expenditures (e.g., medication), this study thus hypothesizes that access to microfinance services enhances the capacity of rural households to cope with household financial problems. As has been widely observed, access to loans facilitates production and greater income of rural households. An improvement in income can then help the poor in engaging in asset diversification, such as physical savings (e.g., raising livestock) and micro bank deposits (Dercon 2002). Asset diversification is critical to the risk-coping strategies of rural households for dealing with unpredictable shocks, such as harvest failures. Savings benefit rural households as they can be withdrawn to finance emergency expenditures, and hence lower the probability of facing household financial distress. Moreover, access to loans may also reduce financial distress as rural households can utilize loans to smooth consumption in urgent situations.

Central to the broader approach is the notion that poverty can arise because the poor often face social exclusion, leading to a deprivation of access to kinship, friendship, and community networks (Sen 1992; Mukerjee 2002; ADB 2006). In this regard, access to microfinance services are said to be capable of enhancing the self-confidence of the poor in dealing with other people. It is likely that low levels of education, income and skills cause the poor to lack self-confidence in participating in community organizations (ADB 2006). As a result, the poor often tend be alienated from access to resources and power within the community. According to O'Hara (2007), a lack of communication skills inhibits the lower-classes from enhancing their social networks, and hence they are often bound within 'unproductive' networks that stimulate crime and drug abuse. Having only subsistence income also potentially constrains the poor from enhancing their social networks. This is the case as the poor are often incapable of financing expenditures on social activities, including transportation costs to maintain close relationships with relatives and business associates.

In the present study we thus hypothesize that access to microfinance services leads rural households to have more self-confidence in dealing with other people. Such confidence potentially provides a basis for the poor to maintain kinship relationships and to
expand social networks. This study argues that access to loans may give rise to self-confidence in dealing with others through an increase in income of the poor. Greater income, for instance, can help the poor finance expenditure on social activities and participation in community organizations. In contrast, loans for consumption are unlikely to enhance such confidence as they tend to have low income-generating effects. As loans for consumptive purposes tend to have a greater probability of default, they will adversely affect the self-confidence of the poor in dealing with others. This is the case as loan defaults can tarnish the reputation of the poor within their social networks.

3. STATISTICS OF VARIABLES IN THE LOGIT ESTIMATION

Over the last two decades, microfinance has increasingly been recognized as a major instrument in the fight against poverty. However, whether microfinance is capable of reducing poverty remains a debatable issue. Many have pessimistic views concerning the impact of microfinance on the welfare of poor people. It is recognized that very poor clients account for only 30 percent of worldwide microfinance clients, while most MFIs successfully reach the moderately poor and non-poor people (Morduch 2006). Coleman (1999) argues that non-poor people gain more benefits from accessing microfinance than poor people. Many factors contribute to the exclusion of poor people from microfinance programs, such as the unwillingness of the poor to participate and the preference of MFIs to serve non-poor people (Data, 2004). In contrast, considerable research reveals a positive impact of microfinance on the welfare of poor people. It is found that access to microfinance can lead the poor to improve child education and nutrition (Chen & Snodgrass, 2001; Pitt & Khandker, 1998; Chowdhury & Bhuiya, 2004; Mosley & Rock 2004; Khandker, 2003). Microfinance services also help to smooth consumption, and facilitate the poor to expand social networks (Kaboski & Townsend, 2005).

It has been widely accepted that poverty alleviation should include not only an improvement in material possessions of poor people, but also access to social resources, such as kinship, friendship and business networks, and community organizations (ADB, 2006). In the microfinance literature, unstable income flows and exclusion from bank loans are often seen as the reasons why rural households, particularly the poor, rely on social networks, such as relatives, neighbors and informal financial arrangements for finance (e.g., Roscas). However, the capability of poor people to utilize social networks has various constrains. For instance, low education and communication difficulties often inhibit people in lower classes to utilize social and familial networks. According
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to O'Hara (2007), people in lower classes tend to face social inferiority and alienation, and hence are more likely to engage in anti-social capital, such as drug and criminal organizations. In this regard, this study seeks to examine whether access to microfinance (e.g., loans) can lead rural households to be more confident in dealing with other people. This is important as a higher degree of confidence can expand social networks.

To examine the effect of microfinance access on child education, the probability of facing household financial problems and the state of feeling confident in dealing with others in Boyolali, we utilize the logit model. In the logit model of the microfinance impact on child education, the dependent variable takes the value of 1 (one) if respondents have children with senior-high school education or higher education. It has the value of 0 (zero) if the levels of child education are lower than senior-high school. For the impact of microfinance on the incidence of facing household financial difficulties, the dependent variable is constructed by taking the value of 0 (zero) if respondents never face financial difficulties, and 1 (one) if otherwise. Furthermore, the logistic model of self-confidence in dealing with others, the dependent variable takes the value of 1 (one) if respondents feel confident in dealing with other people. In contrast, it takes the value of 0 (zero) if respondents are not confident in dealing with other people. Then, the explanatory variables of the model include levels of parental education (EDU), ownership of liquid assets (ASET), such as jewelry and savings, monthly income (INCOM), multiple sources of income (OTHERICOM), size of farmland (LAND) and houses (HOUSE), membership in business organizations (BASOC) and rotating and credit associations (ROSCA), and borrowing from moneylenders (BLENDER), cooperatives (BCOOP) and banks (BBANK).

Table 1 presents the statistics of variables used in the logit estimations. It shows that in the four villages of Boyolali surveyed, 59.7 percent of children have senior-high school education or higher education, while the other 40.3 percent have levels of education below senior high school. When asked how often respondents face household financial problems, 65.8 percent of respondents states that they often face problems with household financial difficulties. In contrast, the majority of respondents without financial problems are non-poor households with monthly incomes above Rp 2,000,000 (US$210.50). This indicates that the incidence of having household financial difficulties in Boyolali is closely associated to income. Because of the low levels of education, skills, income, and assets, poor people do not feel confident in being involved in community associations. To investigate this issue, we utilize subjective measurements through questioning respondents how confident they are in dealing with other people. Table 1 shows that respondents in the four villages of Boyolali who feel confident and very confident in dealing with
other people account for 44.6 percent. In contrast, 45.4 percent of respondents state that they are not (so) confident in dealing with others.

Table 1. Descriptive Statistics of Variables in the Logit Estimation

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (Yes; No)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean (St. Dev.)</th>
<th>Type of Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Dependent variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child education</td>
<td>231 (138; 93)</td>
<td>0</td>
<td>1</td>
<td>0.59 (0.49)</td>
<td>Binary</td>
</tr>
<tr>
<td>Financial problems</td>
<td>231 (152; 79)</td>
<td>0</td>
<td>1</td>
<td>0.65 (0.47)</td>
<td>Binary</td>
</tr>
<tr>
<td>Confidence in dealing with others</td>
<td>231 (103;12)</td>
<td>0</td>
<td>1</td>
<td>0.44 (0.49)</td>
<td>Binary</td>
</tr>
<tr>
<td><strong>B. Explanatory variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of education (EDU)</td>
<td>231</td>
<td>1</td>
<td>4</td>
<td>2.59 (1.10)</td>
<td>Discrete</td>
</tr>
<tr>
<td>Value of liquid asset in thousand Rp (ASET)</td>
<td>231</td>
<td>0</td>
<td>72,260.23</td>
<td>4,723.84 (10,025.1)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Monthly income in thousand Rp (INCOM)</td>
<td>231</td>
<td>360.00</td>
<td>15,485</td>
<td>1,544.76 (1,545.52)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Other sources of income (OTHERINCOM)</td>
<td>231 (139; 92)</td>
<td>0</td>
<td>1</td>
<td>0.60 (0.49)</td>
<td>Binary</td>
</tr>
<tr>
<td>Size of house in m² (HOUSE)</td>
<td>231</td>
<td>50</td>
<td>1,000</td>
<td>318.81 (207.41)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Size of farmland in m² (LAND)</td>
<td>231</td>
<td>150</td>
<td>5,000</td>
<td>1,118.4 (944.26)</td>
<td>Continuous</td>
</tr>
<tr>
<td>Membership in business association (BASOC)</td>
<td>231 (88; 143)</td>
<td>0</td>
<td>1</td>
<td>0.38 (0.49)</td>
<td>Binary</td>
</tr>
<tr>
<td>Membership inRosca (ROSCA)</td>
<td>231 (218; 13)</td>
<td>0</td>
<td>1</td>
<td>0.94 (0.23)</td>
<td>Binary</td>
</tr>
<tr>
<td>Borrowing from moneylender (BLEDER)</td>
<td>231 (101; 130)</td>
<td>0</td>
<td>1</td>
<td>0.44 (0.50)</td>
<td>Binary</td>
</tr>
<tr>
<td>Borrowing from cooperative (BCOOP)</td>
<td>231 (147; 84)</td>
<td>0</td>
<td>1</td>
<td>0.64 (0.48)</td>
<td>Binary</td>
</tr>
<tr>
<td>Borrowing from bank (BBANK)</td>
<td>231 (170; 61)</td>
<td>0</td>
<td>1</td>
<td>0.74 (0.44)</td>
<td>Binary</td>
</tr>
</tbody>
</table>

Sources: Field Survey (processed)
In the last column of Table 1, the explanatory variables of the logistic model can be divided into three types: continuous, discrete and binary (dummy). Monthly income (INCOM), the value of liquid asset (ASET), the size of house (HOUSE), and farmland (LAND) are continuous variables. The variable of parental education (EDU) has discrete values, in a range from less than primary education to university education. The dummy explanatory variables include memberships in business organization such as farmer and petty trader associations (BASOC), and rotating saving and credit associations (ROSCA), borrowing from different MFIs, including moneylenders (BLENDER), cooperatives (BCOOP) and banks (BBANK). Monthly incomes of respondents surveyed range from Rp 360,000 (US$ 37.89) to Rp 15.5 million (US$1,578.94). However, the average monthly income accounts for Rp 1.5 million or equivalent to US$157.8. On average, ownership of liquid assets, such as saving and jewelry, is relatively low among respondents, accounting for Rp 4.7 million (US$497.1). More interestingly, the majority of respondents have multiple sources of income, accounting for 60 percent of respondents. In many cases husbands in Boyolali consider themselves as “farmer”, while the wife engages in petty-trader activities. In the post-harvest season, many farmers undertake temporary migration as urban laborers in construction activities, motorcycle or -taxi drivers, and petty trading. In villages of Boyolali, multiple sources of income are vital for the rural poor to secure themselves against unpredictable shocks (e.g., harvested failure), leading to declining income.

In Table 1 the average size of housing ownership accounts for 310 m², while the size of farmland ranges from 150 m² to 5,000 m². However, the majority of rural households have farmlands less than 1,000 m². Practicing traditional farming techniques, the low size of farmland ownership leads to low and unpredictable flows of income in Boyolali.

Rotating saving and credit associations (Roscas) and religious and business organizations are common associations for rural households in the survey area of Boyolali. Business associations include farmer organizations, groups of petty traders and manufacturers. Some business associations have successfully established credit cooperatives, while many utilize Rosca to provide microfinance services to their members.

Table 1 shows that 94.3 percent of respondents actively participate in Rosca, while 38 percent of respondents are involved in business associations, such as farmer and petty trader organizations. The benefit of being involved in such associations is that it can facilitate access to microfinance. Membership can help to expand networking access to markets and other necessary inputs, such as fertilizer and seeds. This is the case as many producers often provide credit to purchase seeds and
fertilizer through farmer associations, thus encouraging farmers to participate in such associations. Furthermore, the rural poor utilize various MFIs to fulfill their financial needs. Table 3 shows that apart from access to bank loans, many respondents utilize loans from moneylenders and cooperatives. These MFIs remain favorable for rural households in Boyolali, as their financial provision utilizes simple borrowing procedure, such as very little paper work and without physical collateral.

4. THE ESTIMATED RESULT OF THE LOGIT MODEL

The last row of Table 2 outlines comparable results of the logit models. The first point to note is that the diagnostic test using the Harvey and Koenker methods indicates that the estimated models do not statistically suffer the problem of heteroskedasticity. This means that the variance of estimated residuals of the logit models has a constant mean across observations. The likelihood ratio of the models is significantly high with the p-value being greater at the 95 percent level of significance. This implies that inclusions of all explanatory variables in the logit models are statistically acceptable.

Regarding Table 2 column (1), the level of parental education does not statistically affect the probability of having children with high-school education or higher education in Boyolali. Scrutinizing data of parent education in Boyolali, most respondents have had primary education or less. Hence, the level of formal education of parents is not the major determinant of the willingness to invest in higher levels of child education. According to Myrdal (1968), the use of mass media, such as television and newspapers, can influence attitudes of rural households toward the importance of child education. Moreover, rural households can gain knowledge and positive attitudes toward the importance of child education through social interaction and communication (Myrdal, 1968). The ownership of liquid assets, the size of house and farmland also do not statistically lead to a greater probability of having children with higher levels of education. A possible transmission mechanism in stimulating higher levels of child education is income. The variable of “monthly income” (INCOM) statistically increases the probability of rural households having children with higher education. Similarly, multiple sources of income can enhance the probability of having children with higher levels of education. This implies that higher income remains an essential element for rural households in Boyolali to invest in child education.

The magnitude effect on the dependant variable can be recognized through the computation of the odd ratio (OR) of the estimated coefficients (Hosmer & Lemeshow, 2000). The odd ratio measures the
probability of the dependent variable being affected by the change in explanatory variable. The odd ratio of the variable of “income” results in a coefficient of 1.95, indicating that a 10 percent increase in monthly income will be accompanied by an increase in the probability of children with higher education by about 19.5 percent. Considering the variable of multiple sources of income, the odd ratio of 1.75 means that the probability of having children with higher education is 1.75 times greater for respondents having multiple incomes than those with single income source.

Membership in business associations does not statistically affect the probability of having children with higher education. However, being involved in rotating saving and credit association, Rosca statistically leads to higher levels of child education. The computation of the odd ratio for the variable ROSCA results in the value of 4.45. This implies that in Boyolali the probability of having higher levels of child education is 4.5 times greater for respondents being a member of Rosca than non-member of Rosca. This confirms that membership in rotating saving and credit associations facilitates rural households in Boyolali to engaging in precautionary savings, perceived important for anticipating expenditure on child education (Dercon, 2002). Being involved in Rosca, rural households can also have more access to loans that can be used to finance child education (Holvoet, 2004).

In contrast, the variable of “access to loans from moneylenders, cooperatives and banks” does not statistically affect the probability of having children with higher education. This implies that access to microfinance does not directly lead to higher levels of child education in Boyolali. The microfinance impact on child education is probably through higher incomes resulting from the utilization of loans to support productive activities.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Child Education (1)</th>
<th>Financial Problem (2)</th>
<th>Confidence (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>OR</td>
<td>Coefficient</td>
</tr>
<tr>
<td>EDU</td>
<td>0.004</td>
<td>1.00</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td></td>
<td>(0.022)</td>
</tr>
<tr>
<td>LASET</td>
<td>0.049</td>
<td>1.05</td>
<td>-0.061</td>
</tr>
<tr>
<td></td>
<td>(1.493)</td>
<td></td>
<td>(-1.220)</td>
</tr>
<tr>
<td>LINCOM</td>
<td>0.667</td>
<td>1.95</td>
<td>-1.581</td>
</tr>
<tr>
<td></td>
<td>(2.433)**</td>
<td></td>
<td>(-4.610)*</td>
</tr>
<tr>
<td>OTHERINCOM</td>
<td>0.561</td>
<td>1.75</td>
<td>-0.565</td>
</tr>
<tr>
<td></td>
<td>(1.926)**</td>
<td></td>
<td>(-1.625)**</td>
</tr>
<tr>
<td>LHOUSE</td>
<td>-0.178</td>
<td>0.83</td>
<td>0.071</td>
</tr>
<tr>
<td></td>
<td>(-0.669)</td>
<td></td>
<td>(0.242)</td>
</tr>
<tr>
<td>LLAND</td>
<td>-0.245</td>
<td>0.78</td>
<td>0.123</td>
</tr>
<tr>
<td></td>
<td>(-1.099)</td>
<td></td>
<td>(0.482)</td>
</tr>
<tr>
<td>BASOC</td>
<td>-0.041</td>
<td>0.96</td>
<td>-0.721</td>
</tr>
<tr>
<td></td>
<td>(-0.222)</td>
<td></td>
<td>(-1.881)**</td>
</tr>
<tr>
<td>ROSCA</td>
<td>1.494</td>
<td>4.45</td>
<td>-0.233</td>
</tr>
<tr>
<td></td>
<td>(2.252)**</td>
<td></td>
<td>(-0.332)</td>
</tr>
<tr>
<td>BLENDER</td>
<td>0.107</td>
<td>1.11</td>
<td>0.819</td>
</tr>
<tr>
<td></td>
<td>(0.355)</td>
<td></td>
<td>(2.328)**</td>
</tr>
<tr>
<td>BCOCO</td>
<td>-0.218</td>
<td>0.80</td>
<td>-0.037</td>
</tr>
<tr>
<td></td>
<td>(-0.657)</td>
<td></td>
<td>(-0.100)</td>
</tr>
<tr>
<td>BBANK</td>
<td>0.294</td>
<td>1.34</td>
<td>-0.894</td>
</tr>
<tr>
<td></td>
<td>(0.829)</td>
<td></td>
<td>(-1.890)**</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-8.749</td>
<td>23.735</td>
<td>-19.756</td>
</tr>
<tr>
<td></td>
<td>(-2.341)</td>
<td></td>
<td>(-4.578)</td>
</tr>
</tbody>
</table>

Number of observations: 231
Log-likelihood: -120.74
Likelihood ratio with 11 DF: 27.725
Correct prediction: 64.93%
Heteroskedasticity test: 69.874
Harvey test (χ²) with 11 DF: 59.017
Koenker test (χ²) with 11 DF: 110.250

Notes: *, ** and *** indicate statistically significant at 1%, 5% and 10% level, respectively. EDU = Level of parent education (1 = primary school or bellow, 2 = junior-high school, 3 = senior-high school and 4 = university and diploma). LASET = Ownships of liquid assets (e.g., saving and jewelry) in thousand rupiah LINCOM = Household monthly income in thousand rupiah LHOUSE = Size of house in m² LLAND = Size of farmland in m²

Number in parentheses are z-statistics
1 Respondents having other sources of income take a value of 1, and 0 otherwise.
2 Respondents being a member of business associations take a value of 1 and 0 otherwise.
3 Respondents being a member of ROSCA take a value of 1 and 0 otherwise.
4 Respondents borrowing from moneylenders take a value of 1 and 0 otherwise.
5 Respondents borrowing from cooeratives take a value of 1 and 0 otherwise.
6 Respondents borrowing from banks take a value of 1 and 0 otherwise.
7 The odd ratio (OR) is calculated as: OR = e^β^i, where e = 2.718, β^i = estimated constant and β_j = estimated coefficient of variable i (Hosmer and Lemeshow, 2000).
The estimated result of the logit model on the probability of having financial problems is presented in Table 2 column (2). Considering the value of the t-statistic, the variable education is not statistically significant at the 95 percent level. This indicates that having higher levels of formal education does not statistically reduce the probability of rural households facing financial difficulties. Although the ownership of liquid assets is not statistically significant at 95 percent level, the t-statistic is relatively high. The odd ratio of 0.94 implies that a 10 percent increase in liquid assets result in a 9.4 percent reduction in the probability of having financial problems. As expected, higher income statistically reduces the probability of facing financial problems. The estimated coefficient of the variable LINCOM results in the t-statistic of -5.148 which is significantly greater than the t-table at the 99 percent level. The marginal effect of the coefficient indicates that a 10 percent increase in income will be accompanied by a reduction in the probability of facing financial problems by two percent. Similarly, having multiple sources of income also reduces the probability of rural households facing financial difficulties. The computation of the odd ratio of this variable results in the coefficient of 0.75. This indicates that the probability of facing financial difficulties is 0.75 times lower for rural households in Boyolali with multiple sources of income than those with a single income source. This implies that stable income flows remain an essential element of the capability of rural households to cope with poverty (ADB, 2006).

Considering social capital variables, memberships in Rosca and business associations increase the capability of rural households to deal with financial difficulties. The logit estimation confirms a negative correlation between membership in ROSCAs and business associations and the likelihood of facing financial difficulties. The computation of the odd ratio of the variable BASOC results in the coefficient of 0.49. This implies that in Boyolali the probability of facing financial problems is 0.49 times lower for rural households being a member of business association than those without participation in such organization. Memberships in business associations can facilitate access to economic opportunities, perceived vital in sustaining production and income. As Burt (2005) points out, the possession of wider networks can lead to information brokerage in terms of accessing current information about business opportunities. From a social capital point of view, Streeten (2002) proposes that wider networks can lead households to obtain help from their business associates. In the case of rural households, Narayan (1997) puts forward the notion that such networks can act as social glue, perceived important to guard against vulnerability.
Access to loans has positive and negative impacts on the probability of facing household financial difficulties. The access to loans from neighbors does not statistically affect the probability of facing financial problems. This is not surprising as the survey found that loans from neighbors are very small, accounting for the range of Rp 25,000 to 50,000 (US$2.63 to US$5.26). Such loans may not be sufficient to cope with financial difficulties of rural households. Not surprisingly, borrowing from moneylenders increases the probability of rural households facing financial difficulties. The computation of the odd ratio results in the coefficient of 2.27. This implies that the probability of facing financial difficulties is two times greater for rural households borrowing from moneylenders in Boyolali. Two factors are responsible for a greater probability of rural households having financial problems after borrowing from moneylenders. The first is that loans from moneylenders are often used for consumptive purposes. As a study of ADB (2006) points out, rural households in Indonesia are often forced to borrow from moneylenders due to financial distress associated with sickness, death, harvest failure and the like. Being used for consumptive purposes, loans from moneylenders do not have income-generating effect to rural borrowers. Indeed, the repayment obligation of such loans puts a downward pressure on the low income of rural households. The second is associated with frequent installments (e.g., daily and weekly) of loans from moneylenders. In order to meet such frequent loan installments plus high interest payment, the rural borrowers have to allocate significant amount of their income, leading to a reduction in household consumption.

In contrast, access to bank loans statistically reduces the probability of rural households facing financial problems. The estimated coefficient of the variable BBANK is -0.89 with the t-statistics of 1.89. Regarding the coefficient of the odd ratio, the probability of facing financial difficulties is 0.4 times lower for households with access to bank loans in Boyolali. As bank loans are often used to finance productive activities, an improvement in income enhances the capability of rural borrowers to meet loan repayments. It is worth noting, however, that non-poor households have greater access to bank loans, while the rural poor remain excluded. This implies that access to bank loans has a greater welfare impact on non-poor households rather than poor people in villages of Boyolali.

Table 2 column (3) outlines the estimated result of the probability of having confidence in dealing with others. As expected, the higher level of education leads to a greater probability of being confident in dealing with other people. The odd ratio of 1.20 indicates that an increase in levels of education leads to a greater probability of having confidence by
1.2 percent. Similarly, the ownership of liquid asset, such as savings contributes to the state of confidence in dealing with others. The estimated coefficient of the variable LASET is 0.069 with the odd ratio of 1.10. This means that in Boyolali a 10 percent increase in assets will be accompanied by a greater confidence in dealing with others by about 11 percent. Regarding the coefficient of the odd ratio, a one percent increase in monthly income (INCOM) can improve confidence in dealing with others by about 3.4 percent. The computation of the odd ratio for the variable OTHERINCOM indicates that the probability of being more confident in dealing with others is 2.56 times greater for rural households with multiple sources of income than those with a single income source in Boyolali.

More interestingly, the variable of “memberships in business associations” (BASOC) statistically contributes to a greater probability of being confident in dealing with other people. The estimated coefficient of this variable is statistically significant at the 99 percent level. The computation of the odd ratio of this variable results in the coefficient of 4.20. This means that having more confidence in dealing with others is about four times greater for rural households who participate in business associations. This confirms the hypothesis that being involved in business networks can help poor people in Boyolali to develop communication skills. As Collier (2002) points out, extensive interactions can benefit individuals through learning, facilitating knowledge accumulation. As a result, better skills of communication can lead the poor to become more confident in dealing with others.

As expected, access to bank loans (BBANK) statistically contributes to the probability of being more confident in dealing with other people. The estimated coefficient of this variable is statistically significant at the 95 percent level. The computation of the odd ratio of this variable results in the coefficient of 3.21. This indicates that in Boyolali rural households with access to bank loans have three times greater confidence of dealing with others than those without access to such loans. This is the case as bank loans are often used to support productive activities, leading to greater incomes and prosperity of borrowers. As a result, they become more confident in dealing with other people. In contrast, the estimated coefficient of the variable BLENDER is not statistically significant at the 95 percent level. This means that access to loans from moneylenders does not statistically affect the probability of being confident in dealing with other people. This is not surprising, as loans from moneylenders in Boyolali are often used to finance household consumption, and hence have a little impact on production and income of rural borrowers. On the other hand, the usage of such loans for consumptive purposes has greater probability of default, deteriorating the reputation of default borrowers.
5. CONCLUSION

This paper has examined the welfare impacts of microfinance in the rural area of Boyolali, Indonesia. Similar to other studies, the present study reveals that the impacts of access to microfinance services on the welfare of rural households are mixed. While access to microfinance does not lead rural households in Boyolali to have children with higher levels of education, it statistically reduces the probability of facing household financial problems. Access to microfinance services in Boyolali also statistically leads to greater confidence in dealing with other people. Consistent with previous studies (e.g., Zeller & Johansen, 2006; Mosley & Hulme, 1996), access to loans can reduce the probability of having household financial problems; it can help to support production and smooth consumption patterns.

However, access to loans in rural areas of Boyolali has both positive and negative impacts on the probability of being more confident in dealing with others. Access to micro bank loans can enhance confidence in dealing with others, as loans are utilized to support production, leading to greater income. In contrast, loans from moneylenders cannot enhance such feeling confident because they are often used to finance consumption. Loans for consumptive purposes cannot generate income; instead repayment obligations depress the low income of rural households, and thus deteriorate their confidence in dealing with others.

Moreover, social capital in terms of membership in business associations can enhance confidence of rural households in Boyolali in dealing with others. Being involved in such associations, rural households can learn communication skills from their business associates, leading to more confidence in dealing with others. It can also reduce the probability of rural households to face financial problems as business associates can provide loans to them. Access to reciprocal loans among members of association can benefit rural households in response to the urgent needs of cash due to sickness, death and harvested failures. This finding statistically indicates that the utilization of social capital in the form of business networks can enhance confidence of rural households in dealing with other people.

REFERENCES


The Welfare Impacts of Microfinance on Rural Households: Evidence from Boyolali of Indonesia

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