DEMAND DYNAMICS, OUTREACH EXPANSION, AND PRODUCT INNOVATION: RECENT RESEARCH IN RURAL FINANCE

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The world's rural economy has changed considerably over the last couple of decades. Many countries are going through economic transitions that are altering both the rural landscape and the opportunities for investment and development. It is safe to say that these changes impact the demand for and supply of financial services in rural areas. In an attempt to review and discuss some of these changes nearly 200 researchers, experts, representatives of financial institutions and government representatives from 60 countries gathered for the "International Conference on Rural Finance Research: Moving Results into Policies and Practice," in March 2007 at the Food and Agriculture Organization (FAO) headquarters in Rome, Italy.[2]

The conference, co-organized and co-funded by FAO, the Ford Foundation and the International Fund for Agricultural Development, had two purposes. First, the organizers strove to bring researchers together to share their work and identify future research issues together with select rural finance leaders, policymakers, and donors. Second, they wanted to foster dialogue on ways for strengthening linkages between researchers, policymakers and other sector actors. To enable the participants to address these issues, the conference was structured around the following objectives:

– to review and take stock of research on key rural finance innovations, in order to enumerate what has worked and why, highlighting opportunities and challenges for scaling up well-proven approaches;

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[2] For more information about the conference and conference documentation see www.ruralfinance.org/id/46640.

- to identify important empirical issues in rural finance for future exploration and study;
- to discuss ways to improve research quality as well as the communication, dissemination, and use of research findings;
- to define strategies to strengthen ties between research and policy and decision-making processes in the field of rural finance; and,
- to explore ways to foster dialogue and partnership among researchers at an international level.

Through a call for papers 54 researchers were selected to present their research during technical round table and poster sessions on the following topics:

Theme 1: Understanding demand for rural financial products and services
Theme 2: Expanding outreach of financial products and services in rural areas
Theme 3: Improvements in operational management of rural financial institutions
Theme 4: Advances in rural financial products and services
Theme 5: Enabling environment and policies for rural financial markets

The selected research was both academic and practitioner-led research, allowing for a rich exploration of the issues. Overall the participants seem to favourably view the conference and its outcomes. The organizers received much positive feedback and expressions of interest in the need for similar conferences of this type in the future. In a report on the conference published in the June/September 2007 issue of *Enterprise Development and Microfinance,* Jones (2007), a conference participant, states:

> "Many attendees were satisfied with the outcomes of the conference, considering it a first step in advancing research, collaboration and innovation. .....The conference set a general research agenda for the coming years in rural and agricultural finance. ....it is our sincere hope that the conference will continue as an annual event, become a regular venue for knowledge dissemination, and spawn related events and methods for information sharing."

In an effort to share the research presented at the conference the editorial boards of two professional journals, which often focus on rural and microfinance issues, decided to publish some of the conference papers. Three conference papers were published in the in June/September 2007 issue of *Enterprise Development and Microfinance* (Hansel, 2007; Jones, 2007; Wenner et. al.,

2007), and four papers are featured articles in this special issue of *Savings and Development*. A synthesis overview of these papers is provided in the remaining part of this article, highlighting the main lessons and policy implications drawn. The article concludes with a discussion on the contribution of the research, underscoring the need for all types of research in rural finance.

Demand dynamics, outreach, and product innovation in rural finance

The authors of the research presented in this issue studied various aspects of the demand for and supply of financial services in rural areas in the Peoples' Republic of China, Ethiopia, Mexico, and Peru. Each article is unique in its country context, research methodology, and contribution to the literature and respective policy environments. One article is on credit access and borrowing behaviour of farmers and their households. Two articles focus on rural outreach of various microfinance institutions. The last article is about index-based insurance schemes and their impact on "crowding-in" credit supply and demand.

Demand dynamics

Given the changes in the world rural economy, there is an explicit need for up-to-date information on credit demand and borrowing behaviour of farm and non-farm households in many countries today.

In the paper on understanding demand the authors examine the challenges of financing Ethiopian coffee farmers. This research is based on primary survey data collected by the authors during interviews with 120 coffee farmers in the Jimma zone. Survey information was complimented with information garnered during 'focus group' discussions with the farmers and key experts on the coffee value chain in Ethiopia. The researchers analyzed the data statistically and measured means and distributions of various characteristics, perceived risks and risk management strategies and use of financial services by coffee farmers. Large variations exist among small, medium and large farmers on perceived risks and the risk management strategies employed. Small farmers' main perceived risks had to do with farming, e.g., price volatility, weather conditions, and fall in crop income. Medium and large farmers were more concerned about access to financial services and illnesses in the family. To manage risk, medium and large farmers placed a greater emphasis on personal savings than small farmers. Fifty percent of medium and large farmers indicated savings as a key risk management strategy compared to no small farmers.

The study on Ethiopian coffee farmers confirms similar findings else-

where, namely that commercial banks rarely lend for agriculture, especially to small producers. In fact, a large portion of the sample (36 percent) remained without access to any source of credit, including informal sources, even though most (55 percent) attempted to obtain it. Surveyed farmers obtained loans from three sources, the local microfinance institution (MFI), their cooperative and/or through informal channels (family, traders, and moneylenders). Farmers were most satisfied with the terms and conditions of the loans received from the MFI, but cited dissatisfaction with the lack of loans for long-term investments. The authors end the paper by commending the recent expansion of micro-financial services in Ethiopia and encouraging its further development. But at the same time, the authors stress the urgent need for policies that focus on improving the *effective demand* for financial services, such as improvements in agricultural productivity, infrastructure, social services, market access and trade liberalization.

Outreach

When one speaks of "outreach" in rural finance one is interested in knowing about the degree to which financial services providers are serving the rural *poor*, both in terms of number and level of poverty (Zeller and Meyer, 2002). Expanding outreach in rural areas, especially in remote locations, continues to be a key challenge in rural finance. Bank and non-bank organizations address this challenge in various ways, but many questions remain about outreach. For example, what do we know about how successful organizations have been in achieving outreach? What do we know about the cost structure and sustainability of their methodologies? Is there one institutional type that is better suited for expanding into remoter areas than others? Is there any evidence on the comparable advantages and disadvantages of one institutional type over another in terms of sustainability, quality and scope of products and services being offered? The two papers in this category begin to shed light on these questions.

In the first article on outreach Paxton evaluates the outcomes of PATMIR (Proyecto Regional de Asistencia Técnica al Microfinanciamiento Rural), an innovative experiment of Mexico's Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food to expand outreach to the rural poor. The PATMIR experiment selected financial cooperatives, given their predominance in rural Mexico, as the best institutional paradigm for extending services in marginalized areas. The main objective of the project was to test a range of methodologies to see which one was most effective in expanding rural financial services. The experiment consisted of the hiring of three international consulting firms to expand services in rural areas. The consulting

firms were allowed much freedom in deciding the best ways for expanding outreach. In the end they employed the following three methodologies of technical assistance: i) creating new cooperatives; ii) strengthening existing cooperatives; and iii) encouraging existing cooperatives to expand into marginalized areas. In her article, Paxton analyzes the different methodologies used and examines their impact on the financial sustainability of the rural cooperatives under the PATMIR initiative.

As a starting point Paxton stresses the need for using composite measures of outreach over traditional ones, such as average loan size, as they are less deceptive and allow for balanced measurement of large and small organizations. Using two different composite measures, Paxton calculates various outreach indicators across different cooperatives and methodologies employed. She found that new cooperatives and those that were encouraged to expand had better depth of outreach than strengthened cooperatives. Paxton also highlights the importance of recognizing that larger organizations can have a significant impact in serving marginalized clients, in addition to their middle and upper income clients. In many cases, larger cooperatives are in a better position to reach marginalized clients because of their ability to diversify loan portfolios, manage liquidity, and achieve economies of scale.

In examining client outreach and financial sustainability together, Paxton found that many trade-offs exist. Using geographic (through GIS) data and outreach measurements, average client coverage per branch was found to be correlated with the composite measures of outreach, marginality indices and lower average loan sizes. However, cooperatives that focused on reaching the furthest removed clients had a greater dependence on subsidies, experienced lower staff productivity and had higher transaction costs for clients. Paxton found that there were no clear winners among different methodologies, as cooperatives in each category achieved both outreach and sustainability. Her results suggest that new cooperatives had strong outreach indicators and were making good progress to becoming sustainable but faced high start-up costs in terms of time, training and resources.

Paxton concludes her article by highlighting the richness of the experimental design, which contrasted significantly different methodologies, regions and consulting firms. This design helped to achieve a number of outreach and sustainability targets in a short period while at the same time creating a wealth of information to analyze, from which conclusions and lessons could be drawn. Given the programme results after the first phase and the lessons highlighted from the study, the PATMIR team has decided to work with existing institutions for the second phase of the project, by strengthening or expanding them, in order to improve outreach in rural Mexico.

Shifting to China, Cheng examines client outreach by analyzing the demand and use of financial services among rural clients. Using a large dataset of over 600 rural households of the three best performing microfinance programmes in China, Cheng found that Grameen-type microfinance programmes have failed to reach the very poor. He employs a univariate probit model in which he estimates the probability of loan demand as a function of household income, human capital characteristics, and opportunities for off-farm investment and access to alternative sources of borrowing. Cheng's definition of loan demand includes current borrowers of microfinance programmes, non-borrowers who applied but were rejected, non-borrowers who did not apply because they thought they would be rejected, and past borrowers who have quit the programme because of repayment difficulties but wanted to borrow again. Cheng hypothesizes that demand for micro-loans is positively influenced by investment opportunities in farm and off-farm investment, household income, savings, cultivated land area, human and social capital and the need for money to deal for income shocks. Cheng also hypothesizes that loan demand is negatively correlated with access to formal and informal sources of loans. He does not include the interest rate on loans in the model as all households in China face the same micro-lending rate.

The regression results confirm many of the stated hypotheses. Cheng found that income growth positively affects loan demand up to a certain point, before declining. In addition, he found that higher levels of off-farm and farm investment opportunities increased the demand for micro-loans. However, access to loans from rural credit cooperatives (RCCs), which tend be cheaper, have a positive impact on micro-loan demand. This estimation result contradicts Cheng's original hypothesis. Cheng explains that this implies that clients are being credit rationed from RCCs and turn to microfinance to supplement their borrowings for further investments.

In analyzing the household incomes in more detail, Cheng observed that incomes for the top 20 percent of the households were different from the rest of the dataset. After removing these households from the dataset, he re-estimated the model and found changes in the original results. Opportunities for off-farm investment became insignificant while wage income became significant, negatively impacting the demand for micro-loans. Cheng found this to be consistent with his field observations in which increases in wage income tend to decrease demand for micro loans since these households have limited investment opportunities for off-farm production. He also explains that families with wage earners tend to use wages instead of micro-loans to smooth consumption in times of difficulty.

Cheng's results all point to the fact that Grameen microfinance programmes, as carried out in China, do not automatically serve the poor in poor areas. Cheng concludes his article in highlighting some important policy implications. He notes the importance of examining rural labour flows from poor inland areas to the coastal areas in China and its subsequent impact on the demand for micro-credit from poor and middle-income households in these areas. Cheng stresses the importance of redefining the main clients of microfinance programmes to include all those without access to formal loans in rural areas while at the same time acknowledging the differences that exist between different market segments. In this regard, he calls for product development targeted at better meeting the needs of the very poor, such as "credit plus" programmes that offer education and skills training along with credit. Cheng also highlights the need for improving rural infrastructure, education, agricultural extension support and training as a strategy for improving investment opportunities and client repayment capacity.

Product innovation

Risk in agriculture continues to deter banks from entering rural credit markets, and may even reduce producers' willingness to borrow when funds are available. One way to deal with these issues is to insure against risk in agriculture. Recently, index-based insurance products for agriculture have been developed as an alternative to conventional, all-hazard crop insurance, which is costly and less effective in dealing with problems due to adverse selection and moral hazard. In their article, Carter, Galarza, and Boucher, explore the potential impacts that index-based insurance schemes have on producers' output and income and on 'crowding-in' credit supply.

Using historical data on irrigated rice production in the Lambayeque valley on the north coast of Peru, the authors estimate the parameters for two actuarially fair area-based yield insurance products, one based on directly measured yields and one using estimated yields based on observed weather information. To do this, the authors estimate four probability distributions: valley-wide water availability; average valley yields; average valley area sown; and individual yields. They then use the distribution estimates to simulate the value of the different area-based insurance schemes to smallholder producers.

Carter, Galarza, and Boucher found a significant difference in the value that each scheme would have had to the small producers. Namely, area-based yield insurance was more valuable to farmers than weather index-based insurance. For example, they found that a highly risk-averse farmer, to

completely remove risk, would be willing to pay double the amount for area-based yield insurance than for insurance based on weather measurements. The authors value the different insurance schemes at five different risk aversion levels. As risk aversion declines the differences between the area-based yield and weather-based index schemes decline. The authors go on to simulate farmers' loan repayment behaviour to evaluate potential impacts on lenders. In doing this they found that both schemes reduce loan default and increase loan portfolio return by 4 to 6 percent, depending on the type (measured or weather) of area-based scheme used. This finding indicates that these types of insurance can positively impact both the supply of and demand for credit.

The authors conclude their article by examining the practical issues of implementing an area-based yield insurance scheme. They highlight three reasons why private insurers have not offered this type of insurance. These are: 1) the novelty of the product and costs of its innovation; 2) the scarcity of reliable, long-term data on area yields or weather indices needed to calculate actuarially fair premiums; and 3) the costs associated with marketing the product to the smallholder sector. Carter, Galarza, and Boucher suggest that there may be a public sector role in addressing these problems, especially in terms of underwriting innovation costs, creating reliable long-term information, sharing some of the risk due to parameter uncertainty, and exploring non-conventional distribution channels, such as through microfinance institutions. In this way, governments can help to "crowd-in" the private supply of agricultural insurance. The authors end their article by calling for a dual strategy to deal with the past public goods failures that have led to insurance market failures in agriculture. They call on the public sector to create the necessary informational infrastructure that would produce reliable parametric data in the long-run. At the same time, the public sector can help motivate private insurers to enter the market by offering to offset front-end innovation costs and to share the excess risk due to the parameter uncertainty.

Conclusion

The research presented herein contributes significantly to the field of rural finance, not only in the findings the researchers made, but also in the analytical tools and methods they employed. Several of the results obtained in these studies underscore the fact that improving access to financial services in rural areas, while important, is only a necessary, but not sufficient, condition for narrowing the persistent gap between the demand for and the sup-

ply of financial services. The research results re-emphasize the value of increasing the *effective demand* for rural financial services, leading the authors to call for more investment in rural infrastructure, education, health services and agricultural extension support. The research also points to an important role for the public sector in creating public goods that would pull in the private sector, including providing initial funds to help defray innovation costs and developing an effective informational infrastructure to strengthen the abilities of private sector actors to create sound loan and insurance products.

While rigorous studies, like those presented here, typically require a larger amount of financial and non-financial research resources, they often allow for a rich exploration of the problems in rural finance. More experimentation and purposeful study of the experimentation, such as that conducted in Mexico for PATMIR, is particularly warranted. Bringing in researchers at the beginning of the programme design stage may well increase the research opportunities at later stages and, in the end, enhance the contribution that researchers are able to make.

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