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Microfinance and Poverty—A Macro Perspective

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Summary. — We test the hypothesis that microfinance reduces poverty at the macro level using cross-country and panel data which are constructed by the Microfinance Information Exchange data on Microfinance Institutions (MFIs) and the World Bank data. Taking account of the endogeneity associated with MFIs' loans, we show that a country with higher MFIs' gross loan portfolio per capita tends to have lower levels of poverty indices. Contrary to recent micro evidence, our results suggest that microfinance significantly reduces poverty at macro level and thus reinforce the case for channeling funds from development finance institutions and governments of developing countries into MFIs.

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1. INTRODUCTION

Most of the recent studies of the impact of microfinance on poverty or income have relied on micro-level evidence based on household data or entrepreneurial data (e.g., Hulme & Mosley, 1996; Imai, Arun, & Annim, 2010a, 2010b; Khandker, 2005; Mosley, 2001). Due to the scarcity of reliable macro data on microfinance, macro-level studies of the impact of microfinance on poverty are rather limited. However, there are a few recent works that investigate the relationship between the macro economy and microfinance activities and/or performance, such as Ahlin, Lin, and Maio (2011), Ahlin and Lin (2006) and Kai and Hamori (2009), among others. The thrust of these studies is either to examine the environmental context in which microfinance operates, or investigate the potential effect of microfinance on key macroeconomic variables, such as gross domestic product or inequality. The findings of a significant relationship between operations of Microfinance Institutions (MFIs) and the macro economy corroborate the recent evidence based on household data sets which posits that microfinance has a poverty reducing effect (e.g., Gaiha & Nandhi, 2009; Imai *et al.*, 2010a, 2010b; Khandker, 2005).

This study redirects the attention to macro studies given the mixed results of microfinance impact studies at the micro level in recent years. As the separation of causal effects of micro-credit from selection effects is unsatisfactory in many of the micro-level studies, Armendariz and Morduch (2005) pointed to a potential bias arising in the impact of microfinance in

these studies. In view of this, studies that have recently emerged have used one of the following three approaches: (i) randomized control trials (Banerjee, Duflo, Glennerster, & Kinnan, 2009; Feigenberg, Field, & Pande, 2010; Karlan & Zinman, 2010); (ii) financial diaries/portfolios of the poor (Collins, Morduch, Rutherford, & Ruthven, 2009) and (iii) use of other variants of quasi-experimental estimation techniques such as treatments effect and propensity score matching in both cross-sectional and panel data setting (Imai *et al.*, 2010a, 2010b). Evidence from such studies remains mixed due to different microfinance outcome measures and/or different methodologies adopted by these studies, leading to the perception that microfinance is likely to have little impact on poverty.¹ Our econometric analysis points to robust poverty reducing effects of microfinance, as elaborated below.

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The challenges for empirical macro studies of microfinance include: (a) identifying an appropriate measure of microfinance activities, in terms of “availability” or “intensity”; (b) identifying the effects of “performance,” distinguished from “presence” and “scale” of microfinance on macro indicators; and (c) examining the robustness of coefficient estimates related to microfinance. Building on the small but emerging literature on analyzing the impacts of microfinance from a macro perspective, the present study aims to examine the relationship between MFI’s gross loan portfolio per capita and FGT class of poverty indices.² The results would be useful for development agencies, governments, and other investors, as there are important implications for microfinance’s potential role in reducing poverty at macro level. Our counterfactual simulations illustrate the possible effects on aggregate poverty expected from the decrease in MFIs’ gross loan portfolio per capita, GDP per capita, or domestic credit which may be caused as a consequence of global recession or financial crisis.

Drawing upon econometric estimations of the cross-country data—including a panel—we find consistently that a country with higher MFIs’ gross loan portfolio per capita tends to have lower levels of FGT class of poverty indices, which corroborates the poverty reducing role of microfinance. It is notable that microfinance loans per capita are negatively associated with not only the poverty headcount ratio, but also with the poverty gap and squared poverty gap, implying that even the poorest benefit from them.

The rest of the paper is organized as follows. The next section provides a brief explanation of the data which the present study draws upon. Econometric specifications are discussed in Section 3. The main results and simulations are given in Sections 4 and 5, respectively. The final section offers concluding observations.

2. DATA

The present study analyzes the role of microfinance—volume/scale of activities (not performance/quality)—on poverty, using cross-sectional data covering 48 countries in the developing regions for 2007.³ The cross-sectional data are supplemented by a two-period (2003 and 2007) panel covering 61 countries.⁴ This is based on the data generated by *Microfinance Information Exchange* (2010) or MIX and the *World Development Indicators 2011* (World Bank, 2011). Launched in 2002, MIX provides industry, country, and regional level data on microfinance outreach and financial performance indicators. The information marketplace collates reports of (self-reporting) MFIs annually, based on: (i) pre-determined formats and reporting standards; (ii) validation of information received with both internal and external cross checking systems; and (iii) standardization of data to facilitate comparison. Interpreting and further processing the data, however, require a great deal of caution because (i) MIX may not be able to send questionnaires to all the MFIs in the country—in particular if MFIs are small and recent, (ii) not all the MFIs surveyed by MIX respond (sample selection bias), and (iii) “self-reporting” may be a source of measurement errors even if MIX imposes the careful cross-checking systems and the reliability of the data is ranked by MIX (Ahlin *et al.*, 2011). It is not possible to know the extent of the errors arising from these factors, but the MIX data provide the most comprehensive and largest data on microfinance activities (Cull, Demirgüç-Kunt, & Morduch, 2011) and the data cover a large fraction of microfinance customers worldwide (Cull, Demirgüç-Kunt, & Morduch, 2007).⁵

To cross-check the potential bias arising from self-selection, the current study estimates variants of econometric models with different sub-samples, based on several criteria such as extent of validity of data submitted by MFIs (see Ahlin *et al.*, 2011 for details). We have found that the results are broadly similar and consistent irrespective of which sub-samples are included. Also, we have compared the gross loan portfolio of MFI per capita (based on the MIX data)—a dependent variable in our models—with three variables on microfinance activity at country levels available from WDI 2011; (a) branches, microfinance institutions (per 100,000 adults); (b) deposit accounts, microfinance institutions (per 1000 adults); and (c) loan accounts, microfinance institutions (per 1000 adults). We have consistently found that a pair-wise correlation is positive and significant for all the three variables⁶ and hence surmise that the MIX data aggregated at country levels represent actual performance of MFIs.

It is noted that relatively few studies have used a measure of microfinance operations (volume/scale) in a country based on the MIX data. Also, the present study uses the World Bank poverty estimates, released in 2008 (Chen & Ravallion, 2008; Ravallion, Chen, & Sangraula, 2008). These poverty estimates are based on the poverty line of US\$1.25 (based on PPP—Purchasing Power Parity) per day in 2005, and cover a wider range of countries than the previous estimates (based on a poverty line of \$1.08 on 1993 PPP). While there are many studies based on the latter, those based on the more recent poverty estimates are still few.⁷ Also, as noted earlier, we use the FGT class of poverty indices.

With a view to measuring microfinance activities in a country, we rely mainly on Gross Loan Portfolio (GLP) (divided by the total population) given that it measures actual funds disbursed to households. Total GLP of MFIs aggregated for each country is adjusted for write-offs and inflation. This is a benchmark indicator generated by MIX. Standardization of raw data facilitates meaningful comparison of benchmark indicators (MIE, 2010). Other variables in the poverty equation include gross domestic product per capita, domestic credit as a share of GDP, and regional dummies.⁸ While a robust inverse relationship between poverty and GDP per capita is confirmed in extant literature, share of domestic credit in GDP has a more complex role partly because financial development is both a cause and result of growth. It is, however, plausible that when financial development is low there may be a mutually reinforcing relationship between financial development and microfinance. Finally, as poverty is conditioned on many unobservable regional characteristics (e.g., vulnerability to natural shocks), regional dummies are used.

3. SPECIFICATION OF MODELS AND ESTIMATION

Our analysis is based on the data for 2007 (for cross-sectional estimations), and 2003 and 2007 (for panel data estimations), not only because extensive and reliable historical data on microfinance do not exist⁹ but also because international poverty estimates are available only for one or two specific years for most of the countries.¹⁰ As a result, country panel data of poverty are unbalanced, as shown in Appendix 4.

We apply both OLS (Ordinary Least Squares) and IV (Instrumental Variable) model or 2SLS (Two Stage Least Squares) to estimate the effect of gross loan portfolio per capita of MFIs on poverty. 2SLS involves two stages: gross loan portfolio per capita of MFIs is estimated by an instrumental variable and other covariates in the first stage and in the second poverty head count ratio is estimated by the predicted

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