

Ashwin Ravikumar
Summer 2009
Research Assistantship Report

Environmental Studies Program
University of Colorado at Boulder

Indian School of Business, Hyderabad

1. Introduction

I spent the summer as a research assistant for economics professor Shamika Ravi at the Indian School of Business in Hyderabad, India. Professor Ravi is known for her work in microfinance, and I became familiar with her research through my interest in the field. While on a family vacation to India in December, I arranged a meeting with her to discuss the possibility of interning for her over the summer. I explained the scope of my broader interests at this time – energy economics, sustainable development, and particularly the usage of microfinance platforms (which have rural penetration virtually unmatched in the private sector) to extend distributed energy solutions to impoverished rural communities.

Professor Ravi explained that while she wasn't currently studying any energy focused interventions, she would still be happy to take me up for an internship over the summer, and felt it would be useful to me for two reasons. First, the summer experience would amount to some hands on research experience; I'd work with data in a variety of capacities, and learn how field surveys were constructed and conducted. Second, and perhaps more importantly, I would attend a conference and class on microfinance in late July that would introduce me to many individuals who were working on the cutting edge of microfinance, including those who were involved in energy. A third benefit which I came to realize, related to the aforementioned, was access to a dynamic group of ex-pats and Indians within Hyderabad itself, working on development issues from a tremendous variety of angles: academic impact assessment (such as myself), business expansion for microfinance institutions (MFIs), health care expansion and research, clean water access, and fair trade awareness and publicity.

In describing my internship – which may well continue on in Hyderabad in December – I will outline the nature of the work, its implications for my dissertation in terms of tools and content, and additional perspectives that I've acquired concerning the ethical and policy implications of development research.

2. Stakeholders and Organizations

The project that I was directly involved with was an impact assessment for a new intervention targeting ultra-poor women, who are too poor to participate in traditional microfinance programs, by giving them an income generating asset such as a buffalo, goat, or vending stand. Before explaining my task and the nature of the program itself, it would be best to lay out the relevant organizations. They are somewhat interrelated, and distinguishing them is important to avoid confusion.

SKS Microfinance

SKS Microfinance is a large, for-profit microfinance institution. They serve millions of women throughout India. Their product is highly standardized and, in part as a result, scalable. This product consists of small loans to groups of relatively poor women, with the ostensible purpose of providing them with capital to engage in entrepreneurial activities. SKS Microfinance, as a for-profit company, does not much data publicly, and does not contract external agencies to conduct impact assessments. I did not work for or

with SKS microfinance, but some of the projects they had previously engaged in are of interest to me, and I've come into contact with some of their people who were on the ground piloting projects such as solar homes.

SKS's NGO Arm

SKS has an NGO arm, which operates not-for-profit and seeks to explore and pilot programs that extend beyond the reach of traditional microfinance. Such projects include provision of education, improvements in healthcare, and the extension of financial training to a broader swathe of the social fabric than what the for-profit arm is capable of (or interested in). This is the organization that runs the Ultra Poor Program, for which I assisted with the impact assessment.

Indian School of Business

The Indian School of Business (ISB) is located near the city of Hyderabad. Professor Shamika Ravi, who I worked for, is an Assistant Professor at ISB and was commissioned by the SKS Foundation to conduct an impact assessment of their program. The impact assessment has nevertheless been conducted independently of SKS.

Ultra-poor Women

Ultra-poor women are targeted by the SKS Ultra Poor Program. Ultimately, the goal of the program is to serve their interests in both the short and long term, so they are arguably the most important stakeholders in this program. Given that the program is a pilot, and moreover a randomized control trial, it is important to note that while gathering information about effective ways to alleviate poverty at its worst is the goal of the program, it is at this point neither properly scalable nor sustainable.

3. SKS Ultra Poor Program

The SKS Ultra-Poor Program is a pilot launched in 2007 by the SKS's NGO, aimed at alleviating poverty among those most severely afflicted by it. Ultra-poor households are characterized by earning less than \$1/day to having no steady income source, being widowed or in a single parent household, illiteracy or very limited education, as well as a qualitative social consensus in their village that they are the poorest members of the community.

Utilizing such metrics, 1,066 ultra-poor households were identified and surveyed extensively as a baseline, prior to any intervention. The survey questions were designed to collect demographic data, information on education levels for the household, income and asset holdings data, expenditure information (which is being used most directly as a proxy for the impact of the program), as well as psychological and social data.

Roughly half of these households were randomly selected to receive the treatment. The randomization occurred at the village level, because giving some ultra-poor women within a village the treatment while excluding others could confound results through interactive effects that are very difficult to capture through the survey-based

research methodology. By randomizing in this way, the empirical strategy was simplified greatly; in theory, extremely sophisticated ex-post statistical analysis will not be necessary to determine an impact, and a simple double difference will capture impacts.

The treatment includes, most tangibly, the transfer of an income generating asset from SKSs' NGO to the household. Each household is given a menu that describes several options: they can take a buffalo, a goat, or a variety of other non-livestock enterprises including a phone or a vegetable vending stand. In practice, the vast majority opted for buffalos and goats. In addition to the asset transfer, there was a period of extensive training offered by NGO staff-members and field attendants, wherein proper care of their asset was taught. Crucially, financial literacy was included in the training.

4. Managing the Survey

My role this summer has been to assist with the independent impact assessment of the program; and I'd joined the effort fairly deep into the process. The baseline survey was conducted in 2007, and the midline survey was conducted 9 months after the asset transfer. Upon my arrival in May, the final end-line survey was being prepared, and I took on the responsibility of compiling the final survey (for which the components were already present; I just interspersed a portion of the midline with the entirety of the baseline). After preparing the survey, I took on primary responsibility in coordinating with the team to which surveying had been outsourced, as well as finding and managing a data entry company to which data entry was outsourced.

I was given the opportunity to see one of the more uplifting aspects of the program, shortly after my arrival – the graduation ceremony, where women who had “graduated” (as defined by SKS, through a number of different metrics) were presented with their certificates. While not my first introduction to rural life in India – I'd seen my ancestral village in Tamil Nadu before – it was a chance to see the effects of the program I was helping to evaluate first hand.

In addition to seeing this, it was here that I was introduced to the ways in which poverty alleviation, and even the ostensibly objective academic studies that accompanies it, can become politicized. The professor who I was working for was commissioned to conduct the impact assessment for the NGO. NGOs commission academic impact assessments, they do so in order to lend credibility to their program, in the hopes that the intervention in question can be scaled up. At the same time, it is in the interest of the NGO – especially when the painstaking procurement of funds for the pilot is a sunk cost – to produce an “impact” in a timely fashion, so that further funds can be procured and donors can be put at ease that their social investment was a sound one. Academics, myself included, can be quite unwilling to produce policy-relevant prescriptions – to assert that data, or especially a lack of data, compels a particular decision. For this reason, members or former members of the NGO had actually commissioned external studies in the area, in the hopes of producing a more timely impact. This was problematic because there was a risk that that decision could contaminate the results of the formal impact assessment that I was assisting with. These sorts of competing incentives can indeed be ubiquitous, especially when NGOs, donors of funds, and academics are all interacting in a policy-relevant context. Being aware of the potential

for such occurrences is critical to maintaining the integrity of any impact assessment, as ultimately the incentives of the various stakeholders are inextricable from the study itself.

The work of coordinating surveyors and data-entry people was good hands-on experience with what was, essentially, the managerial aspect of a study. There was constant communication with all parties. It was particularly important to ensure that surveys were conducted in a robust and consistent manner. In particular, given that we couldn't personally oversee all of the surveyors, or even a particularly significant fraction of them, it was critical that the *correct* women were surveyed. Surveying women in an endline survey who were not present in a baseline survey would undermine the intensive randomization process, and indeed the impact assessment itself. To this end, I used the downtime when the survey team was making preparations and training its members to overhaul the household identification system that had been used in the baseline and midline. This involved tracking down the work that had been done by previous researchers who had come and gone in the past two years, parsing out who was surveyed when, and making sure that there were no trivial mistakes made due to, for example, inconsistent spelling conventions for village and household member names. Once this was done, ensuring that the correct women were surveyed – and making sure there were no glaring inconsistencies over time in the survey – was made relatively easy by instructing the surveyors to prioritize the inclusion of these PIN numbers.

5. Data Analysis

The full set of follow-up survey data hadn't arrived by the time the summer was up, unfortunately, so the true impact of the program couldn't be determined. The data set should be ready by December, and I may well return in December to help see the assessment through. In the meantime, there was time for two mini-projects that involved working closely with the data.

First, while the formal impact assessment couldn't be completed over the summer due to the lack of data, there was room for some analysis involving the baseline survey, and a midline survey that was taken 9 months into the program. The midline survey captured just 314 of 1,066 households, all of which received the treatment. Due to the lack of a control, analysis of the midline was not suitable for a formal impact as could be ascertained from the final, randomized control trial. Nevertheless, the analysis of the midline could be useful in sorting out procedural aspects of the intervention that may explain whatever results the final analysis yields.

The midline dataset, despite its lack of a control, contains several distinct groups within it. The most obvious delineation is between households who selected buffalos, households who selected goats, and households who selected other enterprises (about 58%, 34% and 8% respectively). The study would ultimately look to expenditure data as the most direct gauge for poverty. This is because as households become wealthier, they consume more, and consumption data is less noisy than income data, making expenditure a metric that is more robust to short-term shocks. To these ends, I prepared a short report explaining the difference between the various groups. By understanding these differences, the impact of the study can be explained in greater detail, and with greater capacity for improving the mechanics of the intervention (see attached). Some interesting notes that fell out of this was that the per head food expenditure was actually

lower in households that selected buffalos, and moreover, households who selected buffalos were significantly larger by about half a member. The follow-up data will reveal whether or not these differences are persistent, and constant in magnitude. Depending on the result – and that caveat is critical - it may be possible to arrive at conclusions concerning which assets are more effective at alleviating poverty under particular circumstances.

Second, there was an additional study that Professor Ravi was working on, using the same data set. In 2006 the Indian Government implemented the National Rural Employment Guarantee Act/Scheme (NREGA/NREGS), a very large public works program designed to provide employment for rural households. Given the tremendous expenditure, there has been considerable interest in assessing the true impact of the program, which is thought to have reached at least 50 million households.

When evaluating the impacts of policies, barring the occasional accident of history that sets one up, randomized control trials are not possible. In order to correct for the numerous selection, response, and other unobservable biases that may exist when attempting to assess the impact of a policy like this, some *ex post* statistical analysis is needed. Working with Professor Ravi and exploring relevant literature exposed me to some of these methods. Relevant techniques involved include a cross-sectional single difference, comparing variables such as food consumption expenditure, between participants and non-participants in the baseline survey, with more weight given to pairs of participants and non-participants who were more similar in terms of other variables (propensity score). The midline survey was used to add a longitudinal component, so that unobservable but time-invariant differences could be subtracted from the difference. Finally, the fact that some households sought work under the NREGA but were not employed because work was not available (a perfectly exogenous factor) was used to correct for the fact that the NREGA was already in effect when the baseline survey was taken, and moreover that some benefit would have accrued across the time-space of the study due to the ultra-poor program as opposed to the NREGA (Ravi and Engler 2009).

The results of their working paper can be compounded with data from the follow-up survey, and as the data came in it was possible to compare the first batch of surveys with the 314 households from the midline, effectively adding an additional data point in to the longitudinal analysis.

6. Rapid Immersion Microfinance in Chennai

I attended the Rapid Immersion in Microfinance conference in Chennai during the last week of July. The purpose of the conference was to introduce a variety of participants – including researchers, government employees, self help groups, and consultants – learn about ongoing research in microfinance. The host organization was the start-up Center for Microfinance (CMF), which is itself housed at the Institute for Financial Management and Research, a business school.

It was useful to meet a group of people with such a diversity of backgrounds, as it is especially incumbent upon research to bear in mind the audiences that their work will ultimately be of interest to. Indeed, just seeing the participants of this conference was instructive, as so many of them – particularly those from some microfinance institutions

and even more particularly those from the government – harbored sensibilities that were rather different from my own academic perspective.

The conference itself involved a large number of talks describing microfinance in terms of its goals, condition, mechanisms and stakeholders. Having read about microfinance extensively over the last couple years, I was relatively aware of most of this, and it was oriented towards those who didn't have the sort of background that I'd had. The more useful talks for me dealt with some of the aspects of microfinance that were particular to India.

First, there was a talk on the technological back-end systems that microfinance institutions use, and how they are important in promoting growth. Second, there was a session outlining the legal classifications of microfinance institutions, tied into a discussion of some of the major policies that variously classified institutions must adhere to. It is in fact critical, even for a researcher, to understand relevant policies because they can unexpectedly interfere with an intervention that a researcher is attempting to evaluate. Third, there were a couple presentations concerning the financing of microfinance, highlighting the increasing role of equity in making expansion possible. This was of interest because as equity plays a greater role in microfinance, the ownership of institutions changes, along with the incentives that guide them. As a researcher, it is important to be aware of which investors – and thereby, institutions – are involved in microfinance and development interventions, such that those who are most amenable to impact assessment and holistic evaluation can be targeted for collaboration.

In addition to meeting with the researchers at CMF, some of whom had much light to shed on the challenges associated with conducting research on development interventions, I spoke with some people from microfinance institutions. In particular, I had the opportunity to speak with a group that expressed interest in pulling together an academic assessment of their biogas digester program near Chennai. They will be worth keeping in touch with.

7. ENVS and the Internship

What I'd learned in the first year of the ENVS program in Colorado was to some extent brought to bear during this internship. The policy core course taught by Roger Pielke Jr. dealt largely with development issues, and much of what I had studied over the course of that semester was useful here. Part of the reason for this was the flexibility of the course. To illustrate the policy process, with all of its real world limitations, the class was instructed to allocate \$50 billion dollars to most effectively address twelve challenge areas outlined by the Bjorn Lomborg's Copenhagen Consensus – these areas included malnutrition and hunger, water and sanitation, conflict, corruption, disease, and others. Being interested in microfinance, I pressed for access to credit to be included as a challenge area itself, and subsequently used the length of the course to research microfinance extensively – particularly as it exists in the Indian subcontinent.

Apart from the material itself being useful in understanding the stakeholders and relevant issues in Indian microfinance prior to arriving, the focus on the relationship between academics and policy makers was perpetually at issue over the summer. At the institutional level, developmental economists are always conducting research that is of interest to decision makers. They assess government policies, evaluate products

developed by the private sector, and study the impacts of interventions of NGOs. During the first year of ENVIS I spent a considerable amount of time thinking about the relationship between experts and policy makers, and before the summer believed that it's incumbent upon researchers to be cognizant of the policy-implications of their work, and communicate those implications both honestly and effectively.

When it comes to development interventions, it is often the case that opportunity costs are little understood. In order to avoid the trap of investing in interventions because they are popular, or seem theoretically wise, it is crucial that we rely on rigorous impact assessments to the degree that it is possible. At the same time, we must not lose sight of the value of qualitative metrics, and situational analyses that are essential for both contextualizing impact assessments as well as informing decision making when highly controlled studies are just not possible.

8. Towards a Dissertation and Evaluation

In learning about the value of, and limitations for impact assessments in development, it becomes clear that in spite of the many barriers that exist there is a wide open space for program evaluation in India and elsewhere. In Hyderabad, I met with two individuals who were running a pilot program for SKS in the state of Orissa, involving the distribution of solar lights for homes. The program was ultimately put on the back-burner, and moreover its connection to SKS Microfinance means that it is probably not amenable to independent evaluation, but speaking to these individuals was nevertheless instructive. The program was tabled because it was risky and costly. The benefits were generally unknown, although the conventional wisdom is that access to energy significantly raises quality of life. The costs were relatively high, and as I'd previously discovered in an ENVIS-linked investigation using a model from the National Renewable Energy Laboratory, the cost-competitiveness of renewable energy systems is highly sensitive to the distance between the target village and the existing grid.

Nevertheless, the demand for rural energy persists, and microfinance institutions will continue to explore the energy sector as interest in beyond-credit products grows. Like all interventions in development, there is a dearth of holistic impact assessments of these programs. Given the uncertainty in both costs and benefits, there is a need for impact assessments on the ground.

Over the next year I plan to utilize the network I've established in India – including people involved in energy pilot projects for microfinance institutions, a consultant working on an impact assessment for such a project, and practitioners with knowledge of biogas and solar projects – to explore areas for impact assessment. Once a relevant area is discovered, I can develop a research methodology and empirical strategy, which will depend on the context: a randomized control trial would be most definitively instructive, but may not be feasible or easily generalized. A holistic evaluation of energy interventions would represent a significant and novel contribution to a growing field, and the experience I've had this summer as well as the tools I've acquired and will continue to expand through ENVIS will be instrumental to this task.