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The welfare impact of microcredit on rural households in China

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ABSTRACT

Microcredit has gained worldwide acceptance in recent years as a flexible mechanism to expand individuals' (especially the poor's) access to financial services, which is considered as an efficient way to achieve poverty reduction and other social development. A large number of empirical studies have been done to examine the welfare effects of microcredit on the borrowers and such effects are well documented in many other countries such as Bangladesh. However, the impacts of microcredit on China rural households' livelihood are not well documented. This paper attempts to empirically evaluate the impact of microcredit on household welfare outcomes such as income and consumption in rural China. The estimation is based on the difference-in-difference approach which is an increasingly popular method of tackling the selection bias issue in assessing the impacts of microcredit. The study uses a two-year panel dataset, including both primary and secondary data collected through a household survey in rural China. Our empirical results favour the wide belief in the literature that joining microcredit programme helps improve households' welfare such as income and consumption. Despite the optimistic findings on how microcredit has changed the rural households' living conditions, our results show that the vast majority of the programme participants are non-poor, which casts some doubts on the social potential (such as poverty reduction) of China's microcredit programmes.

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1. Introduction

Like most Asian developing countries, the majority of the poor population in China dwell in rural areas and poverty remains one major challenge to the society. Inability to acquire formal credit support has been often argued as a crucial constraint in expanding farmers' production, which largely restrains farmers from improving their living conditions in China (e.g., Gale and Collender, 2006; Coleman, 1999). The lending terms and conditions set by formal financial institutions usually exclude the poor farmers who farm on the non-secured lands and possess little tangible assets that can be offered as collateral for formal loans. As an alternative, poor farmers seek for informal loans to meet their consumption or production needs, which are typically offered at higher interest rates. However, the exploitive interest rate of informal loans have exacerbated farmers' indebtedness and further kept most of the households trapped in poverty.

The failure of formal financial institutions to serve small farmers and the great success of the Grameen Bank in Bangladesh in providing credit service to rural poor have inspired the governments in many low-income countries (LICs) including China to adopt microcredit mechanism to deliver credit at reasonable costs to rural people. Microcredit was introduced into China in the mid-1990s as part of the government's poverty alleviation strategies in the mid-1990s, attempting to ameliorate rural poverty through a financially sustainable approach. Various organisations have been involved in the delivery of microcredit service in China, including non-governmental organisations (NGOs), governmental agencies, and rural financial institutions such as the Rural Credit Cooperative (RCC).[2] Since implementing microcredit programmes in 2000, the RCC has expanded its microcredit activity with an extensive network in rural areas and evolved as the largest microcredit provider in China (Du, 2004; Sun, 2003).

However, unlike other countries such as Bangladesh, where the microcredit's potential in reducing poverty has been thoroughly examined (see for example, Khandker, 2005; Morduch, 1998; Pitt and Khandker, 1998), few attempts have been made in China to test the efficiency of microcredit as a poverty reduction instrument. Studies on China's microcredit tend to elaborate the development and regulations of microcredit programmes, giving little quantitative information on the outcomes of programme participation.

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[2] The RCC programme outperforms both the NGO and government programmes in terms of financial sustainability and programme replicability. For details see Park and Ren (2001) and Zuo (2001).

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As a result, the impacts of microcredit on China rural households' livelihood are not well documented.

Since the lack of credit is regarded as the crucial constraint in improving the Chinese rural households' livelihoods, it is hypothesised that microcredit, which targets the rural households for the extension of credit facilities have a positive impact on households' welfare such as increasing the households' income and/or consumption. This paper aims to empirically examine this hypothesis by focusing on the microcredit programme operated by the RCC. The rest of the paper is organised as follows: Section 2 discusses the research methodology, followed by data collection in Section 3. The empirical findings are discussed in Section 4. Section 5 concludes the paper.

2. Methodology to impact assessment

2.1. Identifying the impact of microcredit programme – analytical framework

Assessing the impact of microcredit programmes requires comparing outcomes (e.g., household income and consumption) when a household participates in the programme to the same outcomes when he/she does not participate. For example, let w_i be a binary indicator of programme participation equal one for participation by household i and zero for non-participation. Further let Y_{i1} denote the value of the outcome of interest when household i participates in the programme and Y_{i0} denote the potential value of the same outcome when it is in the state of non-participation. Thus the true programme impact on the outcome of household i, represented by Δ_i, can be quantified by the difference between Y_{i1} and Y_{i0}, as (Sarangi, 2007; Perry and Maloney, 2007):

$$\Delta_i = Y_{i1} - Y_{i0} \quad (1)$$

Two major problems should be addressed to identify the true programme impact: missing data and unobservability. The missing data problem arises because the same household cannot be observed in both participation and non-participation states at the same time and thus the true impact of participation in the microcredit programme on a certain outcome cannot be observed. In other words, one or the other component of the difference expressed in Eq. (1) is missing (Heckman, 1997; Rosenbaum and Rubin, 1983). To overcome this problem, group statistics such as the 'average effect of treatment on the treated' (ATT) is adopted to replace the missing data on individual subject (Heckman, 1997). ATT is the most popular group statistics widely used in impact evaluation literature, which measures the extent to which the programme change the outcome of a group of participants compared to what they would have experienced in the absence of participation[3] (see for example, Perry and Maloney, 2007; Nguyen, 2007; Nguyen et al., 2007). The true programme impact measured by ATT can be expressed by the following equation:

$$\gamma = E(Y_{i1}|w_i = 1) - E(Y_{i0}|w_i = 1) \quad (2)$$

where $E(\cdot)$ signifies expectation in the population. Specifically, $E(Y_{i0}|w_i = 1)$ represents the counterfactual outcome for participants had they not participated (Dehejia and Wahba, 2002; Heckman, 1997).

This, however, gives rise to the problem of unobservability, $E(Y_{i1}|w_i = 1)$ can be estimated while the counterfactual $E(Y_{i0}|w_i = 1)$ cannot. This problem is addressed by constructing 'counterfactuals' based on a treatment/control framework, where a group of programme non-participants are selected as a control group and the observed outcomes of this control group are supposed to serve as 'counterfactuals' to the observed outcomes of programme participants (treatment group). Accordingly, the ATT measured with this treatment/control framework is used to estimate the true impact (γ) and the basic idea of this approach is described as follows:

$$\gamma^* = E(Y_{i1}|w_i = 1) - E(Y_{j0}|w_j = 0) \quad (i \neq j \in N) \quad (3)$$

where γ^* is the estimation of γ, i, and j denote two different households in a chosen sample of N households where household i participates in the programme while household j does not; Y_{i1} is the outcome investigated of household i and Y_{j0} is the same outcome investigated of household j (Sarangi, 2007). Specifically, the paper assesses the average welfare impact of microcredit programme by comparing the average household outcomes (such as income and consumption) between borrowing households (treatment group) and non-borrowing households (control group).

2.2. Empirical model and estimation strategy

The welfare indicators used in this paper include household annual income and annual consumption. Household income refers to the total income earned by all household members, which encompasses the income from all possible sources, such as agriculture, non-agriculture, self-employment, and wages. Household consumption in this paper is measured by the sum of food consumption and non-food consumption within a household.

A review of the impact evaluation literature suggests that empirical work assessing microcredit's impact must carefully address selection bias issue, which otherwise would reduce the reliability of the impact estimation. Selection bias in microcredit impact evaluation arises when the households' participation in microcredit programme or households' receipt of microcredit is related to unmeasured (or unobserved) factors that simultaneously affect the outcomes of their credit use but these unobserved factors are not correctly accounted for in the impact assessment. Two main sources leading to such selection bias are non-random programme placement which is caused by unmeasured village attributes and households' self-selection into the programme which stems from unobserved household characteristics (for details see Islam, 2007; Coleman, 1999; Pitt and Khandker, 1998). It can be argued that comparing welfare outcomes between borrowing households and non-borrowing households without accounting for unobserved heterogeneity (such as unobserved household and village characteristics) would produce biased results since it will wrongly ascribe the entire change (improvement or deterioration) in welfare outcomes to the programme impact, which partly arises from the uncontrolled and unobserved factors.

We adopt panel data model to mitigate the potential selection bias in the impact estimation. The empirical analysis is built upon the difference-in-difference (DD) method, which is an increasingly popular technique in economics for identifying causal effects of programmes or treatments in the absence of pure experimental data. The DD estimation framework requires that the outcomes investigated be observed for two groups over two time periods. The first group, referred as the borrowing group, consists of households who receive microcredit in the period after the start of the programme (i.e., post-programme period) but not prior to the initiation of the programme (i.e., pre-programme period); the second group, called non-borrowing group comprises households who do not receive microcredit during either period (Athey and Imbens, 2006; Bertrand et al., 2004).

[3] There are other statistics used in impact assessment, such as local average treatment effect, marginal treatment effect, or the effect of non-treatment on the non-treated, which measures the impact the programme would have on the non-participants if they had participated in the programme. See Heckman (1997) for details.

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