ICT use to connect smallholders to markets – using cellular phones to transfer price information

by
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and

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1. Background and justification

While there is concern over a growing digital divide and gap in connectivity across socio-economic groups within and across countries, it is ambiguous whether information and communication technologies (ICTs) have the potential to accelerate development in poor communities. This project aims to contribute to our understanding of the determinants of ICT effectiveness in promoting socio-economic development by evaluating an enormous expansion of cellular phones access in rural areas in Peru over the last 10 years.

We propose to take advantage of this expansion as a laboratory for conducting a detailed study of both the diffusion process and impact of ICT in remote and impoverished areas with emphasis on farm activities. The study would involve a detailed longitudinal survey of households residing in the 4 pilot villages in which the expansion will begin and in 2 villages where there is still no connection to cellular phones. The census of pilot households will allow us to thoroughly examine network effects related to the technology adoption decision of households, and also to assess the influence of ICT on the local spread of information to better connect small holders to markets.

The project will also incorporate experimental methods to evaluate specific factors influencing ICT adoption by small farmers and the diffusion of information accessed online, including randomized variation in the design by randomizing cellular phones within the set of pilot villages and in skills training received by target groups of villagers. In this manner, we can explore hypotheses related to the roles of localized content transmission, psycho-social barriers to access, and web-relevant human capital in the diffusion of ICT (cellular phones in this specific case).

Our experimental methods further connect ICT to poverty alleviation by concentrating on content related to information of prices, markets and new farm technologies to better connect smallholders to markets. We will then monitor the influence of ICT activity on related to impacts over transactions costs, technological adoption of improved farm
practices and direct and indirect outcomes. Finally, we will examine the diffusion of ICT-based information on farm prices and agricultural technologies targeted towards local practitioners versus individuals.

2. Broader Impact

The activities we are proposing to undertake have many broad impacts related to the promotion of training and learning within the communities under study and to ICT policy in general. First, our results will assist with the design of public information systems to maximize ICT adoption and impact of the nation-wide expansion that follows the pilot study. These facilities will constitute important centers of educational activity, providing critical infrastructure for local capacity building. Understanding the roles of targeted content and skills training will facilitate localized adaptations, and thereby directly stimulate the development of enhanced educational facilities across intervention areas. Our research partnership with FITEL will fully integrate academic research with development goals of the private telecommunications sector. As part of our collaborative efforts, we will disseminate research findings directly to administrators in order to better direct telecommunications policy formulation. Finally, the new knowledge derived will be directed to development practitioners, policy advisers, community representatives and government officials who are responsible for influencing international efforts towards poverty alleviation.

3. Intellectual Merit

The Peruvian rural cellular phone expansion provides a unique opportunity to carefully evaluate the economic benefits of ICT in remote areas and the use of ICT to reach low-income populations. Results from our study will contribute greatly to our understanding of how ICT in rural areas can be implemented to promote both: reducing the information asymmetries faced by smallholders and economic prosperity by better linking smallholders to markets. Similarly, understanding the way in which information is encountered and filtered through ICT medium and diffused through social networks is at the heart of the technical focus area, Interactions and complex interdependencies of information and social systems. It is clear that the access to cellular phones will not be able to fully promote economic prosperity and vibrant civil society on a sustainable and far-reaching basis unless services and content tailored to specific local needs are offered to potential users. Understanding the influence of these factors is critical to understanding how ICT trends can best be integrated into sustainable development strategies for remote and impoverished regions to promote dense and dynamic social networks rather than furthering the digital divide. This is particularly true in the area of information on agricultural technologies, prices and information of markets to minimize the transaction costs faced by smallholders.

4. Relation to Existing Literature
It is generally believed that cash crops can increase the average returns earned by farmers. Not only may cash crops command higher average prices than subsistence food crops, they may also allow a greater intensity of cropping, if they require labor or draft inputs at different times of the year (Goetz (1993)). Despite this, the movement out of traditional, subsistence crops is often limited to large farmers (Feder et. al. (1985), Morduch (2003)).

Why might small farmers not diversify into cash crops to the same extent as large farmers? While deferent hypotheses have been put forward, they typically originate in the observation that small farmers tend to be more credit-constrained. This makes them more vulnerable to the higher risk involved in producing cash crops, or new varieties of food crops (Morduch (2003)). Cash crops typically require use of more expensive inputs, which raises working capital requirements. Small farmers may have lower education levels; this limits their access to modern technical knowhow, and may affect crop adoption decisions (Foster and Ronsenzweig (1996)).

We shall examine an alternative factor that might affect the ability or willingness of small farmers to diversify their crops. The literature has largely focused on barriers to agricultural production, implicitly assuming that if the crop were produced, the farmer would receive the higher average price and hence higher average return. However, just as small farmers have lower access to capital and technical expertise, they may have imperfect access to markets for their produce. For example, small farmers in many parts of South Asia tend to sell their produce to middlemen, instead of visiting the market directly. If this reduces the flexibility of sales decisions, it can lead to inefficiencies. Official studies of crop production are typically unable to capture these important nuances; for example, the Government of West Bengal’s cost of cultivation study assumes that each crop is sold at the average price prevailing in the market eight weeks after the harvest. However, studies by Abhirup Sarkar and Sandip Mitra suggest that in West Bengal, small farmers of potatoes earn lower prices for their crops than large farmers do (Sarkar and Mitra (2002), Mitra and Sarkar (2003)). Their argument is that farmers lack information about daily fluctuations in prices of potatoes, and hence are unable to time their sales optimally. In contrast, large farmers are networked and well-informed, and have the resources to transport their potatoes to the markets independently. As a result, they can sell their potatoes when the prices are relatively high.

A central goal of this project is to evaluate the information constraints faced by small farmers. It may be costly for a farmer to obtain daily price information on a regular

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1 In some parts of Africa, marketing constraints arise because the markets for food crops are imperfect or missing. For example, Jayne (1994) finds that the cost of acquiring food grains through the market is so high, that small foodgrain-producers in Zimbabwe cannot afford to diversify into oilseed production. Goetz (1993) argues that in the absence of a market for foodgrains, Senegalese farmers engage in intra-household specialization in cash and food crop production, and crops are exchanged within the household. In contrast, we focus on imperfect access to markets for the cash crop.
basis². He may lack the networks to access this information, or the wherewithal to verify it and distinguish correct information from rumors. If our study shows that providing broader access to information can increase returns and participation in high-value crops, this can have an important policy implication. The telecommunication network in the Andean region of Peru makes it relatively inexpensive to transmit information over long distances quickly. Thus public dissemination of market information can be a cost-effective and simple intervention³.

5. Proposed Research Activities

The substantive focus of our research lies in collaborating with FITEL and the private cellular phone providers to develop experimental pilot projects, and in collecting detailed data on the set of households in pilot villages before and after the intervention.

The two central objectives of these experiments are to manipulate the rate of access and the degree to which information influences behaviors of individuals with specific emphasis on price, markets and technology information for farm activities.

**With respect to access**

With respect to access we propose to experiment with the distribution of cellular phones. We will work with 6 pilot villages, 2 will be control villages, 2 villages will receive information through traditional systems and 2 villages will receive information through cellular phones.

In the 2 villages randomly selected to receive information with cellular phones between 20% percent of survey respondents (200 households) will be provided randomly with cellular phones with pre-paid card, the amount of pre-paid cards will also be randomly distributed among the households to which we supply the cellular phones. The treated population will be sampled from the set of village households containing one or more member between the ages of 13 and 40 in the complete 2008 household survey IFPRI and GRADE had developed. Age 13 is chosen to capture the set of potential workers over the age of 14 in 2009 (consistent with the definition of the PEI), while forty was chosen in an effort to under-sample households with extremely low propensity to adopt.

² In the absence of independent sources of information, entrepreneurs might rely on their trading partners for information about the state of the market. For example, Umali (1990) found that ricemillers in the Philippines are an important source of price information for traders of paddy.

³³³The recognition that farmers may not have access to market information has been the driving force behind private sector initiatives such as the ITC’s e-choupal program, introduced first to provide information to soybean farmers in Madhya Pradesh, India but expanded subsequently to other crops and regions (Upton 2004)). Kuttayan and Rao (2003) report that the program has increased farmers’ incomes by upto 30 percent.
The cellular phones will be distributed in such a way to ensure that treatment and control groups are demographically representative within each of the possible treatment amounts. The distribution of phones and prepaid cards among them will not only ensure a sufficient level of demand in the early stages of intervention, but also provide a basis for experimental evaluation of cellular phone use by serving as an instrumental variable (IV) for cellular phone activity.

To capture the role of intensity of use in an IV approach, three sets of pre-paid minutes will be distributed in equal proportions across villages: cards for 20, 40, and 60 soles will be distributed randomly among the households with access to cellular phones, all of which will be good for full six months. The pre-paid minutes will further provide a method of studying the role of network effects in information diffusion with a randomized experiment. In particular, the fraction of sample members selected to receive pre-paid minutes will be randomly assigned, and not proportional to the sample size or any other observable village characteristic with the objective of generating sufficient variation in local treatment density to measure spillovers across groups. These prepaid minutes will be charged directly to the phones through internet to avoid reselling of the minutes which could be the case if pre-paid cards are distributed.

In 2 villages randomly selected from the pool of 6 pilot villages or the sub-sample of villages selected for the study no phones and pre-paid minutes will be distributed. This is to ensure that we still have a subpopulation that can serve as a control group in the event that pre-paid minutes prove to be poor predictors of individual cellular phones use but good predictors of community use of cellular phones, which would occur if an underground market for pre-paid cards emerges. In that case, it would be meaningless to compare households that are randomly assigned cellular phones and prepaid cards with those in the same village that did not receive them. Every effort will be made to ensure that operators comply with the instruction to match names on cell phones provided and pre-paid meters to the phones distributed. Also we will design mechanisms with the telephone provider to minimize the probability of households lending the phones to other households. However, non-compliance may still present a problem, biasing downwards our estimated effect of ICT in a comparison of different levels of pre-paid minutes. This will be verifiable in a comparison of baseline and follow-up data by examining whether the level of pre-paid minutes distributed within the village predicts village-level use but not individual level use. If this appears to be a problem ex-post, we will make use of the two non-intervention pilot villages as a control group.

**With respect to content**

The main purpose is to study the impact of a randomized intervention providing wholesale or retail market price information to small farmers in the four selected villages. These villages will concentrate on potato production. We shall examine the channels through which the impacts on income are realized: effects on informational
asymmetries and margins earned by local middlemen who purchase the potato crop from farmers and resell it in wholesale or retail markets. Econometric analysis will allow us to test predictions of hypotheses concerning the impact of these interventions on marketing margins, cropping patterns, and farmer incomes.

In two of the villages randomly selected, daily prices of potatoes prevailing in the main wholesale and retail markets are being posted in a public place in the village (typically near the main trading stores), with the backing and support of the local government. In the other two villages where the cellular phones are randomly distributed the farmers will be called everyday with the same price information. The remaining 2 villages are control villages with no intervention.

6. **Empirical Methodology.**

Randomized field experiments are becoming common-place in the field of empirical development economics. When trying to identify the effect of a particular factor on outcomes of interest, a common problem is that several other factors operating at the same time may affect the outcome. For example, small farmers who have poor access to information are also likely to have poor access to credit, water, seeds, farm implements and technical know-how. These factors cannot be controlled for easily, making it difficult to isolate the impact of information alone. Our field experiment will introduce random variation in one factor at a time while holding other factors constant, this helping us to distill "pure" effects.

Our randomized field experiment will have a $2 \times 3$ design. The experiment is being conducted in 6 villages across the districts of the Sierra Center of Peru. These area is one the most important potato-producing districts in the Perú. Within the information intervention, there will be three conditions: either the local government will receive the price information, or a subset of landed farmers, or a subset of landless farmers will receive the price information. We have selected the sample of 6 villages, keeping in mind the necessity to keep villages sufficiently far from each other to avoid contamination of the price information. In each village, we will draw a stratified random sample of 100 farmers. Strata will correspond to the size of the farmer's land. To implement this, we will implement a listing of land-holdings of every household in the village, as a first step and we will georeference all the households in the village. This will be important also to control for the spillover effects. We will include farmers from all of the following categories: tenant farmers (recorded and unrecorded), owner-cultivators with different sizes of landownership: marginal (0-1.25 acres), small (1.25-2.5 acres), medium (2.5-5 acres), large (5-12.5 acres) and big (more than 12.5 acres).

Within the information intervention, there are two variations. In one, a subsample of farmers receive the price information privately via a cellphone. In the other this information is made public within the village: it is posted in a prominent public place. Information includes daily prices of different grades both in the local wholesale markets,
and the retail market in the Wholesale market of Lima.

7. Data Collection and Timetable

We will conduct two surveys. The first one will be done in May of 2009 and the followup survey will be implemented in February 2010. The distribution of cellular phones will take place in May 2009. In the two survey we will collected data on the following details on the sample farmers: (a) household demographics - caste, age, gender, education, occupation (b) asset ownership - land, housing, farm implements, domestic animals, consumer durables. In addition we have collected details for the period January 2006– April 2007 concerning (c) production - acreage planted with different crops, input expenditures and prices, output harvest of other crops over the past year, intra-household labor allocations (d) credit - loans from various sources, amount, duration, interest rates (both direct interest and indirect interest through surcharge on input prices through bundled contracts), trade credit, length of relationship with current lenders, collateral, outstanding debts, and purpose of loans; (e) storage and marketing - sale of potatoes at time of harvest, stocks held at home, stocks held in the cold storage, timing of sales, prices received for each sale, any other trades in potato bonds; (and f) information - sources of information guiding sowing and sales decisions.

We will computerize the data as it is collected, and preliminary analysis will begin at the end of Year 1 and continue into Year 2. Full-fledged analysis will begin at April 2010.

8. Budget

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**Survey**

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**Total Project Costs**

|                                      | $85,200.00 | $58,000.00 | $143,200.00 |
9. References


Government of West Bengal (2004), West Bengal Human Development Report, Development and Planning Department.


Lopez Calva, Mexico, DF, Fondo de Cultura Economica de Mexico.


Appendix: CVs

MAXIMO TORERO, Ph.D.

International Food Policy Research Institute (IFPRI)  Ph. 202 862 5662 (O), 202 362 0512 (H)  Email: m.torero@cgiar.org
2033 K Street NW, Washington, DC 20006  http://www.ifpri.org
USA

Current Position:

Division Director of the Markets, Trade, and Institutions Division at the International Food Policy Research Institute, IFPRI Coordinator for Latin America, leader of the Global Research Program on Institutions and Infrastructure for Market Development, and co-leader of the Global Research Program on Urban and Rural linkages.

Education:

Post Doctorate in 1999 at University of California at Los Angeles, Institute of Social Science Research
Ph.D. received September 1998, University of California at Los Angeles, Department of Economics;
M.A. received September 1993, University of California at Los Angeles, Department of Economics.

Professional Associations and Advisory Councils:

(a) Member of the American Economic Association (1998-today)
(b) Member of the European Economic Association (1999-today)
(c) Member of the Western Economic Association (1998-2000)
(d) Member of the Econometric Society (1998-today)
(e) Member of the Latin American Econometric Society (1998-today)
(f) Member of the Latin American and Caribbean Economic Association (LACEA, from 1998-today).
(g) Member of the Southern Regional Science Association (1998-today).
(h) Member of the International Association of Agricultural Economics (2006-today)

Awards

2002  Award for Outstanding Research on Development given by The Global Development Network (GDN). The selection committee was chaired by Nicolas Stern, and consisted of Francois Bourguignon, Mashiro Kawai, Nancy Birdsall, Jose Maria Fanelli y Fernando Loayza.

2000  Award for Outstanding Research on Development given by The Global Development Network (GDN). The selection committee was chaired by Joseph E. Stiglitz, and consisted of Nancy Birdsall, Francois Bourguignon, Takatoshi Ito and Amartya Sen.
1997-1998 Ford-Foundation-ISOP Interdisciplinary Program for Students of Development Areas
1996-1997 Latin American Center, UCLA Research Grant “Diffusion of Technical Change in Traditional Agriculture in Peru”.
1996 Department of Economics, UCLA, Travel grant for diffusion of research
1995-1997 British Foundation Fellowship
1994-1997 Department of Economics, UCLA, Teaching Assistant Position
1992-1994 Fulbright Fellowship
1992-1995 Inter-American Development Bank Fellowship
1992-1994 Ford Foundation Fellowship
1992 National Award for the Best Bachelors Dissertation
Peruvian Economic Consortium and IDRC, Canada.
1990 Honorific Mention on Bachelors and Licenciatura Dissertations
Universidad del Pacifico, Lima, Peru.

Publications:

Books


International Academic Journals and International Academic book chapters


**Working Papers Submitted to International Academic Journals**


**Other Book Chapters**


(with Juan Jose Diaz, and Jaime Saavedra) "Liberalización de la Balanza de Pagos. Efectos sobre el Crecimiento, el Empleo y la Desigualdad y Pobreza.” In: Gauza, E; Paes de Barros, R; Taylor, L and Vos, R; (Eds.) (2001); Liberalización, Desigualdad y Pobreza: América Latina y el Caribe en los 90. Eudeba-Universidad de Buenos Aires, PNUD-Programa de Naciones Unidas para el Desarrollo, CEPAL.


**Discussion Papers**


(with Erica Field). (2005). “Do Property Titles Increase Credit Access Among the Urban Poor? Evidence from a Nationwide Titling Program”, coauthored with Erica Field from University of Harvard, and was accepted at the AER Meetings.


**Work in Progress**


(with Marco Castillo & Ragan Petrie). Lost in the Mail: A Field Experiment on Corruption.

(with Marco Castillo & Ragan Petrie). Are Entrepreneurs Risk Takers?.

(with Marco Castillo & Ragan Petrie). Rationality and Markets?.

(with Chong, Alberto, & Manuel Hernandez). “Privatization and Adverse Selection”

(with Chong, Alberto & Eduardo Nakasone). “Privatization and Discrimination”

(with Chong, Alberto & Florencio Lopez-de-Silanes) “What Happens with Workers After Privatization?”


(with Shyamal Chowdhury). “Concentration and Vertical Arrangements in Food Value Chain in Developing Countries: Causes and Consequences.” IFPRI mimeo.


(with Morely Sam). Hunger and Poverty in the Peruvian Sierra: a proposal for how to reduce them. Paper submitted for the World Food Organization Foro de Hambre de los Paises de la Region Andina to be held in Quito, Ecuador 22-23 November.

Policy Briefs


Proceedings


Abstracts/Summaries


Research grants

Contracting Out of Poverty. 02/01/2008 - 02/01/2010. Role: PI; Funding: GTZ & BMZ, EUS 960,000.

Socio-economic and technical considerations to mitigate land and water degradation in the Peruvian Andes. 01/01/2008-01/01/2010. Role: PI; Funding: CGIAR Challenge Program on Water and Food. EUS 567,525.

Determinants and consequences of public Internet use to connect smallholders to markets in Ethiopia – Applied to Consortium of Donors. 02/01/2006 - 02/01/2009. Role: PI; Funding: World Bank US$ 100,000.

DFID/CARE: Urban-rural linkages in Bangladesh: Impact of infrastructure and food value chain on the livelihoods and migration of landless households, women and girls in the northwestern region, 09/06/2004-11/01/2005. Role: PI; Funding: US$ 375,000.00


World Bank (Bank of Netherlands Partnership Program), CEPAL and Government of Netherlands: The Impact of the Central American Free Trade Agreement (CAFTA) on agriculture and the rural sector. Impact of Infrastructure, 10/12/2004-10/12/2006. Role: PI; Funding: US$ 675,000.00

Inter American Development Bank and the Andean Development Corporation (CAF), Rural Development and Poverty Reduction in Andean Countries: The Case of Sierra del Peru. 30/3/2006-30/12/2007. Role: PI; Funding: US$ 750,000.00

Professional experience

Teaching

1999- Associate Professor. Universidad del Pacifico
Economics Department, Postgraduate School.
Industrial Organization and Uncertainty and Risk.
Currently on leave
1994-1997 Teaching Assistant, Department of Economics, UCLA.
Graduate Level Econometric Software Applications.
Intermediate Microeconomics, Econometrics.

1990-1992  **Lecturer** Department of Economics, Universidad del Pacifico, Peru
Intermediate Microeconomics
Economics Software Applications

**Research**

**Senior Researcher**

2006-  
*International Food Policy Research Institute (IFPRI)*  
Division Director of the Markets, Trade and Institutions Division.

2005-2006  
*International Food Policy Research Institute (IFPRI)*  
Senior Research Fellow if the Markets, Trade and Institutions Division.  
Research on Infrastructure, and Institutions for rural development. Leader of a Global  
Research Project on Infrastructure and Institutions for Development for Africa, Latin  
America, Asia and South East Asia.

2003-2005  
*International Food Policy Research Institute (IFPRI)*  
Research Fellow if the Markets, Trade and Institutions Division.  
Research on Infrastructure, and Institutions for rural development. Leader of a Global  
Research Project on Infrastructure and Institutions for Development for Africa, Latin  
America, Asia and South East Asia.

1997-  
*Group of Analysis for Development (GRADE)*
- Member of the Board of Directors
- Director of the Executive Management Committee

2001-2003  
*Georg Foster von Humboldt Fellow*

**Associate Researcher**

1998-2000  
*Center for Development Research (ZEF)-University of Bonn (Invited Fellow)*

1994-2003  
*Institute for Social Science and Research, University of California at Los Angeles.*

**Countries of Expertise**

Bangladesh, Costa Rica, Ecuador, El Salvador, Ethiopia, Guatemala, Honduras, India, Jamaica, Mozambique, Nicaragua, Peru, Senegal, Tanzania, Uganda, and Vietnam.

**Languages**

English and Spanish.
Born: Lima, Peru
Citizenship: Peruvian
Date of Birth: April 12th, 1976

Education

Ph.D. in Economics, Department of Economics, UCLA 2007
Master of Arts (M.A.) in Economics, UCLA
Bachelor in Economics, Universidad del Pacífico, Peru 1997

Current Position & Research at IFPRI

Group of Analysis for Development – Visiting Researcher 2007-Present
International Food Policy Research Institute (IFPRI) 2007 - Present
Markets, Trade and Institutions Division
Post-Doc Fellow

Rural Development and Poverty Reduction in the Peruvian Sierra Ongoing
Project leader: Máximo Torero
The project, funded by the Inter-American Development Bank, seeks to assist the Peruvian government and international donors in the task of significantly reducing the problem of rural poverty in the Sierra. The project consists of a framework for developing the information basis necessary to support a strategy of poverty reduction and an implementation work plan. My specific tasks in the project include: (1) developing an economic typology of rural communities using multi-output stochastic profit frontier analysis; (2) conduct a detailed socioeconomic survey of around 8,000 households in the rural Sierra of Peru; and (3) analyze the bottlenecks that prevent households in the rural Sierra from improving their livelihoods.

Assessing the Impact of Increased Global Food Prices on the Poor in Selected Latin American Countries Ongoing
Project leader: Máximo Torero
The goal of this project is to estimate the changes in household welfare caused by an exogenous change in international food prices for 12 Latin American countries by looking at the mechanisms of price transmission from international to domestic prices, and through the impact on households’ real consumption measured by demand elasticities. The project takes special care of acknowledging the fact that in developing countries a large proportion of the poor are food producers and the analysis needs to take this into account.

Socioeconomic and Technical Considerations to Mitigate Land and Water Degradation in the Peruvian Andes Ongoing
Project leader: John Pender
The goal of this project is to increase agricultural productivity, incomes, and sustainable management of land and water by small farmers in the rural Sierra region of Peru. The project will pursue this goal by contributing to improved knowledge about the factors affecting the adoption of sustainable land and water management technologies and their impacts in the Jequetepeque watershed of northern Peru. My specific tasks in this project
include: (1) Collaborate in the design and implementation of household surveys in the Jequetpeque watershed; and (2) evaluate the impact of specific interventions in the area.

*Program for Rural Investment and Poverty Reduction - Ecuador 2007-2008*
Project leader: Máximo Torero
Building on the methodology developed for Peru, we construct an economic typology for the rural communities in Ecuador using stochastic profit frontier analysis, producing results that are comparable to the typology obtained for Peru.

*Rural Employment Assessment and Strategy (FAO) 2007-2008*
Project leader: Máximo Torero
The goal of this project is to provide FAO with a rural employment strategy consistent with its strengths and their new mandate. The proposed strategy is based on solid economic foundations, while at the same time taking into account several social dimensions of rural employment

**Prior Employment**

Center for Health and Development, UCLA
Worked under Professor Duncan Thomas doing data analysis for the Indonesian Family Life Surveys (IFLS) and the Work and Iron Status Evaluation (WISE) projects. In particular, I assisted in the construction and revision of price indices for IFLS to help measure price changes from wave to wave, in particular during the financial crisis period, and explored the quality of retrospective measures included in the survey. Other tasks included data quality control for the initial rounds of WISE to provide feedback information for the following rounds.

GRADE, Lima, Peru
Assistant Researcher July 1998 – August 2000
Worked under Senior Researchers Jaime Saavedra and Maximo Torero in several projects in the areas of Labor and Human Development. In particular, I participated in the study of labor market reforms in Peru done by the aforementioned researchers for James Heckman and Carmen Pages’ forthcoming “Law and Employment: Lessons from Latin America and the Caribbean” book. Other projects include studies on returns to education and life-cycle consumption and savings decisions in Peru.

Teaching Assistant in Economics undergrad courses
UCLA April 2002 – March 2003
Universidad del Pacifico March 1996 – December 1998

**Publications**


Unpublished Manuscripts


This paper analyzes the role of transfers as an insurance mechanism in rural areas of Indonesia and Bangladesh during the 1998 financial crisis and the 2004 floods, respectively. The differences in the datasets and nature of the shocks allow us to explore different aspects of the problem. For Indonesia, we explore the transfer flows by kin relationship and find a stronger insurance component in father-children remittances. For Bangladesh, we found evidence of marriage being used as a risk-diversifying mechanism. In both scenarios, support for the insurance motivated transfers hypothesis was found.

“Migration Strategies During Times of Economic Crisis: Evidence From Indonesia”, Present.

This paper looks at the internal migration response to the 1998 Indonesian financial crisis. The huge macroeconomic shock caused many losses but also created some new opportunities. Some activities, like construction or services were particularly affected, while other areas, like rice farming or export oriented industries gained an advantage. Preliminary results show that population flows did in fact respond to the shock as predicted by the theory, with people moving out of hard hit areas towards places with better prospects were available.


This paper analyzes the advantages and disadvantages of using retrospective earnings data in linear regression analysis. We study the specific case of wage equations for Indonesia, using three waves of IFLS. According to our findings, the retrospective measurement error is negatively correlated with concurrent values of the variable. Though correlation with some covariates usually included in wage equations is found, returns to human capital can be estimated without biases or major loss of efficiency.

Grants and Fellowships


Fulbright Fellowship for Graduate Studies Abroad, Lima, Peru, 2000.