



BASIS CRSP

Eighth

Annual Report

Activities
2003-2004

Workplans
2004-2005

and

Outreach

October 2004

BASIS CRSP

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document possible. Comments on this report and BASIS's work are encouraged.
Please visit the BASIS website for more information about the projects, contact
information, and upcoming events: <http://www.basis.wisc.edu>

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INNOVATIVE DEVELOPMENT: BASIS FINDINGS AND POLICY RECOMMENDATIONS

Delivering results

In 2004, five long-term projects completed their research agendas under BASIS. The projects had a common goal of developing solutions to global constraints preventing broadly-based, sustainable economic growth for the rural poor. Each project generated innovative ways of eliminating or sidestepping one or more of these constraints.

Findings and policy recommendations from the projects are delivered in several ways: research papers posted on the BASIS website or published in leading journals, *BASIS Briefs* geared toward helping policymakers form effective solutions to poverty in their country or region, and targeted policy discussions organized by project experts in conjunction with local researchers, policymakers, and donors.

Ultimately, BASIS takes project results to the larger development community through its comprehensive, global *BASIS Policy Conferences*, which seek lessons and synthesized approaches to effective policy action.

Combating persistent poverty in Africa

The first *BASIS Policy Conference*, held in 2004, examined ways to combat persistent poverty in Africa. The conference brought together researchers from BASIS projects in Ethiopia, Kenya, Madagascar, Malawi, and South Africa, along with other leading researchers, development professionals, and policymakers working in sub-Saharan Africa. The goal was to identify types of poverty in different regions, deepen understanding of the structural features and constraints that create poverty traps, and establish steps to combat these problems. Knowledge generated by the conference was designed to help communities, local governments and donors proactively combat persistent poverty.

1. Laying the foundation for solutions

A preliminary workshop, held in November 2003 at Cornell University, outlined previous research in this area. Prior work shows a significant amount of turnover among the poor as households exit and enter poverty. Some of this mobility, or “churning,” can be



Findings solutions to the causes of persistent poverty will increase the wellbeing for many agricultural families worldwide.
(Photo by Chris Barrett.)

attributed to a regular drop into or rise out of poverty due to variability in climate, prices, health, etc.

Other crossings into and out of poverty, however, can reflect permanent shifts in wellbeing associated with gains or losses of productive assets. Distinguishing this structural mobility from churning clarifies the factors that can facilitate important structural change. Conversely, it helps identify the constraints that may leave less fortunate households caught in a trap of persistent, structural poverty.

Held in Washington, DC, in November 2004, the conference examined an assets-based approach to the causes and dynamics of structural poverty.

Commissioned background studies focused on ways in which households are able (or unable) to take advantage of new opportunities, as well as ways they can recover from major shocks that limit their opportunities. Results show why some households are able to move ahead due to changes such as market liberalization or new technology, while other households are unable to take advantage of the changes. Similarly, while the negative effects of shocks like drought, hurricanes, or political crises

may be temporary for some families, others are never able to recover. These findings suggest the existence of a minimum asset threshold below which households cannot take advantage of positive changes or recover from negative changes; unable to re-accumulate important assets, these households are trapped in permanent poverty.

The following outlines some causes of persistent poverty and highlights possible solutions as identified by the conference.

2. Steps to combat persistent poverty

With the overwhelming majority of impoverished Africans depending directly or indirectly on agriculture for their livelihood, it is crucial to ignite rural farm and non-farm productivity growth, which can help households climb out of poverty and keep others from falling into poverty. In order to achieve this, it is imperative to (1) increase productivity of assets, (2) facilitate asset building and protection, and (3) remove exclusionary mechanisms.

Increased productivity of assets can be achieved through market access and improved technologies. Access can be improved by reducing the cost of market participation by improving roads to facilitate travel to and from markets, as well as establishing favorable contracts for a wider variety of producers. In addition, providing smaller producers with business skills, support services, and access to farmer groups can improve their market competitiveness.

Building many types of capital—human, natural and physical—can give households the asset base required to stay out of poverty. Human capital can be improved through education, which leads to more lucrative off-farm employment and helps facilitate uptake of new technologies that improve production. The improvement (or maintenance) of natural capital requires soil and water conservation, soil nutrient replenishment, and sound water management. Physical capital can be built through improved access to credit and savings instruments.

It may be necessary to remove exclusionary barriers that block pathways from poverty for certain segments of the population. A common barrier is a lack of access to financial markets. In order to protect themselves, households need the ability to borrow, insure and save. These financial tools can help people make decisions regarding productive assets, which can prevent them from falling into a poverty trap. Additionally, there are many mechanisms of socio-political exclusion that prevent certain populations

from getting ahead. This can be addressed by improving access to public goods, including roads, electricity, education and health care.

The conference emphasized the importance of both cargo nets, which help households climb out of poverty, and safety nets, which help prevent them from falling into poverty. The goal is to give households the ability to make asset decisions that allow them to remain above poverty-trap thresholds while still meeting their subsistence needs. Improved

Persistent Poverty BASIS Briefs

See <http://www.basis.wisc.edu/pubs.html#briefs>

- No. 21.** “‘Churning’ on the Margins: How the Poor Respond to Drought in South Wollo, Ethiopia,” by Peter D. Little, M. Priscilla Stone, Tewodaj Mogues, A. Peter Castro, and Workneh Negatu.
- No. 22.** “Shocks and their Consequences across and within Households in Rural Zimbabwe,” by John Hoddinott.
- No. 23.** “The Differential Effects on Rural Income and Poverty during a Decade of Radical Change in Malawi, 1986-97,” by Pauline E. Peters.
- No. 24.** “Poverty Dynamics in Rural Kenya and Madagascar,” by Christopher B. Barrett, Paswel Phiri Marenya, John McPeak, Bart Minten, Festus Murithi, Willis Oluoch-Kosura, Frank Place, Jean Claude Randrianarisoa, Jhon Rasambainarivo, and Justine Wangila.
- No. 25.** “Sense in Sociability? Social Exclusion and Persistent Poverty in South Africa,” by Michelle Adato, Michael Carter, and Julian May.
- No. 26.** “Persistent Poverty in Upper East Ghana,” by Ann Whitehead.

health, access to credit, food aid, savings instruments, and education all can contribute to the long-term chances of a household avoiding poverty traps and protecting their productive assets.

3. Outreach: Putting solutions into practice

Since the conference, BASIS researchers have continued to develop and implement solutions to persistent poverty. In a particularly exciting effort, researchers are working with a broad data set on Ethiopian households to identify poverty thresholds. The plan is then to work with both USAID and NGOs to implement innovative targeting and

delivery of food aid in order to maximize the development impact of relief efforts.

Also, BASIS researchers are holding national-level conferences to communicate the results of the persistent poverty research. Conferences are slated for early 2005 in Ethiopia, Kenya and Madagascar and will benefit both local governments and donors.

Global solutions to poverty

In addition to contributing to the policy conference outlined above, BASIS projects delivered innovative research solutions to constraints to growth in many regions of the world. The following are examples.

Kyrgyz Republic. BASIS shows that the country's agrarian structure remains very dynamic with roughly half of farms and enterprises showing growth in income, productivity and returns per unit of land and labor. However, the other half remain mired in poor economic performance. BASIS identified arrangements that would facilitate a rebalancing of assets and increased efficiency. The emphasis on land distribution and land sales should be broadened and deepened to include developing a land rental market in arable and pasture land, making it possible for legal entities to own land, opening the land market to outside capital/investors, upgrading property rights, supporting common property rights, and reforming share equity arrangements.

Madagascar. BASIS contributes important findings on market-level obstacles to growth among poor households leading to geographical poverty traps. Basic food markets that appear to operate quite efficiently at the local level appear vulnerable to non-competitive manipulation by traders at regional levels, and are largely segmented from one another on a national scale by poor infrastructure that drives transportation costs so high as to effectively preclude profitable trade across the whole island. The consequence is an economy segmented into distinct sub-markets, some of which lack market-level competition necessary for farmers to enjoy incentives to invest in productive new technologies.

Malawi. The World Bank is funding rehabilitation of irrigation schemes being handed over to smallholders, and the Bank identified BASIS as having some of the most up-to-date information on the handover process. BASIS findings indicate that farmer training to date has been ineffective and that knowledge and authority concerning the schemes is concentrated in the hands of management committees. Therefore,

farmers are poorly equipped to exercise their rights and obligations in the new governance structures. BASIS assembled development district officers, traditional authorities and members of local government to hear directly from the farmers who use the schemes about their experiences with the transfer process. IFAD, the agency the Bank is funding to rehabilitate the schemes, is using BASIS information to re-orient its policies and procedures.

South Africa. BASIS highlights the need to accelerate land redistribution by presenting detailed estimates of the rate of land redistribution in KwaZulu-Natal, and comparing the performance of private and government-assisted land transactions with respect to the quantity and quality of land redistributed and the gender sensitivity of these transfers. BASIS also details obstacles faced by equity-sharing schemes, where many opportunities for equity-sharing on commercial farms are lost due to the policy divide between land reform and housing. By identifying best institutional practices, BASIS helped the government reconsider procedures and criteria used to evaluate which equity-share schemes are given support and to find ways to make them successful.

Philippines. BASIS shows that the informal sector has established a thriving market for credit, yet provision of saving services remains the domain of commercial banks that operate in the nearby cities but have yet to penetrate the rural landscape or successfully design saving products that suit the demand patterns of the rural poor. Nearly 40% of households in the BASIS study transacted exclusively in the informal sector, yet non-agricultural households are increasingly able to access credit from formal and semi-formal sources, a likely result of microfinance institutions and microfinance products provided by the formal banking sector. Results suggests that better provision of credit to rural households might stimulate higher growth in the rural economy where poverty is still pervasive. Also, risk-reducing agricultural technologies or credit bureaus could increase poor households' access to credit.

Looking forward

Though 2004 marked the closure of its longest-running projects, BASIS in the coming years will continue to deliver policy recommendations directly to the development community based on the findings of those five projects.

1. Outreach: Enhancing agricultural competitiveness in transition economies

The *BASIS Policy Conference: "Government Policies to Enhance Competitiveness in Agriculture"* will focus on the evolving nature of factor markets in agricultural production in economies in transition. Targeted to policymakers, development professionals, non-governmental organizations and academics throughout Eastern Europe and Central Asia, the goal is to compare the experience of Russia with other countries in the region, and focus on policies that may help ease the conversion to a market economy. The conference will look at four themes: organizational structure and performance in agriculture, land and property rights, rural labor, and financial institutions, credit and capital. For each theme, the goal will be to identify lessons for future agricultural policy and present recommendations to ease existing constraints.

2. Outreach: Innovations in rural finance

In June 2003, BASIS sponsored a major policy conference, *Paving the Way Forward for Rural Finance*, which drew hundreds of participants to Washington, DC. As summarized in a synthesis paper, "Rethinking Rural Finance," the conference identified promising new areas for rural financial market innovation (see <http://www.basis.wisc.edu/rfc/index.html>). BASIS subsequently competitively solicited and funded four new research projects on rural finance. The results of this new research will be presented in the upcoming *BASIS Policy Conference, "Innovations in Rural Finance,"* slated for June 2006.

In order to maximize the relevance and impact of this conference, pre-conference workshops will create an opportunity for researchers to interact with private and public sector innovators. Researchers will be challenged to put forward program innovations as though offering these to rural finance venture capitalists. Innovators will be asked to identify priorities for research and the answers they need in order to expand and broaden access to rural financial markets.

The conference will be organized around three themes. The first will investigate the nature and severity of credit constraints in contemporary rural financial markets. Drawing on BASIS research in Guatemala, Mexico, Peru, the Philippines and South

Africa, this section of the conference will employ new and innovative methods to explore both who faces credit constraints and the reasons behind the observed constraints.

The second theme will consider the benefits in relaxing credit constraints, especially for low-wealth households. A unique characteristic of BASIS research in this area is that it has a significant long-term component that allows a window onto the impact of credit access on asset accumulation and long-term poverty reduction.

The third theme will evaluate the impact of specific innovations: credit bureaus that improve lenders' access to information, and new lending rules that provide credit to borrowers rationed out by traditional credit-scoring methods. Drawing on research in Central America, the Philippines and South Africa, this section of the conference will provide a chance to gauge the effectiveness of policy innovations.

3. New research

In 2004, four new BASIS projects began that will add significantly to knowledge about how to break constraints to economic growth for the rural poor. In 2005, initial *BASIS Briefs* from the projects will outline:

- strategies for understanding factors that lead to sustainable poverty reduction in multiple regions of the world,
- ways that environmental service reward mechanisms can provide marginalized social groups with opportunities for generating income and obtaining secure rights to land and water,
- how access to capital can help poor borrowers accumulate assets and working capital, and how microfinance institutions can expand their services to these borrowers,
- state of the art methods for measuring rural poverty in Brazil, leading to improved programs to increase rural incomes.

*

THROUGH BOTH RESEARCH AND OUTREACH, the innovative and responsive BASIS program continues to deliver effective policy solutions that will help many families throughout the developing world achieve lasting and sustainable prosperity.

Project Portfolio: Activities and Workplans

PROFILE

In 2001, BASIS CRSP began Phase II with five projects doing cutting edge research on global constraints to rural prosperity with a goal of making markets work for all. In 2003, BASIS funded three projects designed to increase knowledge about rural finance and its link to other factor markets. In 2004, BASIS added four new projects to address core BASIS themes on pathways from poverty, constraints to asset accumulation by rural poor, institutional innovations, and the allocation and sustainable use of environmentally sensitive resources.

All 12 BASIS projects are detailed in this section. Key findings, outputs, and dissemination activities

are the feature of the five original projects, which came to a close in 2004. The ongoing rural finance projects show activities from last year and workplans for 2004-05. Also, the goals of the four new projects are profiled.

Each BASIS project focuses on a region or regions where constraints to broadly based and sustainable economic growth have particular salience; each also seeks lessons and policy innovations to inform efforts to overcome the constraints in other regions. Together, BASIS projects deliver innovative and policy-relevant impact.

Closing projects

- ◆ “Input Market Constraints upon the Growth of Russian Agriculture”
 - ◆ “Institutional Innovations to Improve Equity Sharing under Privatization and Farm Restructuring”
- ◆ “Institutional Dimensions of Water Policy Reform in Southern Africa”
- ◆ “Rural Markets, Natural Capital, and Dynamic Poverty Traps in East Africa”
 - ◆ “Assets, Cycles, and Livelihoods”

Ongoing projects on rural finance

- ◆ “Credit-reporting Bureaus and the Deepening of Financial Services for the Rural Poor in Latin America”
 - ◆ “Structure and Performance of Rural Financial Markets and the Welfare of the Rural Poor”
- ◆ “Long-term Effects of Access to Financial Services on Asset Accumulation, Economic Mobility, and the Evolution of Wellbeing”

New projects

- ◆ “Pathways from Poverty: A Multi-country Study”
 - ◆ “Regional Diversity in Pathways out of Rural Poverty in Brazil”
 - ◆ “Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment”
- ◆ “Property Rights, Environmental Services and Poverty in Indonesia”

Acronyms

ADD	Agricultural Development Districts	KARI	Kenya Agricultural Research Institute
AEM	Applied Economics and Management	LDI	Landscapes Development Initiative
BASIS	Broadening Access and Strengthening Input Market Systems	LRAD	Land Redistribution for Agricultural Development
CASE	Center for Social and Economic Research	MFI	microfinance institution
CGIAR	Consultative Group on International Agricultural Research	NGO	nongovernmental organization
CLASSES	Crop, Livestock and Soils in Smallholder Economic Systems	NSF	National Science Foundation
CMA	Catchment Management Authorities	OSSREA	Organization for Social Science Research in Eastern and Southern Africa
CRSP	Collaborative Research Support Program	PARIMA	Pastoral Risk Management Project, Global Livestock CRSP
DFID	Department for International Development	PES	payment for environmental services
DLA	Department of Land Affairs	RDP	Rural Development Project
EU	European Union	RIMCU	Research Institute for Mindanao Culture
IAAE	International Association of Agricultural Economics	RUPES	Rewarding Upland Poor for Environmental Services
ICRAF	International Centre for Research in Agroforestry	SAGA	Strategies and Analyses for Growth with Access
IDIES	Instituto de Investigaciones Economicas y Sociales	SRI	system of rice intensification
IDR	Institute for Development Research	TA	Traditional Authority
IFAD	International Fund for Agricultural Development	TIP	Temporary Inputs Program
IFPRI	International Food Policy Research Institute	TLU	tropical livestock units
KAFC	Kyrgyz Agricultural Finance Corporation	USAID	United States Agency for International Development
		WUA	Water User Association

INPUT MARKET CONSTRAINTS UPON THE GROWTH OF RUSSIAN AGRICULTURE:

Land, Labor, Capital, and other Inputs
under Alternative Economic Reform Policies

Global Constraint 1: *Ineffective Agricultural Resource Use in Post-Reform Economies*



Discussion at a BASIS conference on constraints in Russian agriculture
(Moscow, September 2004)

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Hebrew University, Israel: Zvi Lerman

University of Maryland, USA: Howard Leathers, Leonid Polishchuk

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Iowa State University, USA: Bob Jolly

University of Minnesota, USA: Glenn Pederson

<http://www.basis.wisc.edu/russia.html>

PROJECT PROFILE

Despite initial hopes and promise in the early 1990s, reforms of the former Soviet economy in agriculture remain disappointing. Many former collective farms remain in business despite financial losses to the point that they would be bankrupt if Western commercial rules applied. The Russian legislature passed a landownership law in 2002, yet it remains in doubt whether it will appreciably improve long-term incentives for placing farmland in the hands of people best able to use it efficiently.

Nonetheless, significant changes have occurred, though limited to particular regions. Output increases have been noted on household subsidiary plots, which have been enlarged and play an important role, especially where former collective farms are weakest. New arrangements are springing up in which input suppliers or other businesses related to agriculture are establishing vertically integrated or other contractual arrangements with agricultural producers. These arrangements are managing to supply much-needed fertilizer, chemical, and energy inputs in ways more promising than the barter arrangements that characterized the dealings of many former collective farms and the ad hoc and unpriced ways in which owner-employees of these farms often acquire inputs for their own farming enterprises on private plots. Even without fully developed landownership rights, it appears that rental transactions under which new operators may acquire the use of increased acreage are beginning to be economically important.

There have been few systematic research efforts to survey, analyze, and make recommendations on the post-1991 economic development of Russian agriculture. Reviews and studies undertaken to date indicate how difficult it is to draw conclusions about the extent, effectiveness, and consequences of even quite well documented and widely implemented reforms. With respect to factor markets, the informational and statistical base is poorly developed. Indeed much of the anecdotal evidence pertains to barter transactions that suggest a lack of functioning factor markets.

The project seeks to quantify the extent to which factor market constraints impair the ability of Russian agriculture to function efficiently and profitably, to establish which constraints are most important in the short- and long-term, and to provide the analytical knowledge needed to formulate policies to remedy constraints.

In the first two years, BASIS carried out a literature review and conducted a survey of large-scale producers, individual farms, and commercial operations. In the second year, the project carried out preliminary data analysis. The third year was spent refining the analysis, further surveying previously sampled farms for additional information on labor use and worker characteristics, developing papers for a final conference in Moscow, and elaborating these papers into a book to be submitted for publication in 2005.



Support

BASIS CRSP core funding.

Outputs (also available in Russian)

Bogdanovskij, V. 2004. *Agricultural Labor Market Development*. Moscow: FGUP.

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Brock, G. and M. Grazhdaninova. Forthcoming. *A Preliminary Look at Several Crops on Russian Farms in 2001 Using Stochastic Frontier Analyses*. Post-Communist Economies.

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Khramova, I. and E. Serova. 2003. "Farms and Factors Markets in Russia's Agriculture." In

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Non-print

Presentations at the conference "Transition in the CIS: Achievements and Challenges" (Moscow,

September 13-14). Available in Russian. *English proceedings will be published in the Comparative Economic Studies, March, 2005*.

Subjects covered by the presentations:

- Large and Small Business in Russian Agriculture: Adaptation to Market
- Development of Peasant Farms in Central Russia
- Russia's New Agricultural Operators: Their Emergence, Growth, and Impact
- Agricultural Land Market in Russia: Living with Constraints
- Agricultural Employment in Russia 1990-2003
- Markets for Purchased Farm Inputs in Russia
- Nonpayments, Bankruptcy, and Government Support in Russian Agriculture
- Determinants of Access to Credit for Corporate Farms in Russia
- Financial Performance and Efficiency of Corporate Farms in Northwest Russia
- Allocative and Technical Efficiency of Corporate Farms in Russia
- The Allocative Efficiency of Material Input Use in Russian Agriculture

Other presentations

Dmitri Rylko. "New Operators in Russia: Historical Problem or Opportunity." Presented at the Farm Organization in Eastern Europe conference. Halle, November 2003.

Dmitri Rylko. "New Operators in Russia: Emergence, Current Status and Future." Presented at the Adam Smith Russian Food Industry conference. Moscow, November 2004.

I. ACTIVITIES 2003-04

A. Key Findings

1. Farm structure

Soviet farm structure was notoriously inefficient. One goal of transition was to achieve higher productivity and efficiency through market-oriented restructuring of farms. BASIS provides an overview of the changes in Russia's farm sector during the transition, covering both large agricultural business (corporate farms) and small individual farms. The analysis uses a unique database of all 24,000 corporate farms in Russia, supplementing the data with national and regional statistics.

The project reports the results of a unique survey of peasant farms in Tambov Oblast in Central Russia, which has been going on since 1992. This provides an in-depth look into the functioning of this new sector of small-scale Russian agriculture. BASIS also looks at the other extreme of the farm structure spectrum, using case studies and interviews to describe the development of agrohholdings, those mega-farms that began to emerge in the mid-1990s with investments from non-agricultural interests. This unique Russian phenomenon faces an uncertain future, but its impact on the rural scene so far justifies further study.

2. Land

The economic function of land markets is to enable agricultural land to flow from less efficient to more efficient users. BASIS analyzes the constraints on the development of agricultural land markets in Russia. Although the full legal framework for transactions in land is now in place, lack of market information and bureaucratic complexity of registration procedures are major obstacles to the development of land markets. BASIS analysis exploits national and regional data on landownership and transactions in land, as well as the results of the 2003 BASIS survey.

3. Labor

The project provides a sweeping overview of the changes in agricultural employment since 1990. Using national statistics, the 2003 BASIS survey, and a number of smaller original surveys, BASIS

shows how rural labor shifted from corporate farms to the individual sector, and demonstrates that registered rural unemployment in Russia is kept in check by the dual mechanism of reducing the effective working time (i.e., allowing hidden unemployment) and paying labor less than the value of marginal product. Underutilization of labor is particularly pronounced in the small individual farms, which act as a "labor sink" for rural workers who have been dismissed by corporate farms.

4. Farm inputs

Another topic of the project's research is the supply and demand for five groups of farm inputs: machinery, fuel, fertilizer, seeds, and animal feed. The conclusion is that the state no longer has a role as a direct supplier of inputs to agricultural producers and that this function has shifted to wholesalers, traders, and manufacturers, who sell mainly for cash and bank transfers, not barter. The strong imperfections that still prevail in input markets have encouraged vertical integration, with fertilizers, fuel, and machinery delivered in substantial quantities through internal channels of large holding structures.

5. Finance

Because of persistent data limitations, financial questions can be analyzed only for corporate farms. BASIS uses national statistics to address the pressing issues of nonpayments and bankruptcy. The conclusion is that Russian agriculture does not need more subsidies; it needs better functioning market channels to be successful and profitable.

An econometric analysis of access to credit uses the 2003 BASIS survey data to conclude that efficiency and profitability are the main factors that enable farms to borrow, whereas asset endowments (land and machinery) are less important, probably because of underdeveloped collateralization mechanisms. BASIS also used a unique database of all corporate farms in Leningrad Oblast in Northwest Russia to develop a measure of financial solvency and to show that management quality is the main factor responsible for financial health.

6. Production efficiency

Since the main objective of transition is to improve productivity and efficiency, BASIS applied the 2003 BASIS survey data to estimate allocative and technical efficiency of corporate farms. This involves estimating production functions by econometric methods (to compare the value of marginal product of specific inputs to their market prices) and production frontiers by Data Envelopment Analysis (to calculate the distance of the farms from the frontier).

Using the allocative efficiency of material inputs in general and fertilizer in particular, based on the results of several groups of BASIS researchers, it is possible to conclude that material inputs in general are overused, while fertilizer in particular is underused. A surprising result is that labor is underused in the sense that the value of labor's marginal product is higher than the cost of labor.

B. Impacts

The impact of project findings so far is mainly on the Russians who heard and debated the presentations at Golitsino-IV. The Russian audience, including representatives of the Ministry of Agriculture, is more willing than when the

project began to enter into constructive dialogue on economic issues in agriculture and the policy implications. The ideas are better accepted now that policy solutions have to include more than higher prices for farm products and extensions of credit and other subsidies to former collective farms. The need for a policy that allows farmland to be transferred among users through rental arrangements, and even sale to new owners has gained ground in both opinion and law.

BASIS added to the analytical skills and experience of several young researchers at the Higher School of Economics, Moscow, and of a few older researchers at economic research institutions in Russia. It is expected that these improved capabilities will assist in adding to the stock of helpful economic analysis to inform agricultural policy discussion and debate in the years ahead.

INSTITUTIONAL INNOVATIONS TO IMPROVE EQUITY SHARING UNDER PRIVATIZATION AND FARM RESTRUCTURING:

**Helping Land Reform Beneficiaries Gain Access to Land and
Financial Resources in Central Asia and Southern Africa**

Global Constraint 1: *Ineffective Agricultural Resource Use in Post-Reform Economies*



**Equity share schemes could allow farmworkers to receive land and housing
(Photo by Mike Lyne)**

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<http://www.basis.wisc.edu/institutions.html>

PROJECT PROFILE

Central Asia and southern Africa are undergoing political and economic transition, the former from state and collective farm ownership to private groups and individuals, and the latter to redress apartheid and a heritage of racially biased and unequal landownership. Despite different histories and policy contexts, countries in the regions share a common problem: poor people in rural areas are unable to make productive use of their land resources. The problem is acute where it has not been feasible to privatize land, water, infrastructure or movable assets to individual owners.

Group ownership is emerging as an important model in the South African and Kyrgyz transitions. Factors such as organizational inefficiency, free- and forced-riding, weak legal frameworks and moral hazard constrain the willingness and ability of groups to finance the investments needed to sustain farm earnings. New land reform beneficiaries need assistance in determining the type of legal entity to select, organizational structures to adopt, and strategies to finance farm investment and acquire business training.

Recent literature on “New-Age Cooperatives” helps identify important institutional and organizational reasons for the poor performance of joint ventures that operate like traditional cooperatives. A notable exception to the general failure of group land reform efforts is the success of farmworker equity sharing schemes in South Africa’s Western Cape province. Many of these schemes have redistributed commercial farmland and wealth, and some are

improving agricultural performance. An equity share scheme is a private company in which financial equity is owned by workers, managers and other investors in the form of tradable shares that define their individual rights to vote for directors and to benefit from the profits and capital gains generated by the company.

In order to identify and resolve the underlying causes of management and financial problems associated with group ownership in the Kyrgyz Republic and South Africa, BASIS researchers conducted in-depth studies of transformed enterprises in each country. These case studies will yield a set of “best institutional practices” to serve as guidelines when establishing other land reform projects where beneficiaries share inclusive rights to resources. The project endeavors to:

- identify institutional and organizational practices that constrain the success of group enterprises and deprive the poor of current income, capital gains and livelihood opportunities
- determine best institutional practices that broaden and deepen beneficiaries’ access to resources and encourage their productive use
- apply best practices to the design or redesign of one or two equity-sharing enterprises
- assess how organizational and institutional innovations can improve project performance measured in financial health, environmental sustainability, and empowerment of beneficiaries, especially women.



Support

BASIS CRSP core funding.

Outputs

Kyrgyzstan

*Legal background papers, available at:
<http://www.basis.wisc.edu/institutions.html#pubs>
(Also available in Russian.)*

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Databases

All commercial farmland acquired by previously disadvantaged people in KwaZulu-Natal, 1997-2003, broken down by mode of transfer, method of financing, and the status of the new entrants.

From the panel survey of 38 prospective land reform beneficiaries at Sherwood containing repeat observations on household characteristics and poverty indicators.

I. ACTIVITIES 2003-04

A. Kyrgyzstan

1. Papers and Case Studies

The research team completed six background papers that help define the legal and regulatory framework for business activity in Kyrgyzstan. All papers have been finalized in English and Russian and posted on the BASIS and CASE websites.

Case study reports were prepared for all 10 enterprises, however they will not be released for public information in light of the sensitive information they sometimes contain. Four enterprise managers were invited to present at the BASIS Policy Conference, “Institutional Transformation and Agrarian Change in Kyrgyzstan: Bridging Legal and Economic Reforms for Agricultural Development,” organized by the Land Tenure Center and CASE Kyrgyzstan, held at the Cholpon-Ata, Issyk-Kul, 27-29 October 2004. Each case study presentation was turned into a paper that was also translated into English. Final versions will be posted on the BASIS website in 2005.

Reviews of the background papers and case study material were undertaken to determine how and whether the current regulatory environment continues to constrain business activity, and how and whether the problems agribusinesses face are being dealt with in policy and program interventions.

Enterprises in Kyrgyzstan continue to splinter, consolidate and adopt new forms and business activity with considerable fluidity. In addition, the legal, market and macroeconomic environment remains both tenuous and hostile to economic growth. Against this backdrop, best organizational arrangements were difficult to discern, although a number of enterprises were practicing interesting innovations. Two enterprises were identified that offered a reasonable chance of succeeding with their current resource base and set of market opportunities: Aiyl Charba milk cooperative and Sadykov cotton operation in Aravan Rayon, Osh Oblast.

2. Study Tour

South Africa has a more accommodating legal and market environment for investment and deeper NGO capacity for facilitation to aid beneficiaries in pursuing new business arrangements. Indeed it is proving difficult for policymakers within Kyrgyzstan to appreciate the possibilities for restructuring given the localized environment within which they are

operating. BASIS researchers visited South Africa in December 2003 to explore institutional arrangements. Equity-share schemes were also visited in the Western Cape. Researchers found issues related to land reform in South Africa and farm restructuring in Kyrgyzstan to have many commonalities, but both the legal and institutional framework and state of market development in South Africa afforded enterprises a much greater breadth of restructuring possibilities and opportunities for profit. While these opportunities still seem a long way off in Kyrgyzstan, the trip helped broaden horizons; lessons learned were presented to Kyrgyz and Central Asian policymakers in October 2004.

3. Third Farm Enterprise Panel Survey

The Third Farm Enterprise Panel Survey was carried out in the 2nd and 3rd quarters of FY04 to monitor the pace of change in agrarian structure in Kyrgyzstan, analyzing constraints to growth and economic viability, and discerning pathways for improving the livelihoods of the poorest rural households. The findings of this survey continue to attract attention from government, donor and civil society organizations, as it is the only survey of its type in Kyrgyzstan with a rural development focus.

As with the previous two surveys (1999 and 2001), this survey was national in scope, and canvassed all oblasts and rayons. In addition, it sought to revisit and re-interview the same enterprises interviewed in the 2001 BASIS survey. Based on preliminary analysis of the “Survey of Lost Enterprises” implemented in FY03, it was found that many enterprises folded either for reasons of debt or they chose to dissolve the enterprise voluntarily. While some exited farming entirely, others sold off assets, further subdivided landholdings among groups of farming households, but nonetheless remained in agriculture as smaller peasant household (group) farming units. In order to replace “lost” enterprises in the 2001 survey, the decision was to “select comparable enterprises in the vicinity.” If indeed the agrarian structure is devolving toward greater numbers of smallholdings, with further breakup envisioned for the future, then this selection criteria over time would lead to an upward bias in size of enterprises being interviewed.

The government of Kyrgyzstan recently completed the 2003 census of farming enterprises. The Third BASIS Farm Management Survey included as many of the enterprises as could be located from the 2001 survey, but a high loss rate in enterprises is again

anticipated. However, instead of filling in the ideal sample size of +/- 450 enterprises with comparable units, enterprises in the sampling frame were selected to match the national land size distribution, hence filling in with greater numbers of smaller farming units as necessary.

Three outputs utilizing the panel time series data (1999, 2001 and 2003) were prepared during the period and presented at the BASIS regional Policy Conference.

In November of 2004, USAID/Washington with assistance of USAID/Bishkek undertook a *Land Tenure and Property Rights Assessment for Kyrgyzstan* through the Global Land Tenure Awareness Framework activity administered by the Associates for Rural Development, Inc. This activity is intended to assess the state of land tenure and property rights in Kyrgyzstan presently as well as evaluate past policy and program interventions. In addition, the assessment is intended to provide USAID/Bishkek with recommendations to guide its future programming.

BASIS findings were incorporated into this assessment (see annex). In addition, a policy memo was prepared for the Kyrgyzstan and regional USAID missions that provided a preliminary outline of recommendations for future policy and program interventions.

4. BASIS Regional Policy Conference

The BASIS Policy Conference, Institutional Transformation and Agrarian Change in Kyrgyzstan: Bridging Legal and Economic Reforms for Agricultural Development, was held at the Cholpon-Ata, Issyk-Kul, 27-29 October 2004. Roth took the lead in developing the conference agenda while Mogilevsky took the lead in organizing logistics and inviting participants.

The conference included 23 presentations organized into 7 sessions, including an overview of the state of Kyrgyzstan's agricultural sector, a panel on investment and marketing constraints, the determinants of farm size and enterprise dynamics, comparative experiences with contracts, gender and institutional change, and priority training needs. The conference was attended by 60-70 participants from Kyrgyzstan, Kazakhstan, Uzbekistan and Turkmenistan, along with presenters from the US and South Africa. These included a broad cross-section of policy practitioners from both government and civil society, as well as donor funded projects.

B. South Africa

1. Papers and Presentations

Graduate students Shinns and Semalulu completed their Masters dissertations. Both students contributed papers accepted for presentation at the 42nd annual conference of the Agricultural Economics Association of South Africa, both papers were upgraded to plenary status (only 3 of the 33 contributed papers were upgraded), and both were accepted for publication in the peer-reviewed journal *Agrekon*. Semalulu and Ferrer's paper entitled "The impact of the LRAD programme on farmland redistribution in KwaZulu-Natal, 2002" won the Agricultural Economics Association of South Africa prize for best contributed paper.

Lyne and Roth finalized their second BASIS Brief entitled "Making Co-ownership Work: Helping Land Reform Beneficiaries Access Land and Financial Resources through Equity Sharing in South Africa (BASIS Brief No. 20, May 2004). Three papers, by Greene, Pitout and Ngobese respectively, describing the experimental projects in KwaZulu-Natal and their facilitation by LIMA, were presented at a BASIS mini-conference held in Pietermaritzburg on 26 July 2004 and circulated to government and non-government land reform practitioners in South Africa as part of a proceedings issue.

2. Facilitation of Experimental Projects

Two enterprises, a beef operation near Mount West (Sherwood) and a beef and game operation near Noodsberg (Clavelshay), were identified as suitable candidates for equity sharing projects during FY02. By the beginning of FY03, facilitators from LIMA Rural Development Foundation had already started the process of explaining equity sharing arrangements to prospective participants. By the end of FY03 Sherwood was ready for implementation pending the approval of an application lodged with the Department of Land Affairs (DLA) for "Land Redistribution for Agricultural Development" (LRAD) grants to finance workers' equity. Institutional and business planning was also completed at Clavelshay but the DLA would not consider an application for LRAD grants when the project's first requirement was to construct new houses for its workers. BASIS therefore turned to the Department of Local Government and Housing with a request for housing grants.

Setbacks encountered in the cumbersome and bureaucratic process of reviewing applications for grants seriously delayed the facilitation process but helped BASIS achieve its goal of testing and altering

policy. Sherwood's application for LRAD grants was rejected in October 2003 on the grounds that most of the prospective beneficiaries were seasonal workers and therefore ineligible for grants. In March 2004, the DLA agreed to extend LRAD grants to seasonal farmworkers and requested a revised version of Sherwood's application. The revised application was rejected in October 2004, this time on the grounds that land used by the farming enterprise was leased and not purchased by the beneficiaries. BASIS successfully contested this ruling and Sherwood's application was forwarded to the Provincial Grant Approvals Committee for final review at its meeting on 30 November 2004. BASIS researchers established an important precedent by securing permission to attend the committee meeting and so expedite the flow of information between decision-makers and applicants. Lyne and Greene defended Sherwood's case vigorously and came away with conditional approval for LRAD grants totaling R860,000. The condition, that the Trust representing the beneficiaries be given the right of first refusal should the owners decide to sell Sherwood has been accepted by all parties. It is a great pity that Sherwood's launch will coincide with the end of the BASIS program in South Africa.

Clavelshay faces more fundamental challenges. This equity-share scheme requires the relocation of farmworker homes. The farmer is willing to donate land to his workers for this purposes and an audit conducted by the DLA early in 2004 confirmed that all of the workers were willing to relocate. However, legislation governing the establishment of townships (and the award of housing grants) creates prohibitively high costs when applied to a small rural development. BASIS researchers met with senior officials from Land Affairs, Housing and Town & Regional Planning on a regular basis to explore the use of alternative legislation but could not identify a more affordable option. For some reason, the *Extension of Tenure Security Act, Act 62 of 1997* was overlooked. The possibility of using Act 62 to secure grant funding for the construction of houses and for the purchase of equity in an approved equity-share scheme was raised by delegates from the Western Cape at the BASIS mini-conference in July 2004. Land Affairs and Housing are currently pursuing this option but it is highly unlikely that their investigation will result in a decision to consider applications for grant funding from schemes like Clavelshay in the near future. Clavelshay itself, has withdrawn from the process following a land claim gazetted in June 2004 that affects parts of the farm earmarked for the joint venture. Although the claim was lodged before 1999, the Land Claims Commission does not release news

of pending claims until they have been validated and published in the Government Gazette.

The no-cost extension afforded to BASIS Researchers in South Africa will be fully utilized, making Sherwood ready for implementation. This entails modifications to the Business Plan, financial projections, livestock valuations, Lease Agreements and Partnership Agreement, and constituting the new Board of Directors with an "honest broker" to help represent beneficiary interests.

3. Benchmarks to Measure Performance

Graduate student Gray identified a wide range of possible indicators to measure the performance of equity-share schemes with respect to poverty alleviation, empowerment and participation, institutional arrangements and governance, and financial health. Her objective was to define a subset of relevant, objective and feasible indicators using panel data gathered from a land reform project (Clipstone) in the Midlands of KwaZulu-Natal and seven established equity-share schemes in the Western Cape. Roth joined Gray in the Western Cape from 10-17 February 2004 to assist with her fieldwork, and LIMA supported her census survey of beneficiary households at Clipstone. Graduate student Shinns first surveyed these (38) households in November 2002.

A paper by Gray, Lyne and Ferrer measured the performance of equity-share schemes. Recognized indicators of financial performance were applied to balance sheet and income statement data provided by four of the equity-share schemes in the Western Cape. The analysis revealed problems with several conventional measures of profitability, solvency and growth when they were applied to recently restructured farming enterprises whose "empowerment" status attracted unusually high levels of debt capital to finance long-term investments. To avoid these problems, it is recommended that, for equity-share schemes, profitability should be measured by the return on assets or dividend return; solvency by the debt/asset ratio; liquidity by cash flow projections; growth by changes in the audited real value of shares; and workers' total returns by changes in the sum of the real wage bill, capital gains, dividends, interest and other benefits accruing to workers in aggregate.

A second paper by the same authors analyzed data gathered at Clipstone and at all seven equity-share schemes studied in the Western Cape. Poverty alleviation was measured using a transition matrix of households grouped by four different symptoms of poverty: current income, wealth, health and a

principal component index of housing quality. Eight categories of indicators were recommended for empowerment and participation: control and ownership, skills transfer, understanding, information, outcomes, trust, outreach, and participation. A scorecard applying norms drawn the equity-share schemes was used to test the indicators. A scorecard approach was also applied to institutional arrangements and governance, which were measured using three categories of indicators; accountability, transparency and property rights.

A third paper, by Gray, helped measure the performance of equity-share schemes. Overall, this activity generated three papers compared to the two anticipated in the workplan.

4. Census of Farmland Transactions

Ferrer completed the 2003 census survey of farmland transactions in KwaZulu-Natal and analyzed the data. His final report will combine the results for 2003 with those obtained since 1997 when the first survey was commissioned under BASIS phase I. The report will track the quantity and quality of farmland redistributed to previously disadvantaged people in the province over the seven-year study period, show the contribution of private and public modes of land redistribution to these annual transfers, and seek to explain changes in the relative performance of these modes of land transfer.

Figures 1-3 present extracts of the updated census results. Figure 1 shows that the gains achieved in 2002 following the launch of Government's LRAD program were not sustained in 2003 when the rate of land redistribution slipped back to its average level of just 0.5 per cent per annum.

Figure 2 shows that the sharp drop in total area transferred can be attributed mainly to similar losses in the area financed with government grants and the area financed privately with cash (i.e., without the benefit of a mortgage loan). Historically, these two modes of transfer have redistributed farmland of poor agricultural quality (i.e., "cheap" land best suited to extensive grazing).

From Figure 3, it can be inferred that the real price of land financed entirely with government grants

increased significantly in 2003, whereas the same price increases were not evident for private purchases. This suggests that (a) beneficiaries of grants paid more for land than its market value, and/or (b) beneficiaries purchased land of better quality in 2003. The latter explanation is quite plausible because grant-assisted transactions include farms purchased to settle land claims. The quality of land restored to beneficiaries through this restitution process is unpredictable and restitution would have accounted for a substantial share of the land purchased with grants in 2003 as the government intends to complete the restitution process by December 2005. Secondary data obtained from commercial banks and Ithala Development Finance Corporation show that land redistribution projects involving mortgage loans plus LRAD grants to finance farms with a combined market value of more than R20 million were proposed in 2003 but were not approved for grant funding owing to a budgetary constraint. Officially the budget constraint stems from the priority afforded to restitution projects. However, it is becoming increasingly clear that the Land Bank, the only bank permitted to approve LRAD applications, created an artificial budget constraint by failing to process many of the deals for which it approved grants.

5. Regional Mini-conference

A regional mini-conference was held on 26 July 2004 in Pietermaritzburg to disseminate research findings to policymakers and practitioners, and to engage them in debate on LRAD policy and its application. Attendance was restricted to 40 invited delegates representing national and provincial government departments of Land Affairs, Agriculture and Housing, commercial banks, equity-share schemes, non-government organizations, USAID Pretoria, and BASIS. A proceedings issue edited by Lyne and Roth was circulated to all delegates and posted on the BASIS website.

Figure 1. Estimated cumulative and annual rates of farmland redistribution to disadvantaged owners in KwaZulu-Natal, 1997-2003

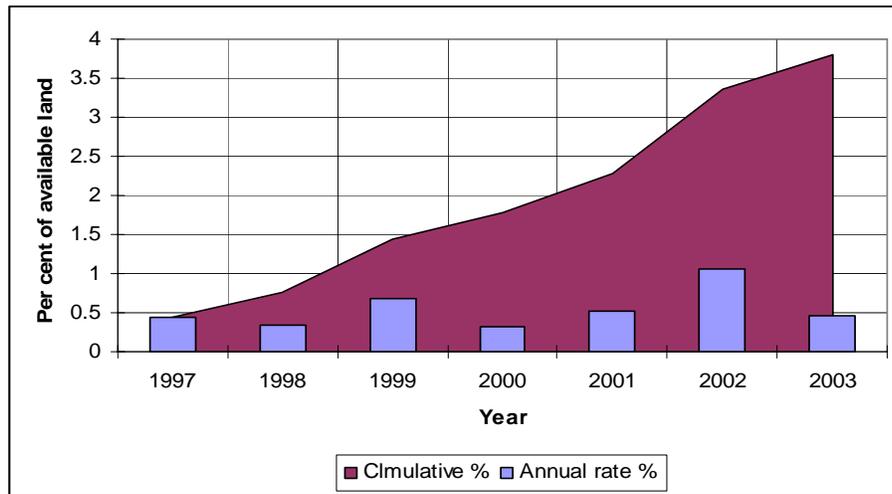


Figure 2. Annual area of land by mode of redistribution to disadvantaged owners in KwaZulu-Natal, 1997-2002

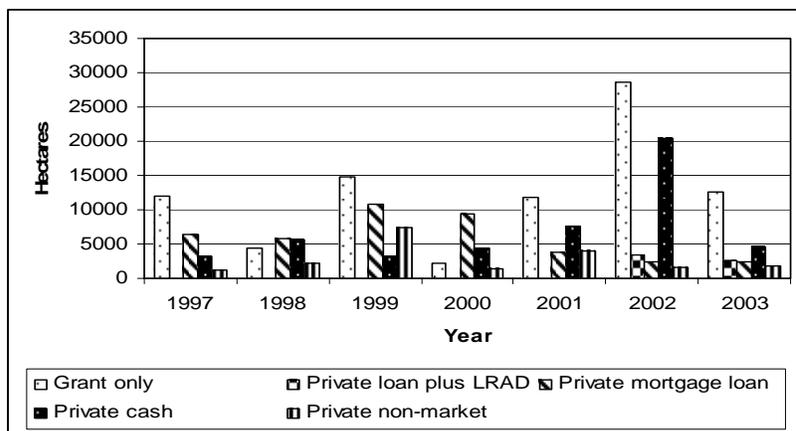
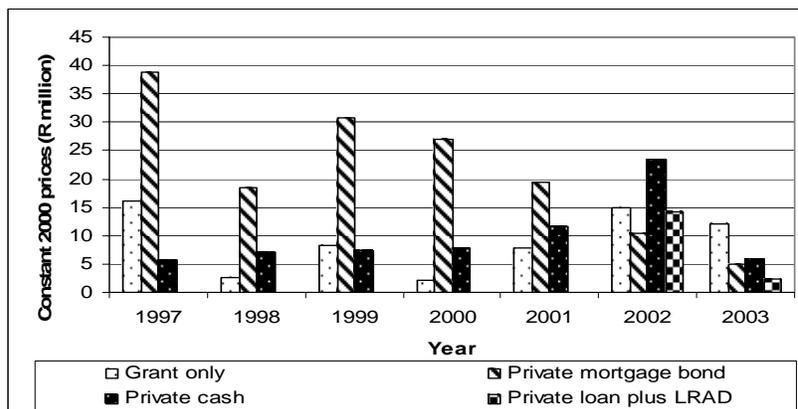


Figure 3. Market value of farmland by mode of land redistribution to disadvantaged owners in KwaZulu-Natal, 1997-2003



ANNEX. TOWARD A LAND TENURE AND PROPERTY RIGHTS ASSESSMENT FOR KYRGYZSTAN

A. Land and Financial Market Integration

Until 1997, state agencies represented the predominant source of credit in the agricultural sector. Beginning in 1997, however, Kyrgyzstan witnessed a long-term secular decline in the supply of credit by the state, and an increase in supply by foreign creditors and non-bank financial institutions. Commercial banks have played little or no role in providing agricultural finance to date. As shown in Table 1, the share of commercial lending to agriculture is very low, although its possible that commercial lending to agribusiness and marketing is captured in other credit categories.

Agricultural lending is a more significant component of non-bank financial institutions. As documented by Erdolatov, Childress and Mogilevsky, the credit portfolio of non-bank financial institutions in 2003 comprised 80% agriculture, 11% trade and catering, 5% services, 3% consumer credit, and 1% industry. The lion's share of this credit was provided by the Kyrgyz Agricultural Finance Corporation (KAFC) (66%), and to a lesser extent by microcredit and companies (12%), credit unions (15%), and the Financial Corporation on Support and Development of Credit Unions (7%). The rise in lending by credit unions has witnessed a spectacular rise from 1.7 million som in 1977 to 288.8 million som in 2004, a significant rise even after taking into account rapid

Table 2: Growth in microcredit lending

Year	Total credit (million som)	Agricultural credit (million som)	Number of beneficiaries (000)
2000	1,240.3	564.8	94.2
2001	1257.8	267.7	98.4
2002	1,682.5	343.0	132.6
2003	2,372.6	362.2	167.2

Source: Erdolatov, A., M. Childress, and R. Mogilevsky. *Financing Restructuring of Agriculture in the Kyrgyz Republic*.

price inflation (see CPI index in table 3). As shown in Table 2, microcredit has also shown growth in total credit and number of beneficiaries served, but agricultural credit appears to have plateaued and declined in relative terms.

The KAFC was established as a joint stock company in December 1966 by the Government of Kyrgyzstan with technical assistance of the World Bank. It is comprised of 11 branches (profit centers) and 47 regional representatives. Its principal partners include

Table 1: Credit portfolio of commercial banks

	1 January 2000	1 January 2003
Industry	18	22
Trade	21	25
Construction	8	5
Consumer Credit	13	15
Agriculture	2	3
Other	38	30

Source: Erdolatov, A., M. Childress, and R. Mogilevsky. *Financing Restructuring of Agriculture in the Kyrgyz Republic*.

the World Bank, Asian Development Bank, UNDP, European Union, Raiffaisen (Germany), and DFID. As a joint stock company, it is prevented from mobilizing domestic savings as does a bank, hence its operating capital depends on equity contributions of its shareholders and borrowings.¹ While it plans in the future to transform itself into a bank in order to expand its services, its projections on total value of deposits from 2005 onward are at best uncertain.² Nevertheless it has shown solid improvements in performance since its recent date of inception. Size of loan portfolio has risen significantly even adjusting for price inflation. However, based on most other indicators—loan repayment rate, average expense ratio, number of borrowers per loan officer and weighted interest rate charged—the KAFC has shown substantial improvements in efficiency gains.

¹ Its present authorized capital is KGS 400 million, or about USD 9.5 million.

² Total value of deposits are projected to rise from KGS 21.6 million in 2005 to KGS 565.1 million by 2010. Source: Baktygul Jeenbaeva, Executive Director, KAFC, presentation prepared for the Conference "Institutional Transformation and Agrarian Change in Kyrgyzstan: Bridging Legal and Economic Reforms for Agricultural Development" Cholpon-Ata, Issyk-Kul, 27-29 October 2004

Table 3: KAFC, Key Indicators of Performance

	1997	1998	1999	2000	2001	2002	2003	2004
CPI Index (Price Deflator)	100	110.5	150.2	178.3	190.6	194.4	200.4	
Outstanding loan portfolio (KGS million).	26.9	126.9	252.0	475.6	637.9	1,000.4	1,276.3	1,516.2
Avg. disbursed loan (000 KGS)	84	103	74	67	62	62	62	
Avg. expenses to avg loan portfolio (%)		27.6	20.7	18.6	15.7	8.0	8.7	8.0
# of borrowers per loan officer	11	36	102	172	187	220	287	284

Table 4: Value of Fixed Assets and Accrued Depreciation, 1998-2003

	1998	1999	2000	2001	2002	2003
Value of fixed assets (book value at moment of purchase)	3,946	3,403	3,040	2,785	2,391	2,442
Accrued depreciation	1,360	1,104	1,086	1,043	863	904

Source: Erdolatov, A., M. Childress, and R. Mogilevsky. *Financing Restructuring of Agriculture in the Kyrgyz Republic*.

Nevertheless against this backdrop of general stagnation in credit supply, a more worrisome problem emerges: depreciation of capital continues to outpace new capital investment. As demonstrated in Table 4, the value of fixed assets in the agricultural sector has declined since 1998, with perhaps signs of a beginning of a turn around in 2003.

As early as 1995, farmers and farm enterprise managers identified the loss of agricultural credit as the most binding constraint confronting growth in profitability in the agricultural sector. Despite modest injections of financial capital into the economy by multi-lateral donors, the supply problem of agricultural credit in Kyrgyzstan today is even more acute, particularly for farm equipment and other movable assets. Interviews with farm enterprise managers and agribusiness owners repeatedly underscore the observation that new machinery is expensive, credit is expensive and unavailable, machinery parts are becoming very difficult to find, and existing equipment has become old and obsolete.

Why donors and multi-lateral lending agencies did not commit more financial capital to the Kyrgyz economy, certainly commensurate with the decline in state capital, but also beyond to help provide greater liquidity, is not readily apparent. Tight credit is intimately linked with macroeconomic policy, and a number of a well-informed people pointed to IMF fiscal targets and conditionalities as the cause. With

core equity contributions from the World Bank, the KAFC made noteworthy strides, but has shown only limited ability to grow its asset base. In the absence of a commercial banking sector, the micro-financial sector is showing rapid growth, but micro-finance with tight ceilings on typical loans would rarely provide sufficient capital for new or remodeled agricultural equipment.

This situation has left agricultural producers and agribusiness managers in a financial lurch with the few options being:

- waiting for the arrival of commercial banks and greater allocation of their credit portfolios to agriculture (likely to be slow in coming)
- greater domestic savings mobilization by credit unions and the KAFC (possible but slow given the poor financial position of most farms and agribusiness enterprises)
- credit expansion via farm input suppliers and/or processors through contracts (in the short run, probably only possible through firms that have the size and position to attract external capital)
- soliciting direct financial contributions (domestic and foreign) through equity in enterprises (difficult given prevailing problems of weak institutions, lack of transparency, unreliable accounting standards, and insufficient trust)
- external borrowing.

B. Impact of the Privatization and Farm Restructuring

As a result of the disintegration of the Soviet Union in the early 1990s, Kyrgyzstan experienced a loss of its international markets with the former republics and termination of financial support from the central union budget. Livestock herd size fell due to distressed sales, consumption, and livestock losses while the supply, delivery and use of credit and other agricultural inputs on state and collective farms plummeted. Economic regress hit Kyrgyzstan quickly and hard. Over a five year period beginning in 1991, the gross value of economic output and services in the economy fell by half, from 99.8 billion som in 1991 to 54.9 billion som by 1995 (measured in 2002 constant som).

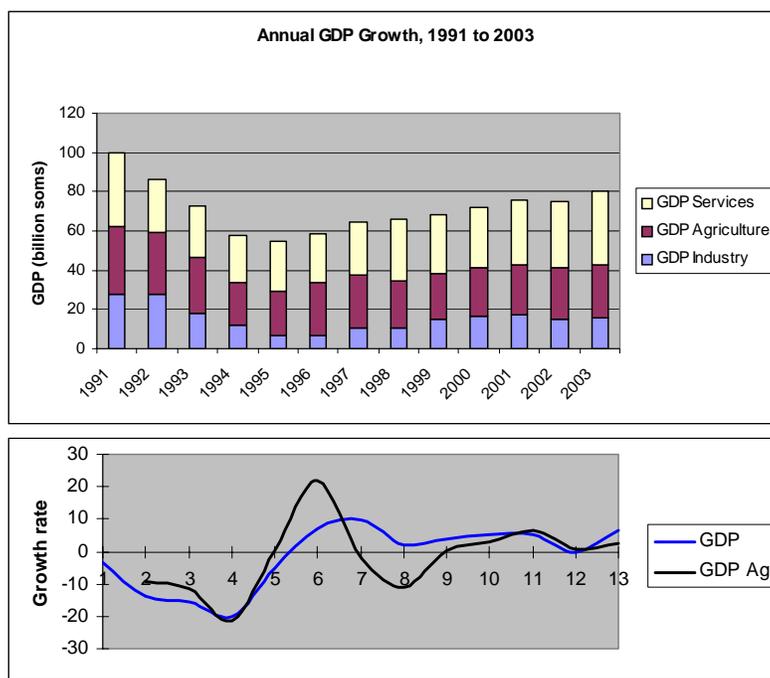
Both total GDP and agricultural GDP plummeted in 1994 before reaching its 1995 bottom. Compared with 1991, output of grain fell 30.3%, potatoes 23.4%, vegetables 45.1%, milk 20.6%, meat 29.8%, and wool 60.5%. The livestock sector was hit particularly hard, and the number of cattle fell by 23.7%, sheep and goats 49.1%, pigs 70.0%, and poultry 84.1%.

At the depth of this economic depression, the population suffered acute food shortages, loss of jobs and livelihoods, severe shortages of consumer goods, loss of investment, and rapid deterioration of public infrastructure. Optimism about the direction of the reforms was hard to find, and all too often people, in particular those living in rural areas, were left wanting, angry and disillusioned.

The collapse of the Soviet Union provided little or no time for careful thought and planning for the transition to a market economy, and once the economic crisis hit, policy making by necessity was “reactive and with haste” rather than “proactive with care.” Legal and institution reforms to aid the transition took the form of decrees spearheaded by presidential *tour de force* in part to put a floor under economic regress and in part to counter or obstruct elements within government that were opposed to market reforms. With great sense of urgency, government at the time faced an urgent need to curb economic regress and acute food insecurity, accelerate economic growth, develop the institutions required of a market economy, strengthen social and political stability in the agrarian sector, and grant economic freedom and independence to rural

producers. The strategic objectives of the land and agrarian reform were to:

- develop and implement projects that stabilize agricultural development
- vest land and property held by state farms and collectives to private individuals, cooperatives and other economic entities
- liquidate and reorganize insolvent agricultural enterprises
- ensure real economic and business independence of rural commodity producers
- promote within a market policy state support for new agricultural commodity producers.



Farm Enterprise Performance

For the 321 farms with complete data available in both 1999 and 2001 periods, Roth, Cormier, Mogilivesky and Mazvimavi cluster the data according to four enterprise categories:

Chronically Weak: Enterprises in the lowest two quartiles (in terms of net returns/ha) in both periods

Progressive: Enterprises in the lowest two quartiles in 1999 but in the highest two quartiles in 2001

Regressive: Enterprises in the highest two quartiles in 2001 but in the lowest two quartiles in 1999

Superlative or Steadfast: Enterprises in the highest two quartiles in both 1999 and 2001.

Table 5: Indicators of Farm Enterprise Asset Holdings and Performance, 1999 to 2001, Kyrgyzstan

	Year of Study	Chronically weak CW	Regressive RG	Progressive PG	Superlative or steadfast SUP
Sample size		N=99	N=60	N=60	N=101
Gross revenue (constant 2001 som)	1999	289.2	717.3	169.7	1,215.9
	2001	1,345.9	1,130.7	1,104.0	3,599.7
Net Income (constant 2001 som)	1999	64.4	553.3	70.7	1,077.5
	2001	754.7	430.7	867.7	2,796.3
Net income/hectare (constant 2001 som)	1999	0.33	2.88	-0.71	3.17
	2001	1.47	4.40	15.98	30.04
Off-farm income (constant 2001 som)	1999	3.0	2.2	0.46	4.9
	2001	16.6	33.3	13.4	34.1
Size of land holdings (ha)	1999	399.3	203.7	119.1	178.0
	2001	369.9	211.3	70.3	178.7
Stock of labor (No. workers)	1999	54.7	110.7	24.4	243.2
	2001	40.2	57.7	27.1	199.4
Net returns/labor	1999	1.2	7.4	-0.7	5.1
	2001	19.6	15.6	34.0	28.0
Net returns/land	1999	0.3	2.9	-0.7	4.2
	2001	3.9	4.4	16.0	21.8

Source: Michael Roth, Kelley Cormier, Roman Mogilevsky, and Kizito Mazvimavi, 2004. Presentation prepared for the Conference *Institutional Transformation and Agrarian Change in Kyrgyzstan: Bridging Legal and Economic Reforms for Agricultural Development*, Cholpan Ata, Issyk-Kul, 27-29 October 2004.

As demonstrated in Figure 2 (end of chapter), all regions of the country share significant numbers of each farm category but unique concentrations within oblasts are evident. Chronically weak farm enterprises tend to be concentrated in Chui and Issyk-Kul oblasts in the northern part of the country where the land reform has from the beginning been the slowest and most problematic, as well as in Batken oblast in the far south that has been late to develop. Better performing farm enterprises (PG and SUP categories) are located in Naryn and Osh.

A further indication of the agrarian dynamics occurring is demonstrated in Figure 3 (end of chapter), which shows the percentage of enterprises changing asset holdings (either increasing or decreasing) for each of five asset categories: labor, land, tractors, trucks and combines. With regard to labor (land), at least 30% (30%) of farms in each performance category added labor between 1999 and

2001, while at least 50% (30%) of farms in each category spun off labor on net. Smaller but still sizable asset shifts (both up and down within each category) are observed for the other assets shown. While the data in Table 5 illustrates overall net changes and trends, the data in Figure 3 suggests a highly volatile environment in asset holdings where farm enterprises are rapidly balancing and rebalancing their asset portfolios as a result of entry of and exit of farm enterprise members, land market transactions, farm divestitures, and machinery purchases and depreciation.

In such a situation where markets are difficult to navigate, prices are highly uncertain, and farms are operating on long learning curves, traditional measures of farm productivity—net returns per unit of land or labor—can be very unreliable. Total factor productivity measures the weighted average productivity of all inputs, where the weights are the

share of inputs in the total cost of production. Because price and quantity of all inputs are taken into account, total factor productivity measures the aggregate efficiency with which inputs are used in agricultural production. Results in Table 6, show TFP measures for three disaggregated farm groupings—by farm typology, by landholding size and by livestock herd size—for two study years, 1999 and 2001. The results generally show that Total Factor Productivity increased modestly for the farming sector over the period 1999 and 2001, and that the smallest farm size categories (<100 ha, < 5 TLU) outperformed larger farm size categories with the exception of the very largest farms.³ TFP estimates for farms in the PG and SUP categories exceed that in the CW and RG categories.

In general these results show the agrarian structure in Kyrgyzstan remains very dynamic with ongoing upsizing and downsizing in asset holdings by farm enterprises. Roughly 50% of the farms and enterprises in Kyrgyzstan are showing growth in income, improvements in returns per unit of land and labor, and growth in total factor productivity. However, the other half of farming enterprises remain mired in poor economic performance. Overall, harsh economic conditions have continued in 2003.

While major tenure forms have been put in place and major legal reforms have been enacted, there is perhaps another 10 years of significant land tenure reform that is needed with a focus on broadening and articulating property rights. A number of arrangements would help facilitate asset rebalancing in portfolios and help enterprises increase the efficiency of their operations. The emphasis on land distribution and land sales should be considerably broadened and deepened to include: developing a land rental market in arable and pasture land; making it possible for legal entities to own land; opening the land market to outside capital/investors; upgrading property rights associated with various enterprise forms (peasant farms, joint stock countries, etc); supporting common property rights and institutions; and reforming share equity arrangements.

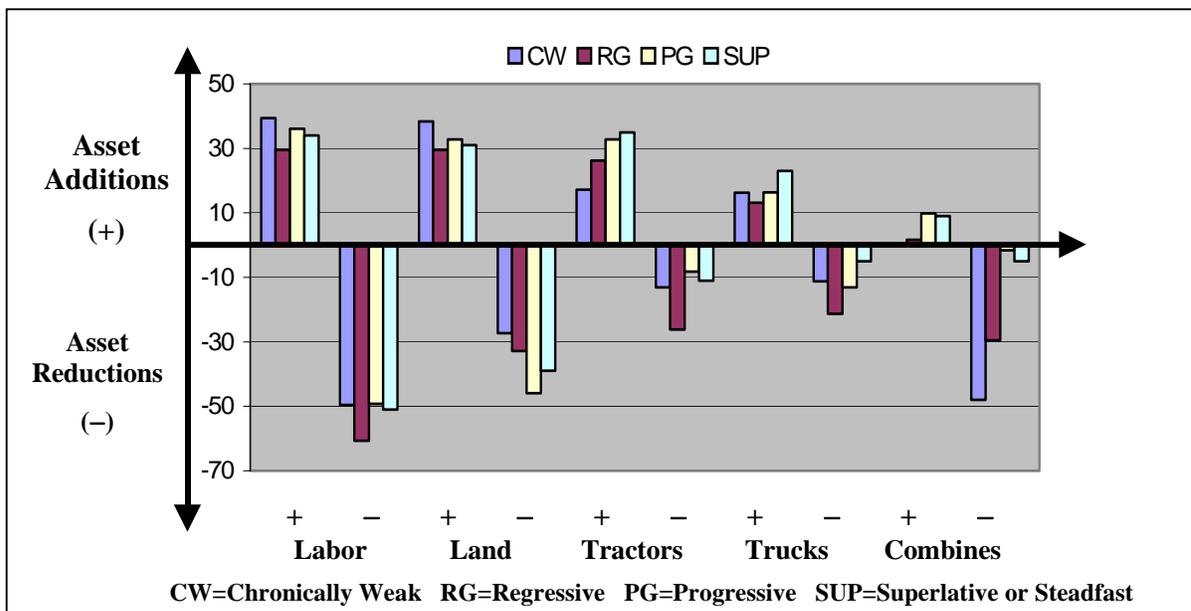
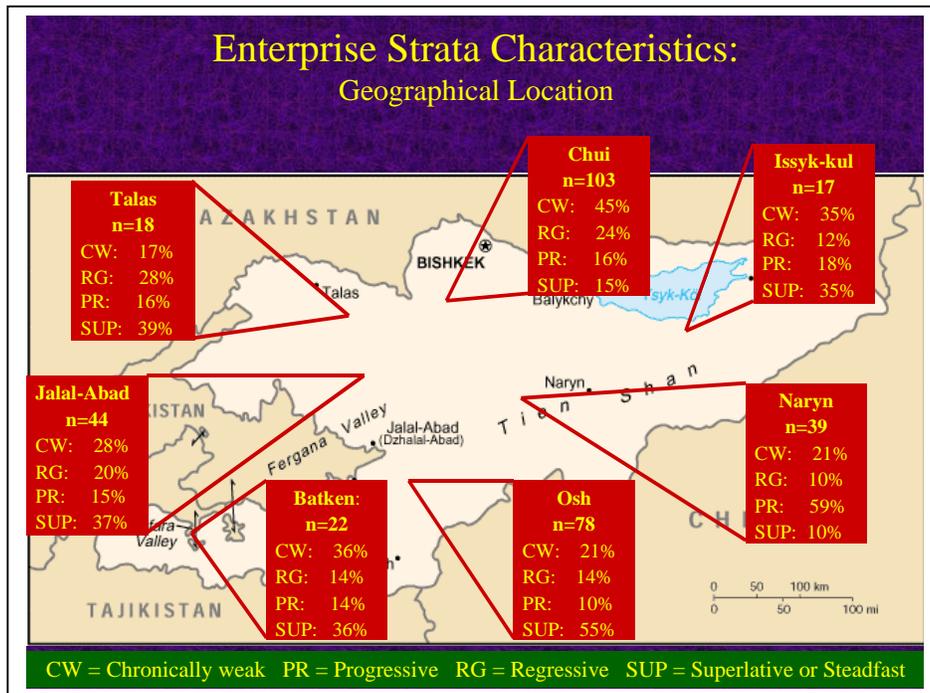
³ Farms greater than 1000 ha tend to be very few in number and have significant state support to encourage crop seed and livestock breeding along with other specialty enterprises.

Table 6: Total Factor Productivity Measures

	TFP 1999	TFP 2001
Farm Typology:		
Chronically Weak (CW)	1.55	1.47
Regressive (RG)	1.66	0.76
Progressive (PG)	1.28	1.97
Superlative/Steadfast (SUP)	1.56	2.25
Total ^a	1.53	1.69
Farm (Landholding) Size:		
0-49 Hectares	1.50	1.68
50-99 Hectares	1.90	1.79
100-499 Hectares	1.55	0.78
500-999 Hectares	1.58	0.29
>1000 Hectares	1.44	3.45
Total ^a	1.53	1.69
Farm (Livestock Herd) Size:		
0 to 4.99 TLU	2.31	2.73
5 to 49.99 TLU	2.06	1.73
50 to 99.99 TLU	2.25	1.58
100 to 5000 TLU	1.66	2.10
Total ^a	2.11	1.95

a. Sample sizes differ because while all farm enterprises have land, not all have livestock

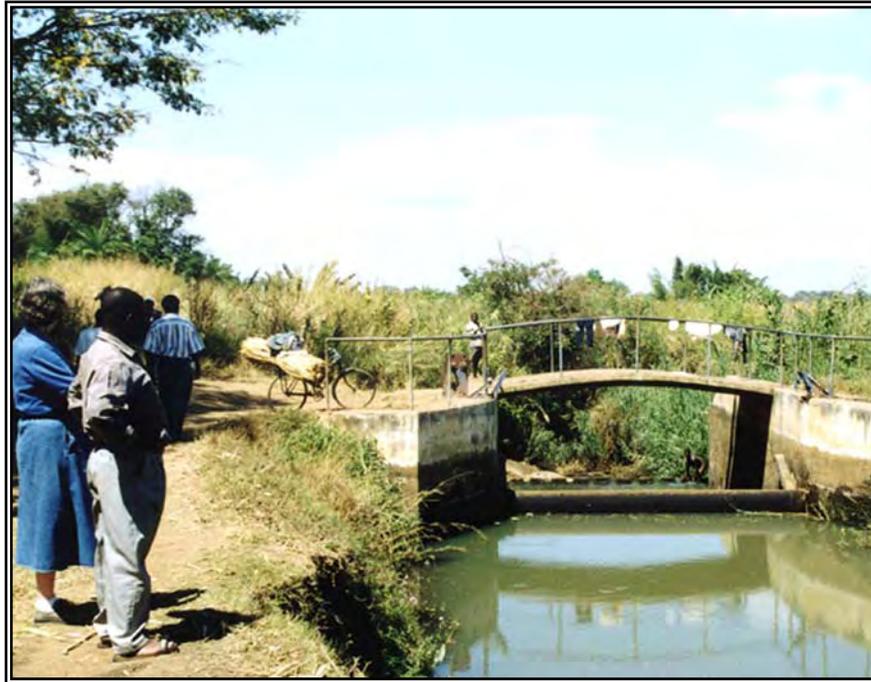
Figures 2 and 3



INSTITUTIONAL DIMENSIONS OF WATER POLICY REFORM IN MALAWI:

**Addressing Critical Water-Land Intersections in
Broadening Access to Key Factors of Production**

Global Constraint 2: *Unsustainable Use of Degradable Resources*



**An irrigation site in Malawi
(Photo by Peter Walker)**

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PROJECT PROFILE

Poverty alleviation, long a central focus in Malawi's development strategies, gained greater salience as an outcome of the famine the country experienced in 2002. Estimates are that 1-3,000 people died early that year as a result of the interaction of policy, political, and weather-related failures. Irrigated agriculture is increasingly regarded as a means to boost incomes and food security and is deemed "a way out of poverty."

Malawi's new irrigation policy, adopted in 2000, identifies poverty alleviation as one of its central goals. It calls for the rapid phase-out of government support to the 16 existing smallholder irrigation schemes, and their handover to newly created farmers' organizations. The policy advocates the expansion and intensified use of informal irrigation practiced by small-scale farmers along streambanks, drainage lines, and wetlands, a type of irrigation that has received little or no previous government attention.

Two programs put into place since 2001 focus on this "informal" irrigation sector: a Targeted Inputs Program (TIP), which makes seed and fertilizer available to poor farmers during the winter season, and a program to distribute treadle pumps intended to benefit the poor, increase the area, and intensify production in winter season gardens. Malawi's new approach to irrigation, like similar reforms adopted in other southern African countries, reflects endorsement of neoliberal development policies in its emphasis on private sector initiatives, reduction of the role of the state, and promotion of new

decentralized, stakeholder-driven, and community-based management institutions.

Our research focused on irrigation reform in the context of Malawi's new land and water policies by asking the following broad questions:

1. How are the new initiatives to reduce poverty identified in the irrigation policy likely to be affected by the reforms underway in the land and water sectors?
2. Do these initiatives broaden disadvantaged groups' access to irrigated land or entrench already privileged interests?
3. How can equitable and efficient systems of access, use, and management of irrigated land be achieved in the context of the new irrigation, water, and land reforms?

To address these issues, we adopted a grounded research approach involving intensive investigation of the Likangala and the Domasi watersheds in the Lake Chilwa Basin in the most densely populated and poorest region of Malawi. Our study focused on two kinds of small-scale irrigation identified as central to poverty alleviation and income generation in the irrigation policy:

1. Government-run, smallholder schemes transferred to farmers organized into "water users' associations."
2. Informal irrigation carried out in the dry season by smallholders along rivers and in wetlands adjacent to the Likangala and Domasi Rivers and irrigation schemes.



Support

BASIS CRSP core funding.

Outputs

Ferguson, Anne and Bill Derman. 2003. "The Value of Water: Political Ecology and Water Reform in Southern Africa." *Human Organization* 62(3): 277-288.

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Non-Print

- Ferguson, Anne. 2003. "Empowerment, Rights and Responsibilities: Malawi's Water Reform in Gender Perspective." Presented at the American Anthropological Association Meetings, November 19.
- Ferguson, Anne. 2003. "Community Based Strategies for Rural Water Supply in Malawi: Gender, Health and Human Rights Perspectives." Presented at the African Studies Association Meetings, Boston, Massachusetts, November 1.
- Ferguson, Anne. 2003. "Water Reform, Gender and HIV/AIDS: Perspectives from Southern Africa." Presented at the Society for Applied Anthropology Meetings, Portland, Oregon, March 20.

I. ACTIVITIES 2003-04

A. Key Findings and Results

2003-04 marked the final year of this BASIS project. We are completing data analysis, write-up, and preparation of policy briefs.

Two workshops were held during 2004. In the first, research results were presented to key policymakers in the ministries responsible for water, land, and irrigation reform, to principal donors, including the International Fund for Agricultural Development (IFAD) and USAID, and to personnel from water- and irrigation-focused NGOs.

The second involved the actors at the local level who had participated in the project over its three-year duration. These included farmers from the Domasi and Likangala irrigation schemes and surrounding wetland areas, Ministry of Agriculture personnel at the district and lower levels, local government officials, and traditional authorities. Reports are being distributed to key policymakers in Malawi and the region, and articles are being prepared for submission to journals.

We circulated our research reports to members of the land reform commission, IFAD, the Department of Irrigation, and the Ministry of Water Development; they are being used in some cases to guide policy.

1. Policy and Institutional Reform

Mulwafu, Ferguson, and Peters

Malawi's water policy has been revised and approved by Parliament. The new water law is likely to be approved by Parliament in late 2004 or early 2005. While the policy and draft law recognize people's right to water for "domestic" purposes, in its present form the draft law requires all those who use water for productive purposes to acquire a water use permit. The high levels of poverty plus the high transactions costs involved in collecting fees from millions of smallholders suggest that other options should be explored.

We suggest that the government legally recognize that smallholders have a right to water for productive as well as domestic purposes. This legal recognition would take into account the importance that water plays in smallholder livelihood strategies and would grant them a voice in deliberations over

water use and dispute settlement without having to register and collect fees from all small-scale farmers—a time-consuming and expensive task. Registration and collection of water permit and use fees can be best concentrated on more easily identified and reached estate owners and other large water users with abilities to pay.

The World Bank, one of the major donors in Malawi's water sector, has slowed the development of catchment management or river basin authorities due to lack of funding to support these new management organizations on a sustainable basis. Plans call for one pilot river basin authority to be established in the Lilongwe area. Others will be established as funding mechanisms permit. We suggest that another strategy be pursued, starting from the local level. In those areas where water shortages and conflicts have developed among different users, we suggest that small-scale organizations on the watershed level be put in place for water management purposes. These management bodies should be cross-sectoral, in recognition that conflicts arise among different types and scales of water users. Representatives should be included from the different user groups in the watershed, plus district representatives from relevant departments, and water-related NGOs active in the area. Representatives from the new land management boards proposed in the land policy might also serve on these watershed bodies. Travel and administrative costs for such watershed-level organizations established only in areas of water shortage and competition would be significantly lower than those for an entire river basin and could be covered by local water permit and user fees.

The lead donor in the transfer of the smallholder irrigation schemes is IFAD, which is using BASIS findings to re-orient its policies. Domasi is likely to be the first smallholder irrigation scheme officially handed over to farmers now that the legal hurdles to recognizing water users' associations have been addressed and the constitution and bylaws have been approved.

Our findings provide information on how the handover process is proceeding at the two irrigations schemes plus recommendations on what

can be done to reduce the possibilities of further plot concentration on the schemes.

1. Focus on the interrelationships between land and water resources rather than rely on a sector-by-sector approach as is usually done in policy reform.

Implementers of new programs and policies need to take into account the interrelationships among land and water resources and livelihood strategies lest their actions have unforeseen consequences. In our research, this was evident in three ways. First, policy actions and debates around small-scale irrigation affect how different categories of people are interpreting authority over land. Second, mistaken premises and lack of accurate information in policy documents and by implementing agencies about existing patterns of allocation and use of land and water resources contribute to confusion over legitimate authority. Third, the ways in which different groups use water and land interact and thus pose challenges for management at all administrative levels and in particular for coordination across sectors.

2. Value of watered land (irrigation plots, gardens in wetlands, and streambank gardens) is increasing as is competition over this land. Competition is driven by the growing population in the area, the ability of these lands to provide two or more harvests per year, thus increasing families' food security and cash earnings, the increasing demand for rice and off-season vegetables in urban and peri-urban areas, and the introduction of new technologies (treadle pumps) and TIP to increase production in irrigated lands. The results are the growing commercialization of these lands evident through renting, increased levels of rent, and concentration of watered lands in the hands of better-off smallholders and those in positions of authority, including chiefs and irrigation scheme committee members.

3. Commercialization and concentration of land and water resources often remain inadequately understood by policymakers and program implementers, resulting in proposed changes that may have unintended consequences. Three examples illustrate this process:

A. The land policy does not make any mention of streambank or wetland gardens, even though these are some of the most highly valued and perhaps unequally distributed lands in Malawi. In fact, the land policy assumes that wetlands remain

unallocated and are treated as common or public lands for members of the "community," defined as residents of the traditional authority. The premise is that the traditional authority acts as trustee of such common lands. In fact, the situation in the Lake Chilwa Basin is considerably different. In some areas, wetlands are treated in much the same way as other village lands, namely that resident families gain access to them as a matter of right through direct allocation by a village head. In other areas, however, plots in wetlands are increasingly being rented out by chiefs in return for a payment that is called "thanks" (*chothokoza*).

The new land policy envisions the role of the traditional authorities at all levels in the allocation and management of land and in resolution of disputes over land. The BASIS research indicates, however, that these authorities cannot be seen as neutral figures because their interests are inextricably entwined with the control over land. Hence, while the longstanding respect accorded these roles suggests they ought to be included in the new land administration, they should be treated as one among the knowledgeable persons on the committees. The land policy specifically warns that, "Holding land in trust for citizens does not make a Headperson, Chief, or any public official the owner of the land." But there needs to be much more public outreach to stress this, and also far more explicit limitations placed on their roles in the new committees than either the White Paper on the land policy or the implementation strategy paper does.

B. The irrigation policy and the new constitutions adopted on the Likangala and Domasi irrigation schemes in preparation for scheme transfer do not address key issues of concern to farmers, perhaps because their drafters were not aware of the centrality of these concerns to farmers, or their silence served certain interests. Until very recently, for example, the tenure status of the schemes themselves remained uncertain. Many plot holders thought that the schemes were to revert to customary tenure upon transfer, a belief that some traditional authorities were able to use to their advantage in laying claims to irrigation plots. Other unresolved issues included the following: Should plots on the schemes be redistributed to assure wider access to them as an equity and poverty alleviation measure? Should a household's other

landholdings, particularly valuable wetland and streambank gardens, be taken into account if reallocation of plots on irrigation schemes were to take place? Should the landholdings of potential new recipients of irrigation plots be considered as well? Should redistribution of scheme plots continue during the dry season as one means to broaden access, or is pro-poor economic growth best served by permitting greater plot concentration? No agreement existed among farmers concerning key issues of membership requirements in the WUA, whether plots could be bought, sold, rented, borrowed, or inherited, and if there would be a limit on the number of plots allowed farmers. At this point in time, rather than being more secure, farmers' rights to plots are more uncertain than they were in the past.

C. Women's rights are particularly precarious. Both irrigation schemes are located in an area of matrilineal inheritance, and many women are plot holders. The new land policy and law require that customary lands be registered as "customary estates." While the final details of the implementation of the land policy and legislation are still to be worked out, the current intent is to ignore customary forms of inheritance, whether matrilineal or patrilineal, and to allow landholders to designate their own heirs. Landholders will be able to register land either as individuals or families (conjugal unit) or as larger kin-based groups, but it is unclear whose name/names will be recorded on titles. If farmers have upland, rainy-season fields in addition to irrigation schemes plots, as is the case with most of the Domasi and Likangala smallholders, will the customary estate include both types of property? At Likangala, it is not yet clear what will happen to plots registered in a woman's name when the husband also has plots and the number exceeds the total of four permitted for families by the new constitution. At minimum, to avoid seeing women lose the land assets they currently control, registration of family land should require the names of both spouses and kin-based land should require the names of all siblings.

4. *While the water policy and draft law, similar to others in the Southern African region, recognize people's right to water for "domestic" purposes, in its present form Malawi's draft law requires all those who uses water for productive purposes to acquire a water use permit.* The high levels of

poverty plus the transactions costs involved in collecting fees from hundreds of thousands of smallholders suggest that other options should be explored, including legally recognizing a smallholder right to water for productive as well as domestic purposes. This legal recognition would take into account the importance that water plays in livelihood strategies and would grant smallholders a voice in deliberations over water use and dispute settlement without at this point in time having to register and collect fees from all of them—a costly and time consuming task. Registration and collection of water permit and use fees might then be concentrated on more easily identified and reached estate owners and other large water users (ESCOM, Water Boards, etc.) with abilities to pay.

5. *The ambiguities and contestations surrounding the transfer of the irrigation schemes to farmers, together with the changing rights of access to wetland and streambank gardens, must be understood within the wider political context in which the irrigation, land, and water reforms are taking place.* This is particularly true regarding the move toward multi-party democracy beginning in the mid-1990s and, more recently, decentralization of governmental authority from central ministries to local governments. These have created a climate in which structures of authority are in flux. In this context fraudulent acts may combine with struggles over legitimate authority. The situation on the ground in the research sites shows different categories of the population drawing on elements of the "ideal" customary system, such as notions of trusteeship and entitlements based on family and locality as well as on more commercial or market ideas. The issue is not simply that "fraudulent disposal ... may deprive some holders of the right to land" but that, in a context where there just is not enough (usable) land for everyone to have a feasible amount, the social conflicts are over *whose* claims have priority over particular areas of land. What we see, in fact, is that various policy shifts—particularly the handover of irrigation schemes to farmers, decentralization of government, the new land policy—have intensified competition over valuable lands and have provided new or reinvigorated rationales for supporting claims, particularly that of locality. The claims of "ancestral" or clan land vie with those of citizenship, and people who moved to areas to take up new opportunities, often decades ago, find

themselves defined as strangers (*obwera*) by those claiming more ancient local ties. Village headmen and chiefs act as spokesmen for and defenders of the claims of ancestral ties, but also act as business entrepreneurs in renting out plots in the wetlands. While there are certainly “fraudulent” acts by some, the overall situation proves to contain more threads that need unraveling in order to understand how the policy changes, so far, have intensified rather than reduced social conflict over land.

2. Formal Irrigation

Mulwafu, Ferguson, Nkhoma

The study addressed the question of whether the transfer of the smallholder irrigation schemes from government to farmers’ associations is broadening disadvantaged groups’ access to critical land and water resources in the context of Malawi’s new poverty alleviation, water, land, and irrigation reforms. Because these reforms are new and have been slow to be implemented, our findings are preliminary. Discussions with the Director of IFAD in Malawi and with officials in the Ministry of Agriculture and Irrigation, and a review of the literature on irrigation schemes in Malawi, suggest that many of the issues are not unique to Likangala and Domasi.

Formal Irrigation and Livelihoods

Smallholder irrigation schemes play a vital role in the local economy of the Lake Chilwa Basin and the livelihood strategies of the farmers on them. The baseline survey revealed similarities and differences between the two irrigation schemes.

Similarities: Farmers had diverse livelihood strategies. In addition to their irrigation scheme plots, 93% of respondents reported having upland rainfed fields (*munda*), 16% had wetland gardens, and 29% had streambank gardens (*dimba*). There were no significant differences between farmers on the two schemes in this regard. Further, many plot holders had sources of income in addition to farming: 40% listed casual labor (*ganyu*); 19% reported marketing of crops; 23% owned a small business; and 9% had other occupations.

Despite the respondents’ engagement in other occupations, plots on the irrigation schemes constituted the major source for most of their household food supply and cash earnings. When asked to rank which of their fields produced the

most food for family consumption, 84% identified irrigation scheme plots, 12% said upland rainfed fields, and the remainder (4%) said streambank or wetland gardens. Seventy-one percent stated that three-quarters or more of their food for household consumption was scheme-generated, 23% said approximately one-half of their food was produced on the scheme, and only 6% reported that less than half came from scheme farming. Often rice produced on the schemes was sold or exchanged for maize for household consumption. No differences were found between the two schemes.

Most cash earnings also were irrigation scheme-generated as well. When asked to rank which fields produced the most cash income, 96% of the farmers said scheme plots. Eighty-five percent reported that three-quarters or more of their income came from the scheme, 12% stated that approximately one-half came from the scheme, and only 3% said that scheme farming constituted less than half of their income. Again, no significant differences were found between the two irrigation schemes.

Marketing was one of the greatest constraints farmers faced. Low prices were reported as a problem by 75% of those on Domasi and 80% of those on Likangala. This was followed by “few buyers,” reported by 13% of farmers on Domasi and 5% of farmers on Likangala. Very little cooperative rice selling took place. Only 4% said they sold as a group in the dry season, and only 1.6% did so in the rainy season. The 2002-04 field notes chronicle the failed attempts at Likangala scheme to negotiate effectively with traders, usually from the large urban center of Blantyre, who visited the schemes to purchase rice. Try as it did, the Scheme Marketing Committee was unable to halt the involvement of some traditional authorities in rice marketing. Traditional authorities would initially refuse to allow traders to purchase rice in villages at low prices, but once they were offered bribes by the traders, many would allow selling to continue at the same low prices. Farmers themselves would sometimes undermine committee efforts to negotiate a higher price by selling to traders at night at a low price. Problems with weighing scales were common as well. The information gathered over the course of the research indicated that rice prices varied significantly by season and by rice variety, and by relative supply and demand locally and in the town,

and by the fact of difficult access, especially to Domasi, for the relatively few large-scale buyers operating in the area.

Differences: The two irrigation schemes also differed in important ways. Rice was the major crop grown during the rainy season. It was also the major cash crop grown in the dry season but more Domasi farmers (60%) said this was the case than those on Likangala (40%), where a wider range of crops was grown. The poor condition of the Likangala scheme's main canal may partially explain this difference. In the dry season, many plots, especially those near the end of the main canal, do not receive sufficient water for cultivation.

We found differences in the number of plots farmers on the two irrigation schemes held, with land concentration being higher at Domasi than at Likangala—an issue explored more fully below.

There were seasonal differences as well in the amount of time farmers spent working on scheme plots. While during the dry season 62% spent half or more of their time working on their plots, during the rainy season this figure rose to 87%. Farmers at Domasi spent somewhat more time working on their plots in the dry season than did those at Likangala: at Domasi, 68% reported working half or more of their time on their dry-season plots, while at Likangala the figure was 55%. Again, this lower figure at Likangala can be attributed partially to the dilapidated state of the scheme.

Differences also existed between the two schemes in use of hired labor and in hiring out farmers' own labor. A quarter (25%) of the sample worked on other farmers' irrigation plots during the dry season. There were slightly more farmers on Likangala who reported doing this (30%) than at Domasi (21%). In the rainy season, 37% of farmers worked on plots owned by others. Again, slightly more farmers on Likangala (40%) reported engaging in this practice than at Domasi (35%). This suggests that Likangala plot holders were somewhat more likely to sell their own labor than were Domasi farmers.

Domasi farmers, in contrast, were more likely to hire labor. There were important differences in hiring casual labor (*ganyu*) by season and between the schemes. During the dry season, 30% of farmers in the overall sample reported hiring others

to work for them, while during the rainy season this rose to 52%, as rice transplanting is labor intensive. In the dry season at Domasi scheme this constituted 40% of the sample, while at Likangala it was only 20%. In the rainy season, 64% of the Domasi farmers and 49% of the Likangala farmers hired workers.

In order to estimate differences in wealth among farmers, a ranking of the households' assets was undertaken. Scores ranged from 7 through 1576. Households were divided into three wealth categories. Over two thirds of the respondents fell in the lowest part of the range, 26% in the middle, and 6% in the top asset group (see table 1). A slightly higher percentage of Domasi (36%) than Likangala farmers (28%) had asset scores at the upper end of the distribution. Education also was a resource that was unequally distributed. The average level of schooling on the Domasi scheme was 4.8 years, while it was only 3.6 years among Likangala farmers.

Overall, our findings indicate that the irrigation scheme constituted farmers' major source of livelihood—including production of food for household consumption and cash earnings. However, the differences presented above suggest that Domasi plot holders were somewhat better off than those on Likangala along a number of dimensions, including number of plots owned, access to labor, and asset holdings. These findings suggest that irrigation scheme farmers are, on average, better off than Malawians who do not have access to dry-season irrigated fields. Many scheme farmers are able to plant twice a year or more and, consequently, are not as likely to experience food deficits as those without access to dry-season gardens. While they are not among Malawi's poorest farmers, many irrigation scheme plot holders remain vulnerable, as the asset profile reveals. During January-March 2002, the height of the famine, the field assistants reported that some people on the irrigation schemes were consuming maize husks and grasses. Deaths, aggravated if not entirely caused by hunger, also occurred among scheme families.

Tenure Status of the Schemes

The smallholder irrigation schemes were classified as government or public land and are slated to remain so in the new land policy and legislation.

Newly-formed farmers' associations will receive a lease for the scheme from government. Our survey and interviews indicated that many farmers, as well as irrigation scheme and government officials, did not know that the water users' associations were to receive leases for the schemes. Thirty-seven percent of the farmers thought the scheme would revert to customary land, and 27% thought it would become their own private property. Sixteen percent believed that it would remain government land, while 13% said the farmers' association would be the owner (see table 2). Less farmer education about the transfer process had occurred at Likangala than at Domasi, where training had taken place through an NGO.

Uncertainty about the tenure status of the schemes and the plots on them has given rise to a number of misunderstandings. First, the concept of handover suggested to nearly one-fourth of Domasi farmers and a third of Likangala farmers that the land would revert to customary control. At Likangala, this perception has opened the door to ancestral claims, including plot-grabbing by traditional authorities and related efforts to limit access to the scheme to farmers from surrounding villages. Second, farmers who assume that the land will revert to customary tenure, rather than being leased from government by farmers' associations, are less likely to understand the need to join the association or to follow its rules. At Domasi, for example, the majority of plot holders did not understand that the newly-established WUA was their membership organization. Instead, they thought it was the new title of the old government-sponsored Scheme Management Committee. In fact, neither of the new Domasi nor Likangala constitutions clearly states that access to plots is dependent on membership in the WUA, which appears to be the expectation of government and donors.

Citizens and Strangers—Rights of Access

Many farmers view the handover of the schemes as reversing patterns that have developed in the last decade. Some plot holders, particularly the wealthier ones, fear that the transfer will remove their opportunities for accumulation as new plot allocation arrangements may be put in place. Others are concerned that it will open the way for more "strangers" to gain access to plots. One of the most contentious debates relates to who will have rights to access plots in the schemes after handover. Is it

people from surrounding villages, any person from Zomba or Machinga Districts, or any citizen of Malawi?

Most of those interviewed were born in the district where the scheme was located—83% of respondents in the case of Likangala and 84% in the case of Domasi. Most of the others were born in a nearby district. On Domasi, 14% were born in Zomba District, and 2% came from Zimbabwe. On Likangala, 10% were born in the nearby districts of Machinga and Mulanje, while 6% came from other districts, and 2% were from Zimbabwe. Differences existed between the two schemes in the number of years farmers had held plots, with turnover on Likangala being higher than at Domasi (see table 3). At Likangala, 63% of respondents had farmed their plots for 10 years or less, while at Domasi the figure was 37%. Domasi scheme had a much higher percentage of farmers (44%) who had been on the scheme for 20 years or more as compared to Likangala (17%).

When the schemes were established in the late 1960s and early 1970s, the land was converted from the customary to the public tenurial system. Government became the owner of the land and various governance structures were established to allocate plots and carry out other functions. Throughout the Banda era, these irrigation schemes became vital settlement sites for school dropouts and party loyalists. The Malawi Young Pioneers, the paramilitary youth wing of the Malawi Congress Party, played a significant role in training and maintaining discipline on both schemes. Until the recent adoption of new constitutions at Likangala and Domasi, any citizen of Malawi could technically ask for a plot by applying to the Scheme Management Committees. In the immediate post-Banda period, absentee farmers and plot seekers from urban areas increasingly began to obtain plots through informal renting and borrowing/lending arrangements and, in some cases, allocation from the Scheme Management Committees. This influx of "outsiders" might partially explain the higher percentage of farmers on Likangala who had held their plots for 10 or fewer years as compared to Domasi. In the rainy season, dirt roads become difficult to impassable, though those to Likangala are usually better maintained than those to Domasi. Dry-season rotation of plots was another way that those who did not normally have access to the

schemes gained temporary use. On Likangala and Domasi, the Scheme Management Committees would reallocate plots each dry season, allowing those who did not normally have plots to use them. Farmers were generally supportive of this practice: 83% said it should be continued after handover. The reasons that they gave included helping people who did not have enough food, and giving access to people who did not have plots or whose lands did not receive enough water. Although farmers were supportive of this dry-season plot rotation, many criticized the way it was carried out, claiming that the Scheme Management Committees were corrupt and often allocated plots, not to the poor, but to better-off farmers and city dwellers.

Many farmers and some officials assumed that the schemes were being handed back to traditional authorities or to local farmers. As a consequence, considerable ambiguity now surrounds the issue of who should have rights of access to plots, especially at Likangala scheme where this has become a heated issue. There, one village headman has encouraged farmers from his village to take over plots on Blocks B and C from other farmers. He bases his claim to these blocks by saying that these were his ancestral lands and, since the scheme is being turned back to farmers, the plots should be allocated to those from his village. There are also historical reasons for his actions. The village headman and many members of his village were exiled to Mozambique when former President Banda banned the Jehovah's Witnesses in the early 1970s. When they returned in the early 1990s, they had very little land on which to cultivate and were refused scheme plots (see Nkhoma and Mulwafu, in press). Other village heads have said that if this headman is allowed to claim the scheme land as his village land, they will do the same. We found that several of them had accumulated irrigation plots and were renting them out. This practice resembles the one that has developed in the Lake Chilwa wetlands. One village headman, who claimed sections of the scheme as land for his villagers, specifically said that the reason one of his peers was not doing likewise was because he drew considerable income from the payments he received from the wetland plots he allocated.

The new Likangala constitution, adopted in 2004, states that access to plots is dependent on being from Traditional Authority Mwambo. The Domasi

constitution contains a similar, if somewhat more vague, clause asserting that access is limited to citizens of Malawi who are residents of the area. This focus on local ownership reflects some of the historical tensions, described above, concerning displacement from ancestral lands, as well as concerns that plots are being unjustly allocated to outsiders. It also reflects a wider trend in natural resource management in Malawi and Southern Africa more generally—the promotion of community control of natural resources as a means to reduce state costs and promote sustainable use. Community ownership is often understood in the narrow sense of those born in the area, an interpretation that does not take into account past movements of people into the Lake Chilwa Basin or the increasing mobility of the population today in search of work and land. Further, it may bolster the claims of headmen trying to regain ancestral lands. Stewardship of irrigation schemes or other resources based on ancestry and concepts of “indigenous” ownership may hinder development in a population that is increasingly mobile.

Women's access to plots and voice in management decisions have not been addressed directly in farmer training to date, although the new irrigation policy includes strong statements supporting women's equal participation in irrigated agriculture. The Domasi and Likangala schemes are located in an area of matrilineal inheritance, and many women have plots on the scheme. At Domasi, for example, Concern Universal estimated that of the 1500 registered plot holders, 47% were women. Asked whether women should be allowed to register plots in their own names, an overwhelming 95% of the respondents at Domasi said that they should, while 88% affirmed the same at Likangala. At Likangala, where the 2004 constitution limits the number of plots a family can hold to four, it is not yet clear what will happen to plots registered in a woman's name when the husband also has plots and the total number exceeds four. Joint registration of plots in the spouses' names should be considered but presently is not allowed on either scheme.

At both Likangala and Domasi, few women served on committees. For example, only after exhortation by RDP officials were three women out of 11 members elected to the new Scheme Management Committee at Likangala in July 2004. At Domasi, four women served on the 12-member Executive

Committee of the WUA. Field observations of scheme committee meetings since 2000 indicated that few women who were elected to committees actually participated at meetings. Women were most active in block-level committees organized to manage and repair secondary and tertiary canals.

Landholding Size

When the irrigation scheme lands were originally parceled out to farmers in the late 1960s and early 1970s, they received two to four plots, each one constituting 0.25 acre. The baseline survey revealed that the average number of plots held by respondents in 2003 was greater on Domasi than on Likangala scheme. The Domasi mean was 3.9 while on Likangala it was 2.7. Overall, 18% of the total sample reported farming five plots or more. Those with five plots or more constituted 8% of Likangala and 17% of Domasi farmers (see table 4).

These differences in landholding size were also apparent when plot use by season of the year was considered. At Likangala, the average number of plots farmed in the rainy season was 2.8 while in the dry season it was only 0.8. At Domasi, the mean number of plots farmed in the rainy season was 3.8 in contrast to 1.7 in the dry season.

This baseline survey information underestimates the actual degree of plot concentration that exists on the two irrigation schemes. Accurate information on the number of plots owned or used by scheme farmers was difficult to gather in a survey due to the sensitivity of this information in the current context of change. Most farmers were unwilling to admit to ownership of more than four plots or to renting or lending plots, as these practices were thought to be against the rules. No accurate updated list of plot holders and the number of plots registered in their names existed at Likangala and Domasi schemes. Thus, the actual degree of land concentration is hard to measure.

However, information gathered through qualitative approaches permitted us to address this issue and to identify the processes involved in plot concentration. This information suggests that over the years, and especially during the 1990s, scheme land has become more concentrated in the hands of better-off farmers, especially those in positions of authority, often through renting and borrowing.

Today it is not unusual for wealthier farmers to farm more than four plots, especially during dry-

season cultivation. Even using the available survey information, 61% of those in the two highest asset classes at Domasi admitted to farming five plots or more, while at Likangala the figure was 29%. Many newly elected members of committees at Likangala and Domasi schemes have more than four plots. For example, some officials on the Domasi WUA Executive Committee own over 10 plots, while some of the officials on the new Likangala Scheme Management Committee own 12 plots or more. Further, these are usually plots with the best access to water. Plot ownership at the household level is actually much greater than these figures suggest, as spouses and children often have plots registered in their names as well. In addition, qualitative research revealed that some farmers and scheme officials made use of fake names to gain additional plots.

The new 2004 Likangala constitution states that families (*banja*)—including the husband, wife, and children—may own no more than four plots in total. It is too early in the handover process there to determine whether committee members farming four or more plots will be willing to enforce these limits or to carry out plot redistribution. In many cases, however, the very people who have been given authority to enforce new regulations are the ones known for violating them. At Domasi, on the other hand, the constitution is vague on the issue of the number of plots that can be farmed, stating only that WUA members have a right to “a profitable landholding size according to agreed criteria for land allocation.” Efforts to promote plot redistribution by Concern Universal were stymied for the time being, as they constituted a challenge to those in power.

Accurate information on renting and borrowing is equally hard to obtain. For example, in the baseline survey, no farmers admitted to renting plots to others. Three said they rented plots from others in the dry season and 11 in the rainy season. Six admitted to loaning plots to others in the dry season and four in the rainy season. Field observations suggested that renting and borrowing are widely practiced on the Likangala and Domasi schemes and further concentrate plot use. For some farmers, the regulation that land not cultivated for two years reverts to the Scheme Management Committee spurs renting as a means to deal with hardships of various kinds. Those who are unable to cultivate their plots because they lack inputs, do not have

sufficient labor, or are sick, often rent to better-off farmers and end up working as laborers on their own or others' fields. During the dry season when plots are reallocated, people from town may gain access to them via allocation from the Scheme Management Committee or by renting from other farmers.

The 2004 Likangala constitution declares that renting of plots is illegal and constitutes one of the reasons why a plot holder can be expelled from the scheme. It may be difficult to halt this practice for at least two reasons—its widespread occurrence and the fact that it meets the needs of both wealthy and poor farmers. The Domasi constitution actually makes no mention of renting or borrowing, perhaps because of these same reasons.

In summary, farmers have used a variety of mechanisms to gain access to more than four plots, including serving on scheme management bodies or having close connections to those who do, plot ownership by spouses and children, renting and borrowing and, in some cases, use of falsified names. All these practices work against broadening access to plots which, as pointed out above, are a premium livelihood resource. While the 2004 Likangala constitution seeks to broaden access to plots by limiting the number a family can own and by barring renting, at this point it remains to be seen if plot redistribution will occur. Objections to these provisions were expressed to the field assistants by the few farmers attending the meeting at which the new constitution was introduced. It is possible that once other Likangala farmers become aware of these clauses in their new constitution, they will try to amend it.

Rehabilitation and Farmer Capacity Building

A critical aspect of rehabilitation of the irrigation schemes is capacity building. Farmer training in scheme maintenance and management is an integral part of the rehabilitation process. Our findings indicate that capacity building has not been effectively synchronized with rehabilitation. In the case of Domasi, Concern Universal was contracted to train farmers at a time when rehabilitation of the scheme was already at an advanced stage. At Likangala, farmers have been mobilized to supply labor for rehabilitation, but there has been little discussion to date of incorporating capacity building as part of this process.

Rehabilitation of canals, headworks, roads, and other facilities on both schemes has proceeded slowly due to numerous factors. These include delays in funds and supplies, inputs going missing, problems with local contractors, heavy rains that destroyed newly renovated structures, farmers' reluctance to provide labor, and numerous other complications. Delays have been greatest at Likangala, which is dependent on government funding for renovations. At Domasi, the targeted date of rehabilitation and handover has changed twice—initially it was scheduled for December 30, 2002, and then for September 30, 2003. By mid-2004, government officials recognized that rehabilitation and handover would not be a single event to be completed by a specified date, but rather a phased process likely to take considerably more time than anticipated. Current thinking is that physical structures will be transferred to farmers as renovations are completed.

Many farmers regarded rehabilitation as a government responsibility and were reluctant to take ownership of the scheme until it had been completely refurbished. This suggests that farmers themselves, not only Executive or Scheme Management Committee members, should be involved in rehabilitation decision-making processes from the onset. Since not all renovation problems can be addressed at once, meetings are needed where farmers, together with specialists, identify and prioritize the most salient ones. While the majority of plot holders on both schemes wanted the main canal renovated, other problems identified tended to be specific to each scheme (see table 5).

Farmers' involvement in decision making, not only labor, can instill a greater sense of responsibility for the rehabilitation process and can help build the skills needed to manage the scheme in the future. When asked, 87% of farmers (92% on Domasi and 81% on Likangala) said they had taken part in the physical rehabilitation of the scheme, but only 41% (52% on Domasi and 29% on Likangala) said they had ever attended a meeting in preparation for rehabilitation and handover. Indeed, many of those at Likangala opposed the transfer as they were afraid that they would inherit a dilapidated main canal and other structures they could not afford to fix. Many did not see how they could succeed in

running the scheme when the government, with all its resources, had failed.

Many of the problems identified by farmers related to physical collapse of the scheme structures (headworks, canals, etc.) have social origins. Rehabilitation is not likely to be effective or long-lasting unless these underlying social issues are addressed. NGOs have been responsible for farmer empowerment and training at Domasi scheme. This process is not yet fully underway at Likangala scheme, but Zomba RDP might benefit from insights that Concern Universal has gained from the Domasi experience. At Domasi, until recently almost all attention focused on training newly elected committees to carry out their functions. Indeed, only 13% of the farmers in the overall sample said they had received some training on handover issues. Twelve of the 15 farmers who said they had received training were from Domasi and all were members of scheme committees. This indicates that the “Training of the Trainers” model that was used was ineffective, as little training of farmers themselves has taken place.

In 2003, our surveys revealed that farmers at Domasi scheme, where handover was well advanced, had little understanding of what it involved and reported having little voice in decisions concerning it. At general meetings of the water users’ association, field assistants reported that farmers were spoken to rather than engaged in conversations. Decisions were taken by a small group of committee members and government and scheme officials and were announced at general meetings. Such concentration of knowledge and authority in the hands of committees means that farmers will be poorly equipped to exercise their rights and obligations in the new governance structures.

Much the same is occurring at Likangala scheme, where a meeting on problem identification and constitution building occurred in early July 2004, involving village headmen and other traditional authorities, scheme committee members, RDP officials, and a small number of farmers. At this meeting, Zomba RDP officials, in effect, imposed a new constitution on those in attendance in the name of “participation” and “consultation.” A week later the constitution was presented for ratification at a general farmers’ meeting attended by less than 20 farmers not holding elected or appointed office.

Few scheme farmers knew that there was a draft constitution or that a meeting was going to take place to discuss it, let alone the provisions contained in the document itself. At the ratification meeting, the constitution was read to the farmers and they were asked to endorse it. Barely a week later, another meeting was held to elect a new Scheme Management Committee. Top-down actions of this sort, although often employing the language of participation and consultation, are reminiscent of the Banda era and will not result in widespread understanding of or support for new rules and committees.

While consultation with farmers is important, critical issues related to governance responsibilities and to land and water rights and assets still remain to be clarified. There was considerable disagreement over who would be responsible for what when the schemes were transferred to farmers’ associations (see table 6). Even more uncertainty prevailed when farmers were asked questions regarding when handover would take place and their rights to land once the schemes were transferred to their associations (see table 7).

In other critical areas there was confusion as well. As noted above, 38% of the total sample believed the schemes would revert to customary land. While 80% knew the irrigation scheme held a water abstraction permit, there was considerable disagreement over what would happen to it after handover. Fifteen percent thought the government would continue to hold the permit, 18% thought it would belong to the farmers’ association, 12% thought that individual farmers would have to get permits, 26% said the permit holder would be the Scheme Management Committee or the WUA Executive Committee, 7% mentioned traditional authorities, and 22% did not know.

These critical issues concerning governance and land and water rights are as important to address, debate, and clarify as is the physical rehabilitation of the schemes themselves. While one of the goals of the transfer of the irrigation schemes to farmers is to promote greater “ownership,” at this point it appears that farmers’ rights to plots are more uncertain today than they were in the past. Women’s rights to plots are even more precarious since it is unclear in whose names the plots will be registered and who can inherit them.

Plot Inheritance

Do scheme farmers have rights to leave plots to children and other relatives upon their death? Under what conditions? Farmers at Domasi and Likangala schemes have been accustomed to leaving their plots to their spouses, children, and other relatives. In the opinion of many Likangala farmers, only when the plot holder is unmarried and has no offspring do the plots revert to the Scheme Management Committee for redistribution, and then usually half go to relatives of the deceased and the remainder to non-family members. However, the new Likangala constitution states that upon the death of the holder, the plots are to revert to the Scheme Management Committee, which may redistribute them to relatives of the deceased or to others as they see fit. In the past, the Scheme Management Committee has sometimes used the occasion of the death of the farmer to obtain plots and reallocate them, often to powerful, influential people—including members of the committee itself. Given these past practices, the clause in the new constitution declaring that plots are to be returned to the Scheme Management Committee for reallocation upon the death of the plot holder has already generated opposition.

The Domasi constitution says that plots can be left to a specified next of kin who must be identified on the plot holder's WUA membership card. The Executive Committee has the power to approve or reject this choice, as it has the authority to determine if the next of kin meets membership criteria. The implication is that inheritance will be limited to one family member in good standing with the WUA. This clause may also generate opposition since it contradicts what has become local inheritance practice.

The issue of inheritance raises the question of plot fragmentation. Given the small plot sizes (1/4 acre), are the schemes intended to meet the needs of future generations? One village headman at Likangala scheme has used the lack of land for future generations as a means of staking claims to irrigation plots and expelling others. Should plots on these irrigation schemes be inherited as if they were family land? This issue needs further discussion with farmers and policymakers in light of the limited number of plots, their small size, and the historical experiences of schemes. The absence of clearly defined and understood rules and

procedures of inheritance is likely to exacerbate misunderstandings and conflicts. Further, even when rules are clear, traditional practices may override them.

Structures of Authority

Although the schemes are government land and traditional authorities are not supposed to be involved in land allocation or dispute settlement on them, over the years, as government has withdrawn from the schemes, traditional authorities have gained greater voice, especially in solving disputes. The Domasi and Likangala constitutions state that chiefs are not to take part in plot allocation or dispute resolution on the irrigation schemes. However, this appears to be at odds with the new local government law and decentralization policy, both of which give traditional authorities identified roles in local administration.

Confusion exists especially concerning the roles of traditional authorities in solving disputes that arise between farmers on and off the schemes. When asked who solves such disputes, 57% of farmers said the WUA Executive Committee or the Scheme Management Committee, and 38% said chiefs, while 5% didn't know. This confusion is exemplified by the failure to resolve the issue of plot grabbing by a village headman on Likangala scheme. In this case, the Scheme Management Committee was unable to resolve the issue and turned to the traditional authorities, who in turn consulted the District Commissioner. After conferring with the traditional authorities, the District Commissioner decided that the land should be returned to the registered plot owners after harvest. But surprisingly, he did not announce his decision himself—instead he asked the traditional authority to do so, thereby legitimating the traditional authority's authority. It remains to be seen if this has put an end to the issue. The larger point is that, because decentralization and many other processes of reform are occurring at the same time, lines of authority are often unclear to farmers, and sometimes even to officials. This raises opportunities for multiple interpretations of rights and competing claims to land, water, and other resources.

Although the water, irrigation, and environmental laws themselves are being harmonized to resolve areas of ambiguity and conflicting roles among

them, there are still questions about how the new structures they are putting in place will function on the ground. One of these questions involves the creation of river basin or Catchment Management Authorities (CMAs) as proposed in the new water policy and pending law. Malawi has been divided into 17 large catchment areas, which are drawn according to hydrological criteria and, in many cases, cross political-administrative boundaries. Two or more districts may fall within one CMA. While the catchment approach makes environmental sense, it creates another administrative structure that has to be negotiated and financially supported. It is unclear how Catchment Councils will work with District Councils and other political administrative units (see Derman, Ferguson, and Gonese 2000).

In fact, this has been a significant issue in Zimbabwe, where the same organizational structure was put into place. There, CMAs include representatives of districts, local representatives of various ministries, and major water users such as commercial farmers, smallholders, and mining and urban water user representatives. For district authorities and smallholders alike, the transactions costs of participating in these meetings are high, and they often lack funds to attend. Water users also have to travel long distances to catchment authority offices to pay fees or obtain services (see Nicol 2003; Derman, Ferguson, and Gonese 2000). In other words, what makes environmental sense presents administrative challenges. In Malawi, significant financial problems exist as well, as sustainable sources of funding for the CMAs have yet to be identified. One way around these challenges, at least for the immediate future in Malawi, is to start with the formation of smaller watershed councils or land-water committees in Districts where water conflicts are likely to occur in the near future—such as the Lake Chilwa Basin.

Finally, and equally importantly, the new policies and laws in Malawi's natural resource sector all call for communities or user groups to organize themselves in committees to assume responsibilities for natural resource management. The transfer of the irrigation schemes to newly organized water users' and other farmers' associations is only one example of a much wider process (see Khaila, Mvula, and Kadzandira 1999). Although this appears to be a good strategy considered on a sector

by sector basis, looked at from the local-level or village perspective, the results can be problematic. Many villages have a school committee, two or three borehole committees (for each borehole), a natural resource committee, a beach village committee, and others as well. Very poor, often overworked people are being asked to take on significant responsibilities for resource management, and they are being expected to do so in the midst of the HIV/AIDS epidemic, which in many cases has depleted their labor and other resources (see Mbaya 2002; Shah et al. 2002; Drimie 2002).

Our previous research on access to potable water in the research sites indicates that this user group strategy often works to the disadvantage of poor women, many of whom are unable to meet requirements needed to be a member of the group and thus continue to rely on rivers, shallow wells, and other usually polluted sources of water (see Ferguson in press). In essence, these user groups constitute a form of privatization of what was once thought to be a public good. It is too early to tell if similar equity issues will arise with the transfer of the smallholder irrigation schemes to farmers' associations, but there are reasons for concern.

3. Smaller Complex Irrigation Schemes and Self-Help Scheme

Mulwafu, Field Assistants

Field assistants carried out semi-structured interviews with the local-level officials in charge of these two schemes. Handover at Khanda was reportedly advancing autonomously with little support or input from the Ministry of Agriculture and Irrigation. At Chilico, on the other hand, the self-help scheme was reportedly under the control of the village headman. Based on the reports by the field assistants, and the time commitments needed to address the research at the Domasi and Likangala irrigations schemes, the research on these two smaller schemes was not pursued in greater depth.

4. Informal Irrigation

Peters, Kambewa

Two research questions were posed about informal irrigation along streambanks and in wetland areas: (1) Given that the economic importance of informal or farmer-initiated irrigation along streambanks and in wetlands has been neglected until the recent

drought years, what are the patterns of access, types of claims and rights, and categories of uses and users over these valuable resources? (2) In particular, in light of new policies on land, water, and irrigation, what can be learned about the forms of tenure and/or open access, and what policy implications can be identified?

Streambank Gardens and Livelihood Strategies

Our study indicates that the existence of areas where watered gardens are found today is a product of several interacting processes—ecological and climatic, historical patterns of settlement, and current political and policy initiatives.

Ecological factors: The ecology of an area obviously has a determining role in the availability of watered areas. Villages settled along rivers and streams have a higher proportion of people with watered gardens than others. Similarly, villages settled in or near flood plains of lakes and rivers, or in low-lying land that becomes flooded in the rains, have more access to these gardens. Chilwa Basin is fairly well-supplied with rivers, some of them perennial, and with wetlands in the lower-lying areas of rivers and around the lake itself, where the study sites are concentrated. On the other hand, the stony and eroded nature of river banks along parts of the rivers' length make gardens infeasible, and villages further away from the watered areas have lower proportions of their populations with access to watered plots. In the upland areas of the Basin, the proportion of farmers with streambank gardens is much lower.

Settlement Patterns: A second influence on who has access to watered areas is the historical pattern of settlement. There is a distinct pattern in the villages studied of long-term settlers and relatives of the village head's lineage being more likely to have streambank gardens than others.

The village headships and chiefships are divided among three tribal groups, reflecting a history of considerable mobility of people for reasons of political divisions and war, resettlement for cultivation or trade, and in response to colonial rule.

Recent political, economic, and policy influences: These ecological and historical processes interact with more recent influences on the distribution of access to watered land. These include the establishment of formal irrigation schemes from

around 1970, which took land from individual families under the "customary" tenure of village heads and higher level chiefs, though in most cases with compensation in the forms of money, allocation of scheme plots, and/or other land on which to cultivate and build houses. Another influence derives from the attraction of Lake Chilwa for fishing and fish-trading, which appear to have increased steadily over the past 50 years, albeit fluctuating according to the level of the lake, which periodically dries up. People in the study villages report increases in both the incidence and the rates of rent for gardens over the past years, a phenomenon also documented in villages along the Thondwe River in another part of the Chilwa Basin (see Peters 1998). It is in these more recent trends that the ability to pay is becoming as common a cause of access to watered land as ecological circumstance, or historical settlement patterns.

Regarding access to streambank gardens, villages settled along the rivers and in low-lying areas tend to have more access than others, but even along the Likangala, there was considerable variation. Over 60% of the censused villages had less than one-third of their inhabitants owning streambank gardens, while in a third of the villages, between 50-80% of the inhabitants had such gardens. Within villages, because of the settlement patterns, the village head and his/her relatives normally have the most gardens compared with non-related villagers. A census of 425 streambank gardens in 17 villages along the lower Likangala River revealed that, in half of the villages, between 85-100% of the gardens belonged to the relatives of the village head, and in most of the others, they owned about half of the gardens. In 50% of the villages, women were the reported owners of about half of the gardens, but in the remaining villages, women were listed as owners for one-third or fewer of the gardens. Renting was reported for only 8% of the listed gardens, and these were disproportionately concentrated in two of the villages. Most respondents reported low levels of renting, the main reason being the value of cultivation in the gardens to the owners themselves. Although most of the village heads tended to have somewhat more gardens than other villagers, only a few controlled such large numbers that they were able to rent out 10 to 16 gardens themselves. In sum, while most streambank gardens along the Likangala River appear to be family property, with village heads and

their wider families owning rather more, a minority of village heads are able to run a type of rental business in the gardens.

The streambank farmers overwhelmingly reported the primary importance of their gardens to be in providing cash income from crop sales, with the provision of household staple food—the usual definition of food security—placed second. Thus, 68% of the streambank farmer sample said that their main source of cash income was from their streambank gardens (*dimba*), whereas their main food supply was from their dryland fields (*minda*), followed by their streambank gardens. A few farmers in this sample, who also had plots in the formal irrigation schemes, identified the latter as another source of cash income. While 81% of the streambank sample also cultivate plots in the wetlands (*dambo*), those fields come a distant third in both cash income and food supply compared with the other plots. As discussed below, this ranking is reversed for those living closer to the lake where dependence on wetland gardens is higher.

There is some variation in the relative importance of streambank gardens in supplying home food and cash income, however. The two main influences revealed by the research are ecological and weather conditions, and the winter TIP distribution. The category of farmers who put the most emphasis on the ability to grow maize for home consumption in their streambank gardens were those who live in the areas downstream of the major rivers and along the floodplain of the lake. These reported that, in years of heavy rainfall, even their upland fields often become water-logged, thus reducing their maize harvest. In this case, the streambank gardens are useful for producing maize in the dry season, as well as for the production of rice in both rainy and dry seasons (depending on water availability). Many rice producers use some of their rice to exchange for maize, bag for bag, since maize is the preferred staple. This pattern of growing maize in streambank gardens for home consumption has been boosted, too, by the distribution of the winter TIP packages, especially in those areas just mentioned. In most years, however, allocation of these valuable sites for growing maize for home consumption, which requires letting the maize dry on the stalk, is not the most profitable use, and farmers normally prefer to grow higher-value crops

(including selling maize as “green” or fresh cobs), using the income generated to obtain household maize.

During the rainy season, most streambank gardens are not cultivated because the crops (and sometimes even the land itself) would be washed away in the rising river levels, though sugarcane often remains along the edges. However, this again depends on ecology and weather. Hence, during dry years, streambank gardens are more likely to have some residual moisture by comparison with upland fields, so they are used to grow the same range of crops mentioned, including maize. Gardens in the wetlands (described below) are used largely for rice in the rainy season, and in the dry season for the same range of crops as streambank gardens. Although, on average, streambank gardens are used mainly in the dry season and wetland gardens mainly in the rainy season, ecological conditions vary so that, sometimes, this distinction falls apart. Thus, in the smaller tributary streams of the main rivers, small wetlands may occur during the rains. Kampapwa stream that runs into the Likangala River is one example. There, if the rains are heavy, water remains in the stream for many months and rice gardens are made in the rainy season; whereas when the rains are poor, the area is used as gardens for vegetables and maize.

Wetland Gardens and Livelihood Strategies

The information on the patterns of access to and rights over wetlands comes from doctoral dissertation field research conducted (late 2003 into 2004) by Kambewa in four wetland areas selected from seven wetlands in the Chilwa Basin, analysis of which is currently underway. In addition to the wetland gardens, 74% of the 170 farmers sampled also had dryland fields, 23% had an irrigation scheme plot, and only 3% had a streambank garden. This distribution, which differs from that of the Likangala streambank sample described above, reflects the ecological conditions along the floodplain of the lake where the rivers disappear into the lake, so lowering the availability of streambank gardens. The respondents placed their wetland garden crops as the number one source of livelihood support, followed by fishing and temporary laboring jobs. Furthermore, 83% said that dry-season cultivation in the wetlands was most important in providing food for their family,

the remainder emphasizing cash income from crop sales.

Unlike the Likangala streambank gardens sample, where many of the garden owners were related to the village headmen, in the wetlands sample, only 31% were so related. This difference derives from the fact that wetlands, earlier used for grazing, have come under control for cultivation more recently than streambank gardens, and to the related practice of headmen and superior chiefs allocating them to non-villagers. Sixty-one percent of this wetlands sample inherited their plots from family members, while 39% had them allocated by village heads and chiefs (referred to as chiefs from now on). As had been found in earlier qualitative research, some of the wetland plots were held on the basis of various conditions, especially that of giving the allocating chiefs annual “thanks” or tribute. Forty-four percent of the sample reported that they had to pay tribute. Of those who had inherited the plot from their family, only 19% had to pay tribute, compared with fully 82% of those who said their plots had been allocated to them by chiefs.

Of a sample of 156 who had cultivated a garden in the wetlands during the previous (2003) dry season, 90% described their plots as their own, whereas the remaining 9% borrowed or rented. However, 13% of those with their own plots also borrowed and 11% rented a plot. Borrowing takes place mostly among relatives and close friends, and occurs most often in the dry season, apparently because more people have access to watered gardens in the rainy season. Plots are rented both to neighboring villagers as well as to “outsiders” from other districts or towns (Zomba and Liwonde, in particular).

The doctoral research shows that the dominant patterns can be understood as a matrix of inheritance/ no inheritance and annual tribute/no tribute. The right of disposal to an heir is the strongest right currently recognized in the area. Despite the designation of “customary” tenure to land held by smallholders, in the Shire Highlands, including the Chilwa Basin, most land, including all dryland and streambank fields and some wetland gardens, in practice is family property. The obligation to pay tribute, a term translating the Chinyanja word *chothokoza*, literally “thanks,” appears to be a modern version of an older tradition. In the past, those allocated plots by a

village head or other chief would give a chicken and/or brew beer as a token of thanks. Today, in the densely populated Highlands area, this traditional token has long disappeared from the use of drylands and streambank gardens, almost all of which are inherited within families. Its use by the chiefs allocating wetlands plots against an annual payment has a very different connotation from the past token of respect and thanks.

Analysis of the wetland garden sample shows that 83% of the users have the right of disposal to an heir; of these, 31% were allocated plots by a chief, with the remaining 69% inheriting plots from family. Thus, direct allocations by chiefs less often include the right to pass on the plot to an heir. Moreover, these allocations often carry the obligation to pay tribute: even among the chief-allocated plots that carry the right to pass on a plot to an heir, 75% have to pay tribute, contrasted with only 13% of those who inherited the plot from family. These figures, along with the conversations recorded in the field, suggest that the practice of paying tribute for a wetland plot has developed in recent years. As indicated later, it also appears to be spreading, despite opposition by some chiefs. Less severe constraints on tenure reported include the stated obligation to cultivate the plot every year, cited by 16% who inherited their plots from family and 20% of those allocated by chiefs; and the obligation to be recognized as a “local” person, cited by 27% of those allocated by a chief but only 5% of those inheriting.

The research also shows a strong variability in tenure types and tenure security across wetland areas and chiefdoms/villages. Two of the four sampled wetlands have a higher incidence of annual payments and lack of inheritance rights than the other two. The chiefs reportedly give concessions to those who are old or sick, thus unable to produce large harvests, and in a minority of cases, users of multiple plots said they did not give the payment for each plot. Outside the wetlands sample, qualitative research in the main BASIS study of the area where the irrigation schemes are situated also described a similar practice of a chief obtaining as many as 1,000 bags of rice as annual payments for plots allocated in the wetlands.

What accounts for the difference across the wetland areas? One dimension is the size of the wetland—the two where the chiefs are renting out many plots

are larger than the others. A more important factor seems to be the interpretation given by different chiefs to their rights and obligations. One chief living near one of those renting out wetland plots in the name of *chothokoza* adamantly denied that this was a legitimate practice. Another, however, said he was considering starting to do so because he felt that he did not receive adequate compensation for his work as chief and was attracted by the considerable rental income earned by a few of his peers. These practices and the disagreements they generate remain invisible, so far, to outsiders and constitute what is now a localized debate over the legitimate rights over wetlands. The issue is influenced, too, by the current process of transfer of the irrigation schemes. In the Likangala scheme, as is discussed above, a few chiefs have appropriated some of the scheme plots, arguing that the land on which they lie belongs to them as first settlers. They claim ancestral rights over land that was appropriated by the government in the 1970s for the irrigation schemes. Along with this rationale, however, is a situation whereby some of these “land-grabbing” chiefs (as they are described in local idiom) say that the reason some other chiefs are not seeking to reclaim the scheme land is because they earn a considerable income from renting out wetland gardens.

In short, the competition over access to gardens in the wetlands turns on competing claims of legitimate authority, and these debates are influenced and influence similar contestations over formal irrigation schemes. For their part, farmers using gardens along streambanks and in wetlands tend to draw on the custom of inheritance of plots within families to claim that once chiefs allocate a plot, it henceforth belongs to the user.

5. New Irrigation Technologies

Peters, Kerr, Kambewa

As donors and government have turned to dry season cultivation along streams and in wetlands as a potential means to address the problem of chronic food and cash shortages, they have started promoting treadle pumps and distributing free fertilizer, maize, and beans seed (via TIP) to intensify and expand dry season cultivation.

In 2003, Liwonde and Zomba RDPs began granting loans to farmers’ groups to purchase treadle pumps. Treadle pumps are a low-tech option for small scale

irrigation. Developed in Bangladesh in the 1980s, they have been introduced in various African countries over the last decade or so with relatively favorable results. We had planned to carry out a survey of treadle pump users during June-July 2004, to determine who was getting access to this new technology, but we found that less than a dozen had been distributed in our research area at that time. Instead, we relied on the field assistants to gather basic information on the distribution of the pumps, the formation of farmers’ groups, and their functioning.

The research showed that the main use of streambed gardens has been to grow out-of-season vegetables, such as tomatoes, eggplant, cabbage, onions, many green leafy vegetables, and fruits, which are then sold in peri-urban and urban markets for much higher prices than the same crops in the rainy season. While some maize has been grown in these dry-season irrigated gardens, it has been sold “green” or fresh (to be eaten boiled as a snack), unlike the rainy season maize that is left to dry in the fields and is harvested largely for home staple consumption. Research during 2003-04 confirmed earlier results, which showed that there is much more maize being grown in dry-season gardens than has been the case in the years before the TIP distribution. Much of the maize is sold fresh.

The effects of the treadle pump and TIP programs on small-scale irrigators were numerous. Even though the winter TIP, especially the most recent one, delivered inputs to only a tiny fraction of those with watered gardens, the anticipation of gaining access to valuable inputs via having a garden has added yet another reason for people to do everything possible to obtain one. Another effect has been to create or exacerbate differences among villagers along the lines of haves and have-nots. First of all, as discussed above, the distribution of watered gardens is far more unequal than that of dryland gardens, and most studies show a correlation between overall wealth and access to watered gardens. Thus (unlike rainy season TIP), the winter TIP does not target the poorest, despite stated criteria.

Secondly, the research revealed serious deficiencies in the distribution of the TIP packages. While the criteria for identifying appropriate recipients were known and followed in some places, in more, they

were unknown or confused, there were more people fitting the description than there were available inputs, the distribution followed not the official criteria but personal favoritism of the distributors, or the distributors and persons in authority appropriated and sold some of the input packages. None of this is unprecedented, having been seen with earlier distribution programs, both in the research area and elsewhere. Nevertheless, people who did not receive the winter TIP inputs, but thought they should have, responded with dismay and anger. Two consequences were documented in the research sites. One was the splitting of existing villages into two, with a clear rationale for seeking to access future distribution programs. Since the chiefly families of most villages already have longstanding debates and disagreements over which of the chiefly lines (within the matrilineage) should provide the chief, such splitting can occur fairly easily. The implications for administrative management, however, may not be positive. Another outcome was that people said, since they did not receive any inputs, they were not going to contribute to any “self-help” or “community” project to which they were called to contribute: “Let those who received the benefits be the ones to contribute!” Again, this has been a response in other places when the distribution is not given to all villagers. This is one of the greatest problems with targeting programs in a population where the majority feel and are, according to most standards, poor.

The programs introducing treadle pumps promise a greatly enhanced level of productivity and, at least at first, an apparently welcome chance for farmers with access to watered gardens to gain a pump on credit. The specifics of the credit program have proved disappointing, however, especially with reference to farmer groups, but also with respect to the timing of the arrival of the pumps and of the credit repayments. While there are a few groups operating quite well, more have proved either to have collapsed after some months or to be “ghost” clubs, which in reality are the means for an individual to gain access to a pump on credit. While failure of management, especially concerning procedures for sharing the pump, is involved in some, many respondents cited the fact that they had received the pump late in the season, thus losing the ability to plant and harvest in time. This lack of benefit from the pump clashed with the requirement

to start repaying the credit soon after the pump arrived, so causing the break-up of several groups. Nonetheless, for those able to manage a treadle pump, this technology adds to the value and attractiveness of watered gardens.

Like the winter TIP, distribution of treadle pumps cannot be seen as targeted to the poorest, even though its positive potential for increased productivity is a clear plus. Also, like the winter TIP, the sudden increase in the availability of pumps, whether on credit or for cash, has intensified people’s desire to gain access to watered gardens. Moreover, the longer-term implication of the spread of treadle pumps is further extension of watered gardens and increased competition over water sources. While the hoped-for productivity gains are important for a rural population living at low levels of income and food supply, the longer-term effects of the relatively sudden intensification of irrigated cultivation along rivers, in wetlands, and in river basins merits greater attention than has been the case so far.

B. Institutional Impacts

BASIS research project contributed to capacity building at Chancellor College, University of Malawi, in the social sciences related to water, irrigation, and land resources. In addition, policymakers and international donors have called on the project for information and advice. Information below covers impacts in the past year only.

Prior to BASIS, there was little focus on water-related research in the social sciences at Chancellor College, and not much attention was paid nationally to the social dimensions of water management or irrigation reform. At the university, capacity building in the social dimensions of environmental and agricultural change has taken place with the degree training of two graduate students and the participation of the Host Country PI, Dr. Mulwafu, in water- and irrigation-related academic conferences and policy forums in Malawi and the SADC region.

As a result of BASIS, Chancellor College has taken a lead role in WaterNet in the region. WaterNet is a regional consortium whose aim is to build capacity in integrated water resource management. BASIS PI Mulwafu was on the Regional Steering

Committee and was an elected Executive Board Member.

Helping the Malawi water partnership. The Malawi chapter of the Global Water Partnership brings together stakeholders to discuss water issues and to promote integrated water resource management. Mulwafu sat on the steering committee in recognition of research on the social aspects of water. This body is becoming a conduit for funding from donors on water issues.

BASIS project has been asked to provide input into a number of major policy and project design initiatives undertaken by government and donors.

These include:

- Providing research findings for the World Bank-funded team on “Strengthening the Water Resources Board.”
- Meeting with the World Bank-funded “Malawi Irrigation, Rural Livelihoods and Agricultural Services Project” design team to discuss our research findings concerning the rehabilitation and handover of the Domasi and Likangala irrigation schemes. BASIS was identified as one of the very few sound, scientific projects with up-to-date information on the handover process.
- Request from the Ministry of Water Development to take part in a conference reviewing Malawi’s policies on dams in July 2004.
- Support for the Ministry of Water Development. BASIS helped convince the newly elected Malawi administration to *not* dissolve the Ministry of Water Development into other Ministries.
- Local- and national-level policymakers workshops bringing policymakers and donors together to discuss issues that have emerged from our research related to the new water, irrigation, and land policies.
- Bringing development district officers, traditional authorities and members of local government together to hear directly from the farmers who use the schemes about their experiences with the transfer process.
- Supplying the IFAD project with information to help it in its World Bank-funded effort to rehabilitate the irrigation schemes. IFAD is particularly interested in seeking guidance on the socioeconomic issues.

Table 1. Assets Ranking of Farmers on Domasi and Likangala Irrigation Schemes

Asset Ranking	Domasi	Likangala	Total
Low (7-524)	40 (64%)	43 (72%)	83 (68%)
Middle (525-1049)	18 (28%)	14 (23%)	32 (26%)
High (1050-1576)	5 (8%)	3 (5%)	8 (6%)
Total	63 (100%)	60 (100%)	123 (100%)

*Baseline Survey 2003***Table 2. Farmers' Perceptions of the Tenure Status of the Irrigation Schemes after Handover**

Tenure Status	Domasi	Likangala	Total
Government Land	8 (13%)	11 (19%)	19 (16%)
Individual Private Property	22 (36%)	11 (19%)	33 (27%)
Customary Land	14 (23%)	31 (32%)	45 (37%)
Owned by Farmers' Organization	12 (20%)	3 (5%)	15 (13%)
Don't Know	5 (8%)	3 (5%)	8 (7%)
Total	61 (100%)	59 (100%)	120 (100%)

*Handover Survey 2003***Table 3. Number of Years Farmers Had Worked on Domasi and Likangala Irrigation Schemes**

Number of Years Worked on Scheme	Domasi	Likangala	Total
1-10 Years	23 (37%)	38 (63%)	61 (50%)
11-20 Years	12 (19%)	12 (20%)	24 (20%)
20+ Years	28 (44%)	10 (17%)	38 (30%)
Total	63 (100%)	60 (100%)	123 (100%)

*Baseline Survey 2003***Table 4. Number of Plots Held by Farmers on Domasi and Likangala Irrigation Schemes**

Number of Plots Held	Domasi	Likangala	Total
1-2 Plots	30 (48%)	37 (62%)	67 (55%)
3-4 Plots	16 (25%)	18 (30%)	34 (28%)
5-16 Plots	17 (27%)	5 (8%)	22 (18%)
Total	63 (100%)	60 (100%)	123 (100%)

Baseline Survey 2003

Table 5. Irrigation Scheme Rehabilitation – Farmers’ Highest Priorities

Want Rehabilitated—Highest Priority	Domasi	Likangala	Total
Headworks	6 (10%)	4 (7%)	10 (8%)
Pump	2 (3%)	0	2 (2%)
Main Canal	30 (49%)	46 (78%)	76 (63%)
Secondary and Tertiary Canals	4 (7%)	2 (3%)	6 (5%)
Roads and Paths	5 (8%)	0	5 (4%)
Leveling of High Ground	9 (15%)	1 (2%)	10 (8%)
The Whole Scheme	0	3 (5%)	3 (3%)
Other	5 (8%)	3 (5%)	8 (7%)
Total	61 (100%)	59 (100%)	120 (100%)

Handover Survey 2003

Table 6. Farmers’ Knowledge About Transfer of the Irrigation Schemes – Governance Responsibilities

Questions	Yes	No
After handover will government be responsible for:		
Establishing irrigation policy?	35%	65%
Providing extension services?	62%	38%
Carrying out operation and maintenance of the scheme?	21%	79%
Resolving conflicts over plots?	42%	58%
After handover will the farmers’ association be responsible for:		
Providing extension services?	10%	90%
Managing water allocation and use?	53%	47%
Carrying out operation and maintenance of the scheme?	68%	32%
Resolving conflicts over plots?	84%	14%

Handover Survey 2003

Table 7. Farmers’ Knowledge About Transfer of the Irrigation Scheme – Rights to Plots

Questions	Yes	No	Don’t Know
When will transfer of the schemes to farmers’ organizations take place?			98%
Will borrowing or lending of plots be allowed after transfer?	33%	56%	11%
Will renting of plots be allowed after transfer?	37%	55%	8%
Will buying and selling of land be allowed after transfer?	8%	84%	8%
Will there be a limit on the number of plots a farmer can have after transfer?	32%	53%	15%
Will dry-season plot rotation continue after transfer?	48%	40%	12%

Handover Survey 2003

RURAL MARKETS, NATURAL CAPITAL, AND DYNAMIC POVERTY TRAPS IN EAST AFRICA

Global Constraint 2: *Unsustainable Use of Degradable Resources*

Global Constraint 3: *Poverty and Food Insecurity Traps*



Charrette driver, Madagascar
(Photo by Chris Barrett)

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<http://www.basis.wisc.edu/poverty.html>

PROJECT PROFILE

One fifth of the world's population lives on less than a dollar a day. Most of the ultra-poor live in rural areas and work in agriculture, so the poorest populations in the world rely disproportionately on the natural resource base on which agricultural productivity depends. Recent empirical studies using longitudinal data find that a disturbingly large share of these people suffers chronic rather than transitory poverty. Many appear trapped in a state of perpetual food insecurity and vulnerability because their poverty and poor market access preclude efficient investment in or use of productive assets.

In the course of their ongoing struggle to survive, those caught in a poverty trap may have strong incentives to degrade natural resources, particularly the lands they cultivate and graze. Partly as a consequence, nearly two-fifths of the world's agricultural land is seriously degraded and the figure is highest and growing in areas such as Central America and Sub-Saharan Africa. Such degradation exacerbates pre-existing poverty traps by discouraging capital-strapped smallholders from investing in maintaining, much less improving, the natural resource base on which their and their children's future livelihoods depend. Resulting degradation of the local agroecosystem further lowers agricultural labor productivity, aggravating the structural poverty trap from which smallholders cannot easily escape. These problems feature prominently in Kenya and Madagascar and in

discussions among policymakers, donors, and NGOs as to how best to design poverty reduction strategies.

The project "Rural Markets, Natural Capital and Dynamic Poverty Traps in East Africa," undertaken in collaboration with partners in Madagascar and Kenya, has the goal of identifying best-bet strategies to help smallholders escape the interrelated problems of dynamic poverty traps and on-farm natural resource depletion. Degradation of soils and access to factor and product markets are the primary foci. Empirical analysis, based on panel data collection, qualitative fieldwork and soil sample collection in five sites in Kenya and two in Madagascar, along with context-driven simulation modeling, are used to determine the incidence, severity and causal linkages behind poverty traps. The project identifies the most promising approaches to reducing the incidence and severity of chronic poverty, especially in ways that support agricultural productivity growth and repletion of degraded soils.

The project engages in discussions with policymakers involved in the poverty reduction strategy programs in each country, with the most senior levels of the agricultural research communities in each country, and with local communities about practical, science-based strategies for improving access to productive inputs and markets necessary for poor people to be able to improve their livelihoods over time.



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“The Interplay Between Smallholder Farmers and Fragile Tropical Agroecosystems in the

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I. ACTIVITIES 2003-04

A. Accomplishments

1. Data Collection

Panel Data Collection in Embu, Kenya (Murithi)

KARI directed much of its time in 2003-2004 to data entry and cleaning for the first two sets of data. Much time and effort was also spent finding locations and plots for the final round. Last round of surveys began in August-September 2004.

Soils Samples Data Collection in Madagascar (Rasambainarivo)

Data from the soil samples were collected in September-October 2003 from nearly every rice plot in the Madagascar sample. The soil samples were analyzed in September 2004 to produce plot-specific characteristics reports to be returned to the sample farmers. These samples provide the first profiles of spectral imagery of soils from highland Madagascar, thus providing valuable data and calibration for the agricultural research community working on improving agricultural productivity in this region. They also create a baseline of matched economic and soils data to enable future construction of an unprecedented matched panel of socioeconomic and biophysical measurements of agricultural productivity and resource conditions.

Rice Production Data Collection in Madagascar (Minten)

The Cornell-FOFIFA team re-surveyed households in the BASIS panel (about 1400 plot-level observations) in order to allow for panel data analysis at the rice plot level, to study productivity dynamics controlling for spatial and biophysical factors specific to plot level. The data have all been entered and cleaned and are now being analyzed at Cornell by Randrianarisoa.

Land Contracts and Productivity Survey in Madagascar (Bellemare)

The purpose of this survey was to collect household-level data on land sharecropping contracts. Data collection took place between March and August 2004, with data entry ending in September. Team members hope to be able to study the institution of reverse share tenancy, i.e.,

sharecropping contracts wherein a poorer landlord rents out land to a richer tenant, over the coming year.

Collection of Data on Social Networks, Informal Finance and Technology Adoption in Highlands Kenya (Hogset)

As part of her Cornell dissertation research, Hogset undertook original survey work in Embu and Vihiga Districts, Kenya, from August 2003-September 2004, reconstructing social networks as they relate to information flow and informal lending and insurance transactions within households in our BASIS panel in those locations. Using snowball sampling methods to collect data from first- and second-order networks, Hogset has established far greater density of networks in the better-off region of Embu—in spite of greater household-level access to formal financial services—and significantly higher rates of adoption of improved natural resources management practices.

Collection of data on smallholder product marketing, producer co-operatives and meso-level impediments to accumulation in central Kenya (Mude)

As part of his Cornell dissertation research, Mude undertook original survey work in Mur'anga District, Kenya, from September 2003-February 2004. He did sub-sector studies of the coffee, dairy and tea industries, coupling household-level survey data with qualitative and quantitative data collection at the level of producer co-ops and local processing facilities to explore why farmers are able to effectively use commercialization of certain products (e.g., dairy and tea) to accumulate assets and improve standards of living but not other products. This study looks at the political economy of local groups as well as the organization of smallholder production and product marketing.

2. Data Analysis

Analysis of determinants of adoption and disadoption of improved natural resources management practices in western Kenya (Marennya)

As part of his MS thesis at Cornell University, Marennya is using the BASIS panel data from

Vihiga District, Kenya, to identify the determinants of investment and disinvestment in natural capital through improved natural resources management practices.

Analysis of Intercropping Productivity in Highlands Kenya (Brown, Nambiro, Wangila)

Intercropping of various crops is commonplace on the farms in our sample, especially in the highlands sites in central and western Kenya. There are differing opinions as to whether this affects productivity and thus welfare dynamics for small farming households. We have therefore been doing novel ray production function estimation of mixed crop production systems, both for calibration of the bioeconomic simulation model and to establish why farmers intercrop and with what productivity effects.

Qualitative Studies of Poverty Dynamics (Mango, Mulindo, Kariuki, Ongadi and Randrianjatovo)

We followed up quantitative panel data collection by doing intensive household-level qualitative research on a sub-sample of households selected randomly from the income transition matrices constructed from the panel data. The objective of this research was to uncover subjects' perception of the reasons for poverty transitions so as to complement and help shape the quantitative analysis.

Public Goods and Services Provision and Markets Performance in Madagascar (Moser)

We used the national commune census collected under the separate Ilo project to study meso-level issues related to potential geographic poverty traps. As part of her Cornell dissertation research, Moser analyzed the commune-level provision of public goods and services (e.g., education, health) and how these are shaped by the political economy of democratic election that leads to significant, predictable deviations of actual allocations from those that would minimize poverty in the nation. She likewise studied how well markets transmit prices across space, time and transformed commodities (e.g., paddy into milled rice) using the commune census data so as to identify whether market failures were primarily local, regional or national phenomena and whether these were attributable to high costs of market intermediation or to the exercise of market power by traders.

Integrated study of welfare dynamics in rural Kenya and Madagascar (Barrett)

Using the panel data collected in each of the project sites and the qualitative data collected in follow-up visits to a sub-sample of panel households, we undertook empirical analysis of household-level welfare dynamics to explore the core hypotheses of the project: are there really poverty traps? If so, are these related to locally increasing returns to particular key assets, to wealth-dependent risk management, and/or to site-specific conditions (e.g., access to markets, agroecological conditions) that create geographic poverty traps. This involved descriptive statistics, econometric work and contextual analysis of qualitative (oral history and participatory appraisal) data.

Development of CLASSES model and initial application to western Kenya (Okumu)

We continued to develop the bioeconomic simulation Crop, Livestock and Soils in Smallholder Economic Systems (CLASSES) model, calibrating it to the western Kenya BASIS site and working through various simulation scenarios. This work will result in at least one academic paper explaining how the interaction in the nonlinear dynamics of the underlying natural resource stock, fixed and sunk costs of changing livelihoods and barriers to financing adverse shocks and de novo investment combine to yield divergence in economic growth paths followed by reasonably similar households in rural Kenya.

3. Stakeholder Consultations

Community Feedback Workshops in Embu, Kenya (Murithi, Ouma, Hogset)

KARI held three community feedback workshops in Embu (6-8 July 2004) to share highlights of the first round of their survey with the participating farmers and extension staff. There was a high turnout among farmers (67%). The farmers confessed they did not initially fully understand the purpose of the project but after those presentations, they were very happy and saw the value of the study. Attendants unanimously agreed to participate in the second round of the survey starting in August/September as they could now see the benefits of the study. Hogset also highlighted some of the findings of her social networks study. Also during this session, the farmers requested visit the

KARI Embu station, preferably before the start of the second round of the survey.

Ouma organized the subsequent visit to KARI Embu in August 2004. 120 farmers (70 female, 50 male) participated in the tour. Although the farmers live in the area, the majority of them had never been to the station and were impressed by the range of activities taking place. Many expressed an intention to try some of the technologies they saw that day on their own their farms.

Policy Research Strategy Group and Stakeholders' Workshop on Linking Research to Policy (Murithi, Oluoch-Kosura, Place)

The informal Policy Research Strategy Group, initially begun under the BASIS CRSP, has been active intermittently for about two years. Coordinated by the Department of Agricultural Economics (University of Nairobi), its purpose is to strengthen linkages between research institutions and policy makers in Kenya by encouraging exchange of recent research findings, ongoing research efforts and research questions on which policy makers could use current, precise findings. On January 27, 2004, the Department of Agricultural Economics at the University of Nairobi organized a stakeholders' meeting at KARI headquarters for policy researchers and policy makers to review the status of the links of research findings to policy making in the country. We identified constraints, opportunities and suggestions on what can be done to improve the communication and linkages related to research findings and policy. The Permanent Secretary of the Ministry of Planning and National Development, gave the opening speech, and the Director of the Kenya Agricultural Research Institute, also spoke. The meeting was supported by the British Department for International Development but other key donors such as the World Bank, USAID and the Rockefeller Foundation were represented.

Cognitive Mapping Introductory Farmers' Focused Group Discussions, western Kenya (Wangila)

Wangila, Amudavi, Hogset and Lenachuru were discussants and Bulali, Lomosi and Obwayo assisted in taking notes for this meeting held in Madzoo, Vihiga District on 29 January 2004. The objective of the meeting was to introduce the planned "cognitive mapping" survey under the related NSF project and to discuss farmers'

perceptions of soil fertility, crop changes and risk assessment, and actual actions and investments farmers undertake.

Meetings with USAID Mission Staff (Barrett, Minten, Murithi)

Barrett met with USAID mission staff in Kenya in March 2004 and Murithi met with them again in September 2004 to update them on the activities of the BASIS CRSP project. Minten met with USAID mission staff in Madagascar regularly throughout the past year to update them on BASIS and related activities.

Project Team Meeting (Barrett, Murithi, Place)

The Fourth Annual BASIS CRSP Project Team Meeting took place March 15-16, 2004, in Nyeri, Kenya, including team members from Kenya, Madagascar and the United States as well as stakeholders from multiple institutions in Kenya. The purpose of the meeting was for researchers to present their findings for discussion and to plan the final months' workplan under the project.

Cognitive Mapping Introductory Farmers' Focused Group Discussions, central Kenya (Mbugua)

A farmers focused group discussion was held in Embu with selected farmers coming from Manyatta, Mukangu, Kianjuki and Kavutiri extension focal areas. The meetings were facilitated by Amudavi, Mbugua and Lenachuru. Thuraniira and Njeru assisted in taking notes during the proceedings. The objective of the meeting was to introduce the planned "cognitive mapping" survey under the related NSF project and to discuss farmers' perceptions of soil fertility, crop changes and risk assessment, and actual actions and investments farmers undertake.

4. Training

Degree Training (Barrett, Bellemare, Hogset, Marennya, Moser, Mude, Naschold, Randrianarisoa)

The BASIS project supported one graduate student and partially funded six other students last year, all at Cornell University under Barrett's supervision, and most in the Department of Applied Economics and Management (AEM). Randrianarisoa (Madagascar, AEM Ph.D. candidate) entered his second year of training in September 2004 and was fully funded by the BASIS CRSP. Bellemare

(Canada, AEM Ph.D. candidate) conducted field research in Madagascar, partially funded by BASIS and partially funded by a grant he was awarded by the NSF. Hogset (from Norway, AEM Ph.D. candidate) was partially funded by BASIS for work in Kenya (with co-funding from Cornell). Phiri (Kenya, AEM M.S. candidate) received funding from the Rockefeller Foundation. Moser (USA, AEM, Ph.D. candidate) completed her Ph.D. Mude (Kenya, Dept. of Economics, Ph.D. candidate) was mostly funded by BASIS (with co-funding from Cornell). The workplan had also anticipated partial funding for Osterloh (USA, AEM, M.S. candidate) but we later found that her work contributed more directly to another project under Barrett's supervision and so her funding was transferred off the BASIS project. This left room in our budget to fund Naschold (Germany, AEM, Ph.D. candidate) whose work is a much better fit with our research. The workplan also called for Wangila to do Ph.D. dissertation research at the University of Nairobi but he did not officially register as a student this year and so his work is not captured under "training" in this report. Wangila is still heavily involved in the BASIS project as a researcher at ICRAF.

Université d'Antananarivo Lecture Series (Minten)

In early 2004, Minten gave a series of lectures at the University of Antananarivo to masters students that are enrolled in the DEA (Degree d'Etudes Approfondies) program on rural development that ESSA (Ecole Supérieure des Sciences Agronomiques) is offering. He taught the students principles of agricultural supply and demand, agricultural policy analysis and the linkages between agriculture and poverty. Around 25 students of this program attended this series of lectures.

Post doctoral training (Okumu, Barrett)

Okumu, the post-doctoral researcher on the BASIS project, trained in empirical methods while playing the lead role in the bioeconomic modeling component of the project. Barrett supervised Okumu's training, which included field visits to Kenya, presentations of seminars, and leading the development of the CLASSES bioeconomic modeling tool. Okumu finished his post-doctoral assignment in October 2004.

On-going maintenance of the "Bioeconomic Modeling for Smallholder Systems" course website (Okumu)

This restricted-access course website, developed in 2002, continues to stir interest beyond our project. We have received a number of requests from people all over the world wanting to learn more about bioeconomic modeling. We most recently granted access to Dr. Jeffrey Sachs, Director of the Earth Institute at Columbia University, at his request. We continue to devote time to helping researchers understand the site, for example, Okumu has devoted much time to explaining integrated bioeconomic modeling simulation methods to students at Cornell and other institutions, many of whom are now applying these methods in their own research. On-line activity from former class participants has dropped, as expected, as the course ended. Others continue to use that web site regularly:

(http://aem.cornell.edu/special_programs/AFSNRM/Bioecon/)

5. Collaboration

The World Bank is undertaking a study in Eastern Africa on the linkages between poverty and agriculture. Madagascar is one of the case studies in this analysis. This study is being done in collaboration with local researchers in FOFIFA and INSTAT. BASIS CRSP is closely aligned with this project.

In Kenya, we have strong links to two other USAID-funded projects and to a major National Science Foundation research project. We share our Baringo and Marsabit sites with the USAID Global Livestock CRSP Pastoral Risk Management (PARIMA) project. PARIMA has enabled us to leverage data collection in our northern Kenya sites significantly, to our mutual benefit, as BASIS funding enabled expanded thematic coverage of the households surveyed under PARIMA. The USAID Strategies and Analyses for Growth with Access (SAGA) cooperative agreement includes Kenya as a core country in exploring "bottom-up" approaches to growth with access. The consortium of Kenyan collaborators under SAGA includes each of the major economic research institutes in the country (IPAR, KIPPRA and Tegemeo) and are heavily represented in the rural development and poverty reduction advisory processes in the

government. The SAGA program in Kenya is pursuing two interrelated projects that link nicely to our BASIS project, “Reducing Risk and Vulnerability in Rural Kenya” and “Empowering the Rural Poor,” and coordination has been explicit between BASIS and SAGA.

Our project is most closely linked in Kenya with our team’s 5-year \$1.7 million National Science Foundation biocomplexity grant entitled “Homeostasis and Degradation in Fragile Tropical Agroecosystems.” The NSF project augments the BASIS social science research with in-depth biophysical field research and modeling in our Baringo, Embu, and Vihiga sites to pursue frontier modeling of complex dynamic systems. This project began in January 2003, and involves extensive biophysical field research over four-plus years with involvement of leading animal, atmospheric and soil scientists in addition to sociologists and economists. The NSF project also involves four Kenyan Ph.D. candidates—a GIS specialist, two soil scientists and a rural sociologist—whose programs at Cornell are funded under the Rockefeller Foundation’s African Food Security and Natural Resources Management program at Cornell and complement the BASIS project, especially in our Baringo and Vihiga sites. This adds considerable capacity in understanding processes of ecological degradation and will ultimately improve the quality of the bioeconomic modeling product from this project. The NSF modeling effort has, however, superseded the CLASSES modeling venture programmed under the BASIS project because it affords us the opportunity to go into greater depth in modeling the biophysical processes that mediate productivity and resource changes over time among smallholder farmers in Kenya.

Our project is also closely linked with two other projects directed by ICRAF. One is a DFID funded project on assessing the impact of agricultural research on the poor, coordinated by IFPRI, with ICRAF directing the case study work in western Kenya, in our Siaya and Vihiga sites. ICRAF has another related DFID-funded project, on Voices of Poor Livestock Farmers in the greater Lake Victoria basin, which likewise includes our western Kenya sites.

Linkages to other projects are likewise extremely strong in Madagascar. Cornell recently completed a

substantial, multi-year policy analysis and capacity building project (the Ilo project) funded by USAID-Madagascar. BASIS team member Minten was the Ilo project chief of party in Antananarivo and Barrett, Moser and Randrianarisoa were actively involved in the research under that project. Cornell is also a part of USAID-Madagascar’s Landscapes Development Initiative (LDI) project run by Chemonics International, and Madagascar is (like Kenya) one of the seven core countries under the USAID/Washington SAGA cooperative agreement. These projects share complementary interests, in the case of Ilo and SAGA, in welfare dynamics and public policy and in the case of LDI in sustainable agricultural systems for smallholder producers. Ilo has helped fund the social analysis component of BASIS’ data collection, while LDI and Ilo have both contributed background data to BASIS analysis of poverty traps and rice technology adoption. SAGA will help integrate BASIS findings into a broader policy dialogue about Madagascar’s poverty reduction strategies and into training of economic researchers in the country.

B. Key Findings

1. Although economic mobility appears significant in the short-run as a share of income, the structural component of income—that which is predictable based on household ownership of productive assets—appears far less mobile. Assets and their productivity are the ultimate determinant of long-term poverty status, and we focused our energies on studying the dynamics of assets and asset productivity. This enabled us to test empirically among several competing hypotheses of economic growth, each carrying quite different implications for policy. The convergence hypothesis holds that, given universal access to finance and markets, poverty is only transitory and getting prices right will suffice to induce accumulation and growth out of poverty. The conditional convergence hypothesis holds that barriers hold certain groups back, but if those barriers can be overcome, even the poor from such groups will enjoy growth out of poverty. This logic underpins efforts to break down legal restrictions based on race, religion or gender that handicap members of certain groups, and initiatives to redouble infrastructure and technology development for remote rural areas that might represent geographic poverty traps. The poverty

traps hypothesis, by contrast, posits that there exist not only group-specific barriers that impede growth, but wealth-conditional barriers based largely on access to the finance necessary to adopt new technologies or to acquire a critical mass of productive assets. The poverty traps hypothesis implies not only a need for targeted interventions to break down exclusionary barriers and to create assets for the poor, but also a need for safety nets to prevent shocks from thrusting households irreversibly into long-term poverty as their asset losses shift them into a new, lower-level equilibrium.

Our research repeatedly rejects the first (convergence) hypothesis in favor of the second and third hypotheses, each of which demands a more activist profile for government and NGO actors than has prevailed over most of the past twenty years in development practice. This body of research yields several important results, described below.

In quite different environments—from the semi-arid rangelands of southern Ethiopia to the arid lands of northern Kenya to the highlands of western Kenya—we find asset dynamics that exhibit multiple stable equilibria, meaning a low level at which some households appear stuck—a poverty trap—and a higher level to which a small population ascends and remains safely above the poverty line. Households appear to understand this, even though researchers have been slow to recognize the existence of nonlinear asset dynamics in poor communities.

For example, pastoralists in northern Kenya and southern Ethiopia have long been criticized for what seems mindless devotion to building up their herds. Yet in an environment prone to severe asset shocks associated with climate and disease and in the presence of multiple asset equilibria, herd accumulation is a perfectly rational economic growth strategy. While many observers have been puzzled and frustrated by pastoralists' general reluctance to market their livestock in response to the onset of drought or a rise in prices due to new export opportunities, our work has shown how household-level livestock marketing and risk management behavior both reflect rational adherence to a herd accumulation strategy necessary to minimize the risk of falling into a

poverty trap in a place where non-pastoral livelihood options are essentially non-existent.

2. *Poverty traps are not universal.* Poverty traps associated with multiple equilibria emerge in some places but not others. We find no evidence of such effects in the most prosperous rural region of Madagascar, the Vakinankaratra highlands around the city of Antsirabe.

One important issue seems to be access to finance. Those who can borrow and insure themselves reliably can afford to undertake new investments, while those without access to financial services typically either cannot afford an investment or risk one. This seems to describe, for example, patterns of adoption of an extremely promising new rice production method—the system of rice intensification (SRI)—in Madagascar. Our research demonstrated through careful econometric methods that SRI increases farmer productivity more than 80%, controlling for farmer- and plot-specific characteristics and variation in input levels. Put differently, a farmer who uses SRI methods instead of other methods to plant the same plot with the same other inputs should enjoy more than 80 greater harvest. Yet a minority of farmers use SRI and the poor in particular hardly ever adopt the method. Why?

The answer seems twofold. First, SRI is initially labor intensive during the *soudure* (hungry season) when poor households must work off-farm as casual day laborers for wages necessary to buy food to meet their families' immediate consumption needs. In the absence of seasonal consumption credit to enable them to reallocate their time to their own plots, they cannot afford to practice SRI. Second, we have also documented that yield risk is greater with SRI, with estimated risk coefficients that imply uninsured poorer households will typically opt not to take a chance on SRI while wealthier households that can afford to self-insure might. As a result, poor households follow a safer, less remunerative strategy while wealthier households follow a somewhat riskier but far more rewarding rice production strategy. The outcome is a bimodal distribution, with the ex ante poor stuck in a low-productivity poverty trap and the ex ante rich enjoying productivity and income growth that pushes them further above the poverty line.

Similar financial liquidity barriers appear to impede both entry into more remunerative activities in the

non-farm rural economy and intensification of agricultural production through use of inorganic fertilizers, adoption of improved breeds of dairy cattle, and uptake of improved natural resources management practices such as tree planting for erosion control and use of improved fallows for soil nutrient replenishment. The most attractive agricultural sub-sectors—e.g., commercial dairy or tea production—lie beyond the reach of those without some independent source of cash income or credit. As a consequence, we find smaller, poorer households cultivating less well-diversified farms on soils that are degrading—while wealthier neighbors’ soils commonly exhibit stable or improving quality—with the predictable consequence that one subpopulation’s situation is deteriorating while their wealthier neighbors enjoy economic growth.

3. *Poverty traps may arise due to phenomena at more aggregate levels.* Our team pointed this out in its work on “fractal poverty traps.” Consider the case of coordination failures that arise from the complex political economy of producer groups. Preliminary results from research in Muranga District, Kenya, show for example, that coffee cooperatives severely underperform their potential as coop leadership bribes voters in order to have access to collective resources they can divert for personal gain. The failure of coffee marketing then discourages farmers from investing in chemical pesticides necessary to maintain yields, so output falls. This limits farmers’ cash incomes, constraining their capacity to invest in even non-agricultural activities or assets requiring up-front cash outlay.

Informal networks do not necessarily fill in the blanks left by access to formal financial services. Preliminary results show that in Embu District, where most sample households have access to bank credit and savings services, social networks for informal credit and insurance are far denser than they are in Vihiga District, where very few households enjoy access to formal financial services. This greater access to financial services is strongly and positively associated with increased likelihood of adoption of improved natural resources management practices (e.g., improved fallows or *tumbukiza*) that sustain soil quality and thus long-term productivity on farm.

4. *In Madagascar, there are market-level obstacles to growth among poor households.* Basic food markets that appear to operate quite efficiently at the local, commune level, appear vulnerable to non-competitive manipulation by traders at regional levels and largely segmented from one another at national scale by poor infrastructure that drives transportation costs so high as to effectively preclude profitable trade across the whole island. The consequence is an economy *enclavé*, one segmented into distinct sub-markets, some of which lack market-level competition necessary for farmers to enjoy incentives to invest in productive new technologies. The predictable consequence is geographic poverty traps of the sort we see in our survey data for Fianarantsoa, the poorest province in the nation.

5. *Regional-scale markets problems are compounded by electoral politics that similarly complicate the distribution of essential public goods and services.* Our research shows that because the provision of public goods and services attracts votes, incumbent politicians have an incentive to distribute such goods and services so as to maximize their chance of re-election, leading to deviation from the allocation appropriate to poverty reduction goals. Data from our 2001 commune census and the 2001 national presidential election in Madagascar, combined with the national poverty map, suggest that the foregone poverty reduction effects due to electoral pressures are quite substantial.

6. *In theoretical work motivated by observations in rural Kenya, we model the educational disincentives created by spatial differences in public goods and services that affect labor productivity.* As an example, workers are more productive where electricity allows them to use advanced machinery and where reliable police protection means they do not have to dedicate time to security-related activities. When poor children and their parents do not have access to loans to pay for the costs of secondary or tertiary education, informal loans and gifts can, in principle, enable children blessed with talent to continue in school regardless of their household’s wealth. Oral history suggests this used to occur in rural Kenya, as elaborate gift and loan networks provided for the education of talented rural children. But as spatial disparities in labor productivity have grown due to

striking differences in institutional and physical infrastructure between rural and urban areas, educated children become more likely to outmigrate and not return, making collection of past debts and reciprocity more difficult. The predictable result is that only families able to self-

finance their children's education can afford the secondary and tertiary education necessary to enter higher-return segments of the non-farm labor markets and the informal financing of poor rural children's education has been effectively choked off.

ASSETS, CYCLES, AND LIVELIHOODS:

Addressing Food Insecurity in the Horn of Africa and Central America

Global Constraint 3: *Poverty and Food Insecurity Traps*



Ethiopian farm household surrounded by ripening wheat fields
(Photo by Peter Little)

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<http://www.basis.wisc.edu/assets.html>

PROJECT PROFILE

The Horn of Africa includes some of the world's poorest rural populations, most volatile political conflicts, and extreme cases of food instability. In these and other impoverished regions, including parts of Central America, natural disasters—such as droughts and floods—can further devastate the lives of rural people by depleting already meager assets and savings and in the extreme creating conditions of severe food insecurity (famine). This was the final year of a three-year research program that examined the ways that households and communities cope with and attempt to recover from climatic shocks. The key roles that assets, as well as market and non-market mechanisms play in the coping and recovery processes is highlighted. During particularly harsh natural disasters when severe asset depletion occurs, prices for remaining assets, such as livestock, and for labor and land often decline, while food prices and credit costs often skyrocket. This pattern further hurts the disaster-impacted poor. In post-disaster periods, markets often move in opposite directions: assets often increase in price as does the costs of labor and land, which inhibits recovery for asset and land-poor households. The ultimate goal of the study is to identify policies that help poor households retain

assets during disasters, as well improve their access to markets in the recovery period, thus allowing them to avoid relief dependency. Without an understanding of how factor markets relate to cycles of poverty and asset depletion, policy interventions have tended to be restricted to targeted, short-term efforts, such as food aid relief and highly subsidized credit schemes that neglect long-term development and sustainability.

The research project includes three different research sites—South Wollo/Oromiya, Ethiopia, Samburu/Baringo, Kenya, and rural Honduras—that provide very different market and policy conditions. The research design also allows comparisons and assessments under different policy frameworks. The major research site is South Wollo/Oromiya, Ethiopia where the greatest data collection effort is focused, followed by Honduras where the project is building on existing studies and data bases, and finally Kenya where minimal update of an existing study has taken place. In contrast to Ethiopia and to some extent Kenya, Honduran households have relatively good access to factor markets and are able to pursue relatively complex mixes of farm and non-farm activities; and land rentals and purchases.



Support

BASIS CRSP core funding. Add-on from USAID/Ethiopia.

Outputs

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Castro, Peter. "Vulnerability, Shocks, and Memory: Food Shortages and Conflict in Ethiopia."

Debela, Mengistu Dessalegn. "Individualizing the Commons and Changing Resource Uses: The Case of Gimba Meda."

Debsu, Dejene Negassa and Peter Little. "Socioeconomic Responses of Peasant Households to Food Insecurity and Resource Pressures at Kamme, Oromiya Zone."

McCann, James, Boston University, Discussant

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Debela, Mengistu Dessalegn, "Individualizing the Commons and Changing Resource Uses: The Case of Gimba Meda." Presented at the Annual Meeting of the African Studies Association, Boston, Massachusetts, October 31.

Debela, Mengistu Dessalegn, "Common Property Management in South Wello." Presented at the Symposium "Ethiopia: Challenges and Possibilities," sponsored by the African Initiative of Syracuse University, November 10, 2003.

Little, Peter. "Asset Thresholds and Social Dynamics of Poverty: Research Findings from Ethiopia." Presented at Planning Seminar for BASIS Conference on Persistent Poverty in Africa, Washington, DC, 2 March 2004.

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I. ACTIVITIES 2003-04

A. Accomplishments

1. Ethiopia

Data entry and analysis of the annual asset update of the household study (416 households) was completed. The survey measured ending stocks of assets, household composition, savings, and other indicators of drought recovery/non-recovery. Also, data entry, cleaning, and analysis was completed for the asset/herd recall study conducted in August 2003.

By January 2004, a complete, cleaned, and coded data set for the household study (June 2000-August 2003) was finished. Data analysis and write-up of a case study of non-farm activities and enterprises, which would complement our household and community-level research, was carried out. For the case study a total of 332 enterprises were randomly selected from six towns in or near the study region. From each town, a total of 50 enterprises or more were selected from five different categories of enterprises: trade, services, food and drinks, manufacturing and processing, and handicraft. A structured questionnaire was administered to each randomly selected enterprise. This enterprise-level data has been complemented by analysis of non-farm employment and enterprise activities at the household level.

Other research activities in Ethiopia included continuation of the qualitative study of a sub-sample of individual and household heads that have been interviewed since June 2000. This sub-sample represents a stratified sample of 68 households that represent poor, middle-poor, and better off households from the large household study of 416 households. Past qualitative/ethnographic research covered individual histories of drought and recovery; unrecorded food and other transfers not captured in the survey; social networks and relationships (kinship and other); and gendered responses to asset de-accumulation and recovery. Repeat qualitative/intensive interviews were continued in January 2004 and included detailed interviews with 16 individuals, stratified to represent different types of households (female-headed, oxen-less, wealthy, etc.). This round of qualitative work focused on local perceptions of

poverty and wealth and social and extra-household networks used to cope with and recover from droughts.

2. Ethiopia and Honduras

Comparative data analysis and write-up of the impacts of the 1999-2000 drought in Ethiopia and the 1999 Hurricane Mitch in Honduras was completed in August 2004. A second meeting of the Ethiopian and Honduran research teams was held in May 2004 at the University of Wisconsin-Madison. A comparative paper on the impacts of disasters on assets and welfare in Honduras and Ethiopia was completed.

3. Training and presentations

The project participated in the planning of the BASIS policy conference, Persistent Poverty in Africa, and in pre-conference workshops/seminars at Cornell University (November 2003) and USAID/Washington (March 2004).

The project sponsored a post-doctoral research sabbatical for an Ethiopian researcher to be in residence at the University of Wisconsin-Madison, February-August 2004. The project also sponsored a panel, titled "Poverty and Food Insecurity in Amhara Region, Ethiopia", at the Annual Meetings of the African Studies Association, and gave several other presentations at professional meetings and seminars. An Ethiopian graduate student on the project, Kassahun Kebede, was awarded a fellowship and scholarship to attend the doctoral program in anthropology at Syracuse University.

4. Collaboration

Collaborative arrangements and meetings were held with staff of the SCF-UK 'Relief to Development ("R2D")' project, which works in North Wollo. The project also established linkages with the Amhara Regional State, including the Amhara Regional Agricultural Research Institute and the Bureau for Rural Development. In meetings in Bahir Dar during January 2003, the process of forming a regional policy working/liaison group, similar to one which we established in South Wollo in 2002, was started. It was formalized in June 2003 with the Amhara Regional Agricultural Research Institute

and Bureau for Rural Development agreeing to head up the group.

The project is now informally collaborating with the new USAID-funded project, Amhara Micro-enterprise Development, Agricultural Research, Extension and Watershed Management, based in Bahir Dar, and the Chief of Party of the project and other staff members have attended BASIS/IDR project meetings.

The project continues to keep colleagues at ICRAF working in the Amhara Region informed about BASIS activities. ICRAF is involved in an applied research activity looking at natural resource policies in the Amhara Region, in collaboration with the Amhara Regional Agricultural Research Institute. Since tree-planting and sales are important drought coping and recovery strategies in South Wollo/Oromiya.

The project will continue its collaborative linkages with on the ground agencies working on rural development in the Amhara Region. The project has been in communication with several NGOs in the region (including Save the Children-UK and World Vision International) and through its Policy Liaison Committee has a formal arrangement to disseminate research findings and provide policy recommendations to the NGO, Concern International. Save the Children-UK is implementing an experimental project in North Wollo Zone, with USAID funding, on Asset Protection and Food Security. The USAID/SCF-UK activity is premised on many of the same assumptions of our project: the significant role that assets play in food security and poverty alleviation; and the need to guard against massive asset de-accumulation during periods of drought and other disasters. In the hopes of spurring asset protection, asset recovery, and income and asset diversification, the SCF-UK is guaranteeing food aid to communities in four districts over a three-year period. It is assumed that the relaxation of the food security constraint will allow for more productive use of assets and other resources and buttress households against future shocks.

The work on Honduras is tightly related to an ongoing MacArthur Foundation-funded study of social capital and income distribution dynamics. This project includes participation by IFPRI, and the University of Natal (Durban, South Africa) and the Catholic University (Lima, Peru). A

methodologically-oriented paper comparing the Honduras experimental results with work generated by the MacArthur project has been prepared. The work has been presented at several conference venues.

B. Key Findings

1. Policy Implications of Natural Disaster Recovery

Based on longitudinal studies in Ethiopia and Honduras, our findings suggest certain policy initiatives that could reduce the negative impacts on the poor of natural disasters (in this case, droughts and hurricanes). An important first step would be to build social safety (insurance) nets that keep vulnerable households from losing their assets and sinking further into poverty. For the chronically poor, a safety net of guaranteed food needs and, in some cases, minimal cash income, can allow them to divert efforts from survival-type (often destructive) livelihoods, to more remunerative activities that might build assets and pull them out of poverty. Given that social networks and institutions play an important role in keeping households from falling into poverty, externally supported safety nets need to be cognizant of the way social networks operate, so as to minimize any potential negative impact of programs on existing social institutions.

The estimated relevance of markets for households' ability to resort to livelihoods that do not lead to asset erosion suggests programs that go further than building safety nets. Policies that improve non-farm employment opportunities, rural market infrastructure, and availability of credit—especially in the post-disaster period—are important ways that government and development agencies can help limit long-term asset depletion. Our findings show that market conditions do make a difference in how shocks differentially affect certain communities and regions. Policies that make markets more accessible to the chronically poor and vulnerable will mitigate the kind of widespread human suffering now associated with natural disasters.

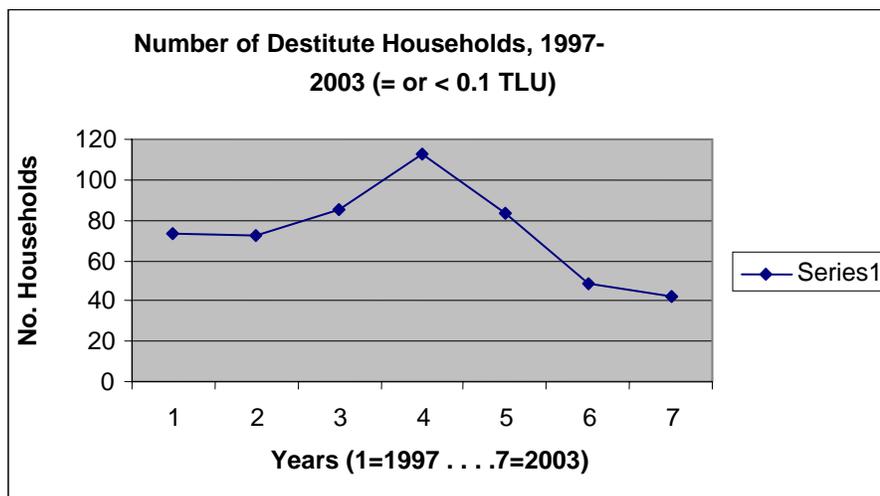
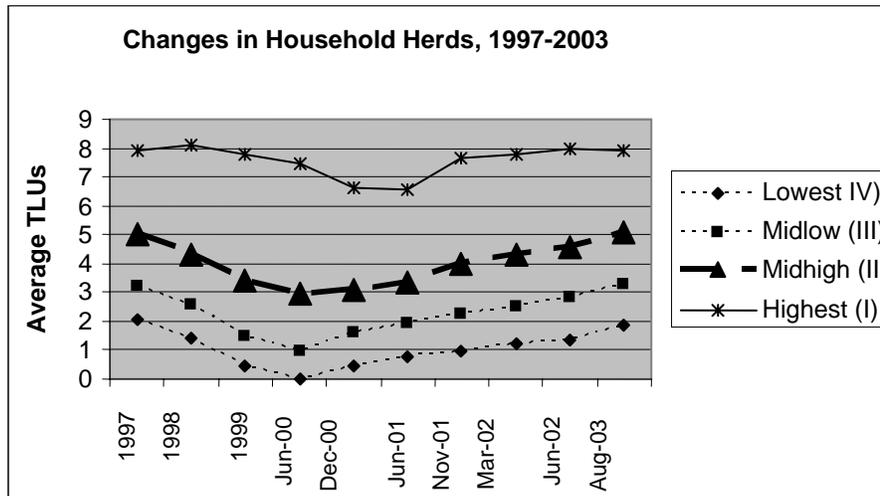
2. Drought and Poverty Dynamics in Ethiopia

The 1999-2000 drought had a devastating short-term impact on Ethiopian households, particularly

among the poorest, but contrary to public opinion it did not significantly increase overall rates of poverty in the area. With some exceptions, those who were poor before the drought were able to bounce back to their same minimal levels of assets three years after the drought. As our findings argue, a large percentage of poor households actively pursue a range of different economic activities (“churning”) that allowed most to attain their pre-drought wealth status but not to escape poverty. Levels of poverty remain abysmally high—25% of households still had fewer than 2.0 tropical livestock units (TLU) (quartiles IV and III) in 2003—but at least according to our data the situation has not deteriorated any further in the past seven years as some authors have suggested. In fact, the actual number of asset-less (destitute)

households in the area declined by about 41% during 1997-2003 (see figures and tables below).

Our research shows that the poor are not static, mired in despair and paralyzed into inaction. To the contrary, the poor are extraordinarily resourceful and show a great capacity to build up assets to a point. A before/after analysis of the 1999-2000 drought demonstrated that the poorest categories of households suffered disproportionately from the recent drought but were able to recover just as fast, or even faster, than others. Despite low levels of asset ownership there has been more rapid post-drought herd/asset recovery among poor households than among better-off units, and this may be a result of the former group’s willingness to pursue non-farm activities (including petty trade).



Household Mobility during 1997-2003 based on initial asset holdings in 2000

		Movement by August 2003			
		IV	III	II	I
Quartile 2000	IV	30%	30%	24%	16%
	III	7%	21%	39%	33%
	II	0%	5%	34%	61%
	I	1%	1%	15%	83%
Total		10%	15%	28%	48%

*n=416 Households

Social Mobility and Drought, 1997-2003

WEALTH QUARTILE (TLU/Asset range)	% improved	% stayed same	% declined	TOTAL
I ('BETTER OFF') (4.3+ TLU)	---	52.4	47.6	100
II. ('VULNERABLE') (2.1-4.2 TLU)	46.7	46.7	6.6	100
III ('POOR') (0.5-1.9 TLU)	70	20	10	100
IV. ('VERY POOR') (0-0.4 TLU)	43.7	56.3	--	100
ALL	32.3	46.8	20.9	100

*N= 62 households.

Despite relatively impressive gains in post-drought asset recovery, we have shown that there are definitely persistently poor, even destitute, individuals and households in the area. While the number has declined in the study region, the percentage of destitute in the area is still about 10%. The ability of the poor and very poor to move beyond a certain threshold of asset viability before the next drought strikes is limited, and this has been the case for many households since at least the 1984 famine. Indeed, many poor households that show incredible resourcefulness have reached a type of low-level poverty equilibrium where they move between very low levels of asset ownership. Despite intermittent shocks (droughts) they return to their pre-existing asset levels. Because droughts have a greater immediate impact on the assets of the poor, the poor are caught in a situation where once they re-build their assets the next drought

wipes out the gains. These households seem caught in a cycle of impoverishment or a poverty trap, that is at least partially related to the leveling effect of recurrent disasters.

3. Effects of Social Networks and Institutions on Drought Recovery in South Wollo

Analysis of the data shows that the asset recovery is influenced importantly by the extent to which households are embedded in institutional as well as informal social relationships. Our findings show that social capital is an important variable in explaining why certain households recover their assets after droughts, while others do not. A differentiation is made in the study between local forms of social capital, that is, social ties that are mostly limited to others within the village, and

“bridging” social capital that reflects how far-flung these social connections are. Holding past assets constant, both measures have a positive effect on current asset levels, directly, as well as indirectly, by mitigating the impact of income shocks on livestock capital. In assessing the indirect effect, we focused on examining the role of local relationships on individually experienced shocks and of distant relationships on covariate shocks, as it is less likely that covariate shocks can be mitigated as effectively by ties with those who are bound to be affected as well.

With risk (weather risk is but one type of risk) being an integral part of rural life in Ethiopia and many rural areas of other poor countries, and with very limited ways to insure against risk, it is important to gain a better grasp of how social connectedness contributes to protecting assets from erosion by shocks. Our results were not necessarily expected, since in earlier qualitative work in the area informants suggested that severe food shortages from droughts have themselves led to an erosion of social institutions as participation declined when households were searching for ways to economize. There well may be a threshold degree of exposure up to which being able to draw on others’ help can be mutually beneficial, but beyond which social mechanisms break down. Explicit attention to these issues in empirical projects is warranted to get a richer understanding of the role of social capital as a risk-coping mechanism.

4. Factors Affecting Micro Enterprise Performance in South Wollo

Micro enterprises in South Wollo are generally characterized by low productivity and economic stagnation. With few other options, small-scale enterprises (especially petty trading) become a means of self-employment at relatively low wages. The capital requirement is very small and the technology is minimal and easily accessible in most cases. The primary aim is to maintain the same level of operation, with little business and entrepreneurial innovation.

The lack of purchasing power among the local people is cited by the majority of enterprise owners as a major bottleneck. The main customers of micro-enterprises in small towns are local farmers and town dwellers. Any improvement in

agricultural incomes would thus enhance local demand for goods and services, which could stimulate enterprise development. There must also be serious thought to how to raise incomes of town residents either through government transfers or new sponsored activities.

The major determinant of business performance is the enterprise’s level of working capital. The lack of financial resources is a critical limiting factor. Because of expanded market opportunities, larger urban centers are associated with enterprises that have higher sales than in small towns. The presence of mass media, banks, and business licenses all encourage operators to perform more efficiently than other firms. However, the overall business



Harvesting teff in Ethiopia. Photo by Peter Little.

environment is so weak that human capital and physical infrastructure do not seem to have significant impacts.

To allow small enterprises to grow and innovate, government policies should encourage, not discourage, the growth of small towns if the goal of rapid local and regional/rural development is to be achieved. Micro enterprises in small towns need government support to reverse the stagnation and instill dynamic growth. A comprehensive package of support is necessary given the diverse and complex problems of the sector in South Wollo and Oromoya zones. These interventions should address both the supply and demand side of business development. Undoubtedly, adequate provision of credit should be the key component of any stimulus package. Ways must be sought to ensure that small

enterprises benefit from the services of formal commercial banks, specialized banks and micro-finance institutions. Among other critical components for enterprise development are extension services and information provision, consultancy, training, research, and prototype business development.

A major prerequisite for the introduction of business support programs is institutional capacity at the local level. The government has created

several institutions, including Trade and Industry Bureaus and Agency for Micro and Small Enterprise development, to implement its support programs. Nonetheless, these and other similar institutions are noticeably absent at local levels. Policies and support measures announced at federal or regional levels often fail to reach the intended targets due to missing institutional links at the local level.

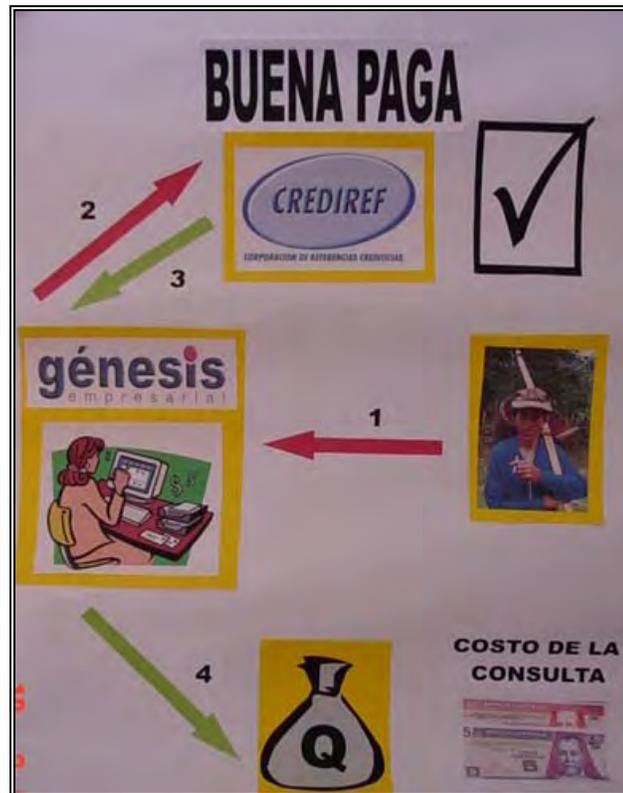


An Ethiopian family. Photo by Peter Little.

CREDIT-REPORTING BUREAUS AND DEEPENING FINANCIAL SERVICES FOR THE RURAL POOR IN LATIN AMERICA

Global Constraint 1: *Ineffective Agricultural Resource Use in Post-Reform Economics*

Global Constraint 3: *Poverty and Food Insecurity Traps*



Training material developed for group training on credit reporting system, Genesis, Guatemala

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<http://www.basis.wisc.edu/credit.html>

PROJECT PROFILE

Lending is an information-intensive activity. The ability of lenders to verify bad borrowers and the outside indebtedness of borrowers is a precondition for liquid capital markets. Two factors currently coinciding in most Latin American countries bring together new sources of information with new sources of capital: namely, the rapid growth of public and private credit bureaus in combination with a tremendous extension of lending capital to the poor driven by the new lending technologies of microfinance. Due to these two factors, not only is there a huge host of mostly semi-poor borrowers who have, in the past decade, established experience and reputation with microfinance lenders, but private capital markets are increasingly extending loans to poorer clients. Credit reporting is a natural mechanism through which economic mobility may be enhanced.

Peru was selected as a country of focus for research because of the presence of a resurgent smallholder agricultural lending sector side-by-side with an active microfinance sector. In rural areas, a multiplicity of credit-offering agencies have emerged, making it a natural study for the process by which information moves between these sectors. This summer will see the entry of 14 small rural microfinance lenders into the bureau used by the large regional agricultural lenders, and this will form the center of our study in the country.

Guatemala was selected because a confederation of the country's major microfinance lenders instituted a new credit bureau one year ago. Using Genesis, an institution that joined in the first tranche along with other lenders soon to join this bureau, we can use dynamic changes to identify impact. We formed extensive contacts in Guatemala that allowed us to assemble unique datasets for the analysis of information sharing in Guatemala.

Our extensive data on clients of several of the largest microfinance lenders provide us with the ability to measure important, non-experimental components of client composition over time. We also are organizing an increasing battery of experiments in Guatemalan microfinance markets. This combination of several forms of experimental identification with extensive client data provides a rich laboratory for understanding policy impacts.

Through our theoretical work, we have isolated the components of the impact of information sharing that pass through knowledge held by the borrower, and those that pass through knowledge held by the lender. Our experiments are focused on allowing us to isolate these effects empirically as well. We hope that a combination of quasi-experimental policy implementation, policy experiments organized by us, and high-frequency panel data on a very large group of borrowers will allow us to make fine-grained policy recommendations, rather than simply testing a lump-sum policy experiment.



Support

BASIS CRSP core funding. Add-on: FAO Latin America Offices.

Outputs

de Janvry, Alain, Elisabeth Sadoulet, Craig McIntosh, Bruce Wydick, Jill Luoto, Gustavo Gordillo, Guilherme Schuetz, Martin Valdivia, Jonathan Bauchet, Carlos Enrique Herrera, and Rémy Kormos. 2004. "Credit Bureaus and the Rural Microfinance Sector: Peru, Guatemala, and Bolivia." Madison: BASIS CRSP, University of Wisconsin-Madison.

Databases

Three-year panel of 60,000 clients of Genesis, and a ten-year panel of 7,000 clients of Fe y Alegria, two major Guatemalan microfinance institutions. 70,000 current and past Genesis clients from Crediref, the national credit reporting bureau. Screening forms of all 2,000 new clients accepted for loans by Fe y Alegria. Branch level detail of repayment performance and borrowing of all clients in the 41 *sucursales* of Genesis.

I. ACTIVITIES 2003-04

A. Accomplishments

1. Guatemala

We received full client databases of Genesis Empresarial and Fe y Alegria, two major Guatemalan microfinance institutes (MFIs). Through agreements with microfinance umbrella organization, we gained access to the data Crediref (a new credit bureau) has on the records of clients from these organizations. Two of our experimental projects have completed their first phase.



Training of Genesis group loan clients on how credit reporting system works, Guatemala

Training Genesis Group Loan Clients on How a Credit Reporting System Works

We completed 90% of the trainings of group clients in Genesis Empresarial, one of Guatemala's largest microfinance lenders. Training was designed to impart the maximum information to clients, many of whom are illiterate. The administration of the trainings was randomized in a stratified fashion that allows us to measure not only the direct effect of the trainings, but the way in which information spills over to untrained clients. The training has been accompanied by a testing regime that allows us to make direct and indirect measurements of what was learned through the training.

Impact of Credit Bureaus in Screening New Clients

Working with Fe y Alegria, a medium-sized Guatemalan microlender, we will use quasi-experimental identification to measure the impact on client admittance of the use of a bureau in screening new clients. Because this organization began using the bureau one year ago, we can use their screening and admittance forms for the past two years to understand how the availability of the new information source altered their acceptance process. We have scanned all of the screening forms for the whole organization for two years, and are in the process of entering these forms into a database which can be used for analysis.

2. Peru

A plan to work extensively in the Quillabamba valley has been undermined by a unique history of politically coordinated defaults in the region and by other reasons. However, we have one project underway in Peru.

Analysis of ex-FINCA Clients in Ayacucho

Here we found a way to connect with a large survey conducted by our collaborators in 2001, and to utilize a quasi-experimental identification on how the increasing use of the credit bureau in Ayacucho has altered the experience of clients leaving a pre-existing MFI.

B. Key Findings

1. *The impact of credit bureaus can usefully be decomposed into a screening effect and a moral hazard effect.* The former operates through the mitigation of adverse selection in client composition. The latter takes place once clients internalize the new incentives imposed by the bureau.

2. *Credit bureaus have a significant impact on borrower performance.* This is true even when they operate solely through screening (mitigation of adverse selection). This has been verified by utilizing the quasi-experiment of Genesis' staggered entry into the Crediref bureau. Using group-level information we calculate that entry has no discontinuous impact on subsequent repayment, but that the treatment effect becomes significant

within several months; within six months branches using the bureau have arrears that are 2-2.5% percentage points lower, a 20% decrease. This effect is found despite the almost total lack of information among clients about the use of the system, and hence does *not* include the moral hazard component of the treatment effect.

3. *Lenders want to participate in bureaus in order to realize benefits yet fear doing so because they perceive that the bureau will be used to poach their best clients.* For these reasons, several phenomena are observed when bureaus are introduced to microfinance in most Latin American countries:

- Because the downside of bureau participation is poaching from “higher-tier” lenders, institutions are very willing to share data with smaller, less

formalized lenders but often wish to keep the microfinance bureau separate from the larger bureau covering formal-sector banks in order to prevent the latter from gaining access to client data. This dynamic takes place despite the fact that bureaus are a natural monopoly.

- The structuring of credit reports by bureaus is often inhibited by these fears, meaning that organizations agree to a system that reports far less information to collaborating institutions than is in fact present in the system. Thus while each participating institution gains far less than they would from a more extensive reporting regime, they are willing to bind themselves into this contract because it also protects them from poaching.



Interviewing a family in Tzucubal, Guatemala

II. WORKPLAN 2004-05

A. Research Plan

1. Guatemala

The first two projects detailed below are ongoing from year one; the remaining Guatemalan projects are new.

Training of Genesis Group Loan Clients

We will return in August 2005 to retest clients and collect the final round of data. Subsequent to training, we expect a difference to emerge between treated and controls, and we expect that difference to disappear over time as the natural process of information accumulation eventually reveals everything taught in the class. Several separate hypotheses can be tested from this setup:

1. What is the first-order effect of the information-sharing intervention?
2. How much information have clients accumulated about the degree of information-sharing by the time the training begins?
3. How does the behavior of more informed agents differ from the control? That is, what is the second-order effect of borrower response to information-sharing?
4. How long does it take for the controls to catch up to the treatment? That is, what is the natural speed at which clients of different kinds in different institutions acquire the full information set about how their information is used?
5. What is the rate at which informational spillovers from the treatment to adjacent controls occurs? What are the descriptors of “proximity” that best describe how these spillovers occur?

August 2005: Re-test all tested groups to give a measure of changes in information (Rosada/Romero).

September: Receive a second tranche of data from Genesis that will allow us to test the impact of the trainings on outcomes.

Impact of Credit Bureaus in Screening New Clients

This study will measure the impact on client admittance after a bureau screens new clients.

September-November 2004: The data entry of Fe y Alegria’s data will be completed (Rosada/Romero).

December 2004: Statistical analysis of data will be conducted and results reported to FyA (McIntosh/Sadoulet/de Janvry).

Showing Credit Report Forms to Individual Clients for Continuation of Training at Genesis

This project is to extend the Genesis training project to individual clients. Individual clients (who are much more likely to be literate than communal bank clients) will be shown a simplified copy of their credit reports when they come to Genesis for a new loan. This methodology is cheap and easy to administer to individuals, and is a very direct way of studying the effects of information on client behavior. The project would proceed as follows.

Currently, we have divided the 38 Genesis *sucursales* into seven “similar” groupings, from which we have chosen one treatment and one control *sucursal* for the trainings. We have selected seven new *sucursales* in which the credit reports will be shown to all individual borrowers.

We randomly select the percentage of clients in each treatment branch who will be shown their reports; then, given these percentages, we randomly select the clients to be treated.

The credit reports currently provided by Crediref are difficult to read, and require some expertise on the part of credit officers. We will write computer code that will take the output from Crediref and prepare an easy-to-read report that presents selected elements of the credit record.

The software for preparing the simplified reports will sit on a computer at Genesis. Each month, we prepare the reports for the clients to be treated that month and, using the Genesis mail system, the reports are sent to the *sucursales* in envelopes labeled by credit officer.

We repeat this system each month for six months, so each selected client should have been shown at least one report.

At the end of the experiment, we will perform an analysis that looks at the following:

- the effect of the reports on client behavior as borrowers, both inside and outside of Genesis (based on observed credit behavior)

- the effect of the reports on the information known by clients (treated and controls) over the working of Crediref (based on questionnaire administered to clients some six months after the end of training)
- the indirect spillover effect of the reports on individual clients in treated branches who were themselves not shown the reports (based on observed credit behavior).

September 2004: Preparation of list of treated and non-treated individuals (random draw from branch clientele) (McIntosh).

September-October: Preparation of software to generate simplified credit report for Genesis clients (Rosada/Romero/Polanco).

October-November: Preparation of printed report format for client inspection (Romero/Salguero).

December 2004-May 2005: Printing and distribution of reports to Genesis credit officers (Rosada/Romero).

September: Receive a second tranche of data from Genesis, which will allow us to test the impact of the reports on outcomes.

Credit Officers' Use of Different Types of Information in Screening, Genesis. A Simulation Exercise

In screening new clients, credit officers using Crediref have access to four kinds of information:

- application form used by their institution, and a quick personal interview
- a check within the data of Genesis itself to verify that the client has not taken a previous bad loan from Genesis
- use of Crediref (positive and negative information from the microfinance sector) and *Informacion Publica* (negative information from a broad range of commercial sources)
- a visit to the home and business of the client; this information is qualitative and it is likely that even the credit officers themselves will have difficulty explaining their weighting system.

We wish to understand how Crediref alters the screening process, and who is helped and who is hurt by the presence of this information. We will work with assessors from both Fe y Alegria and Genesis for this experiment.

We hope to work with 15-20 credit officers who will participate in *both* stages described below.

Field stage. At present, the cheapest forms of information are observed first, leading up to the field visit, which is the most expensive step of the screening process. Observing a client at any stage of the screening directly implies that they have passed through the preceding stages. Without intervention, we observe only that a client was accepted, in which case all information is present, or that they were rejected.

We will ask participating credit officers to record for each rejected client the exact reason they were rejected, and also to keep all paperwork used in processing the form up to the point it was rejected. This allows us to use the characteristics of the credit officer and the first-stage client information from the screening forms to perform a series of conditional probits on the determinants of passing through each successive phase of the screening.

Game stage. We bring all participating credit officers to Guatemala City. We will have prepared a set of client files (30-40) that include: (1) the application form used by the lending institution and a transcript of the initial screening interview, (2) a report on other lending from inside Genesis, (3) the client's credit report from *Informacion Publica* and Crediref, and (4) a report on the main qualitative features that agents typically collect in their own personal interviews with a client. These may be real or simulated files, but they will be prepared so as to resemble as closely as possible the range of real applications faced by credit officers. In addition, we will have a survey form for the officers, recording characteristics, such as age, gender, years of experience, and education.

The purpose is to understand how the *ordering* of the information alters the impact that an additional piece of information has on the decision-making process of the credit officers, conditional on the information set observed previously. We will ask each of the officers to evaluate this group of application files, and the ordering of the information will be randomized. In addition, item (3) above will be broken into positive and negative information, and this ordering will be randomized too. Officers will record what they would have done with the application at each stage along the way. The extent that one kind of information makes another kind irrelevant will be observable.

We will then perform the following analyses:

- Which kinds of clients are hurt/helped by the revelation of negative information?
- Which by positive information?
- Which by the use of Crediref as a whole?
- How much more sensitive are screening outcomes to Crediref when personal information than when no personal information is available?

November 2004: Prepare forms to be filled on each client, with recommended outcome at each stage of the decision process (McIntosh/Rosada/Romero).

December 2004-June 2005: Inform the COs and organize the experiment. Collect forms each month (Rosada/Romero).

November-December 2004: Prepare the case study client files, including personal assessments (Rosada/Romero).

February 2005: Organize and implement the experiment (Rosada/Romero/Sadoulet/de Janvry).

March: Report and analyze outcomes (McIntosh/Sadoulet/de Janvry).

Impact of Credit on Volatility and Covariance of Agriculture vs. non-Agriculture Returns

Two reasons are usually given why microfinance institutions will have a difficult time lending to agriculturalists. First, returns are highly irregular through the year due to the long time between planting and harvest seasons for most staple crops. Second, since much of the volatility in agricultural output comes from weather, the returns of farmers within a given area are likely to be highly correlated and thus they will be unable to insure each other.

In recent years, however, there has been a dramatic increase in the prevalence of microfinance lending to high-turnover agricultural activities such as the raising of pigs and chickens, eggs, lettuce, and mushrooms. These activities have no seasonality, can be rotated quickly, and thus are able to generate the kind of rapid turnover needed to repay a microfinance loan.

This project will test whether the returns to this kind of peri-agricultural activities display the problems described above, and if they are shown to in the absence of credit, whether the provision of credit to such activities alleviates these problems. We will utilize an experimental application of credit, combined with a large baseline survey and

rapid resurveying of the study households for a period of six months.

Stages. ACT should identify a promising area that will have *both* agricultural and non-agricultural lending, and into which they would have planned to expand in 8-10 months in the absence of the project. We will then cover all of the staff costs they incur in going to the area, recruiting and screening new clients, and putting together a pool of, say, 400 potential borrowers. These should be roughly half agriculture and half non-agriculture loans. It is likely that ACT will have to be straightforward when screening clients about the fact that there will be some kind of lottery, and that some of them will receive loans immediately and others after several months. Because we wish the operations of ACT with the treatment clients to be as similar as possible to their normal operations, the best-case scenario would be a new region that is relatively close to an existing branch, so that we could use existing credit officers and infrastructure to administer the new loans.

We will then hire a surveying firm to administer a baseline survey to the entire study group of the approved clients. This survey will be relatively large and can be a fairly typical household-level credit survey. Participants should be asked to keep a weekly record of income and expenditures over the course of the study period. GIS data can also be collected on all the clients so that we have locations of households, places of work, and fields.

We will randomly sample half of the approved clients, and they will be administered loans in whatever fashion ACT would normally have administered them.

At several intervals during the next six months, surveyors will return to all of the households to measure the volatility and pattern of income and expenditures. Six months after beginning the loans, a balloon payment will be made to participating credit officers contingent on the fact that the controls have been maintained. This can be verified using the final survey from the experimental period.

Several questions can be addressed with the data:

- Is it true that agriculture activities have a higher temporal variance than non-agriculture activities? If so, is it also true for agropecuerial activities?
- Is it true that the spatial covariance of returns are higher in agricultural activities?

- How do the answers to the above two questions change when households have access to credit? What are the risk-reducing benefits of credit in these different kinds of activities?
- Where do we see the highest returns to investment? (The answer to this question is going to be approximate and very hard to calculate.)
- What are the ex-ante determinants of high-return investments? What are the determinants of default on loans?
- What is the role of gender in determining who applies for which kind of loan, and how does intra-household allocation of resources change depending on who takes the loan?
- What are the different strategies employed by different households for maintaining cash flow in the household, how do these strategies change when households get access to credit, and how do the strategies differ according to the term and repayment frequency of the loan?

November-December 2004: Sign agreements with ACT, employ the necessary staff to begin screening process of potential clients (McIntosh/Rosada/Romero).

January 2005: Perform the baseline survey of the treatment and control groups (INCAP/Rosada/Romero).

February 2005: Disburse initial loans.

March, May, July: Perform repeat surveying of treatment and control groups (INCAP/Rosada/Romero).

August: Conclude the experiment, begin analysis of programs (McIntosh/Sadoulet/de Janvry).

September: Return to get data on control groups once loans have been issued to all clients.

2. Peru

Analysis of ex-FINCA Clients in Ayacucho

First, we will conduct a detailed dropout survey of all clients to have left the organization since the previous survey, which will focus on their subsequent credit experiences, how they got access to loans, and how their reputation worked for or against them. In addition, we will go through the administrative records of FINCA to verify whether

the clients left voluntarily or were ejected. Finally, we will conduct an exhaustive survey of the other credit providers in Ayacucho, with the goal of establishing a detailed timeline of the intensity of use of the credit bureau in the community. By combining these sources of data, we can measure not only the direct effects of FINCA's usage of the credit bureau but also the indirect effects of the entrance of other lenders on credit access for different types of borrowers.

October-November 2004: perform individual-level dropout surveys (Valdivia/McIntosh/Karlan).

December: perform survey of other lending institutions in Ayacucho (Valdivia/McIntosh/Karlan).

January-March 2005: perform analysis of data (Valdivia/McIntosh/Karlan).

Construction of a Dataset to Study Overlap in the Absence of Bureaus

In collaboration with the umbrella organization of microfinance lenders in Peru, and the *Mesa de Bancos Comunes* (a network of about 16 MFIs that use the village banking methodology in different parts of the country) we are working to sign agreements that will give us access to institutional data among lenders who *do not* currently share positive information with anyone. We are currently following the coordination to define formal engagements with 6 MFIs. This dataset would permit us to measure the counterfactual level of multiple borrowing in the absence of information sharing. Also, since it appears likely that these organization will soon begin to share positive information through INFOCORP, this dataset will serve as a baseline for future measurement of the impact of information sharing.

January 2005: Obtain datasets from collaborating institutions (Valdivia/McIntosh/Karlan).

February-May: Perform the merging and assembly of the datasets, which will allow for estimation of the prevalence of multiple loan-taking and other repayment problems (Valdivia/McIntosh/Karlan).

June: Report back to collaborating institutions, give policy recommendations on how to optimally share information in future (Valdivia/McIntosh/Karlan).

STRUCTURE AND PERFORMANCE OF RURAL FINANCIAL MARKETS AND THE WELFARE OF THE RURAL POOR

A Comparative Study in Peru and Mexico

Global Constraint 1: *Ineffective Agricultural Resource Use in Post-Reform Economics*

Global Constraint 3: *Poverty and Food Insecurity Traps*



Harvesting alfalfa outside of Concepción in the Mantaro Valley, Peru
(Photo by Stephen Boucher)

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<http://www.basis.wisc.edu/finance.html>

PROJECT PROFILE

Financial market liberalization has been a core component of the market-oriented reforms undertaken throughout Latin America in the 1980s and 1990s. The structure and performance of the financial markets that emerge in the wake of these reforms has important implications for poverty reduction. We take an integrated approach to the analysis of rural financial markets in their three main capacities: financing productive investment, facilitating risk management, and promoting savings.

First, we are constructing a detailed, household-level panel data set to track consumption, wealth, and investment portfolios over time and to understand the evolution of these variables in relation to household participation in various niches of financial markets. This will help us understand the barriers different types of rural households face in accumulating assets and escaping poverty.

Second, we will identify supply side constraints by conducting surveys with formal and informal lenders. One primary objective of the lender survey is to understand how lenders manage the risk of contractual default. The ability of lenders to reduce the contractual risk facing borrowers is crucial since many rural households may refrain from participating in credit markets—and thus forego productive investments—for fear of losing collateral.

In both Peru and Mexico, small farmers—*ejidatarios* in Mexico and agrarian reform beneficiaries in Peru—control a large fraction of each country's high quality, irrigated land. Among Latin American countries, these two countries hold out the possibility for a model of agricultural

development in which small farms play a leading role. The types of financial markets that are emerging will determine, to a large degree, which rural households will be able to accumulate and realize the full potential of their physical and human capital. The research will help policymakers identify specific barriers to household participation in financial markets and enable the design of policy to enhance efficiency and equity in rural areas.

One important difference across the two countries is that Mexico is currently implementing a series of financial sector reforms that deal specifically with the wide variety of informal financial institutions that provide services primarily to the poor. The Popular Savings and Credit Law (*Ley de Ahorro y Credito Popular*), passed in 2002, will enter into force in June 2005. The law seeks to extend coverage of the state's formal regulatory framework to the heterogeneous set of "Cajas Populares," or informal savings and loan institutions that proliferated in the past five years. This policy seeks to accelerate savings mobilization by enhancing deposit security, facilitate the provision of new financial services such as remittance transfers to areas underserved by the formal financial sector, and increase access of the poor to credit.

Several regions were selected to capture heterogeneity in primary crops, climate, and irrigation infrastructure—three main sources of agricultural risk. In Peru, the sample is divided between the northern department of Piura and the Mantaro Valley in the central highlands. The Mexican sample is divided between the central state of Guanajuato and the southern state of Oaxaca.



Support

Core funding: BASIS. Add on funding provided by the Center on Rural Economies of Asia and the Pacific at UC-Davis. Additional grants to support fieldwork and dissertations provided by the Giannini Foundation, the University of California Faculty Research program, the Social Science Research Council, UC-Mexuc, and USDA.

Outputs

Boucher, Steve and Brad Barham. "Land Market Liberalization and Wealth-differentiated Land Access: Panel Evidence from Honduras and Peru." Presented at the American Association of Agricultural Economics meetings in August 2004. Peruvian database at: <http://perudata.ucdavis.edu/>

I. ACTIVITIES 2003-04

A. Accomplishments

1. Data Collection in Peru

Household Survey

Enumerators were trained and the second round of the survey was applied October-December 2004. Two visits were carried out with an interval of two weeks with each household. The re-survey rates are summarized in Table 1. In Piura, 96% of the 2003 households were relocated and resurveyed while in the Mantaro Valley 95% were resurveyed. In Piura, sample attrition resulted primarily from death and subsequent dissolution of the household. This is because the Piura households were originally sampled in 1997, so that by 2004, the household heads were on average quite a bit older than the Mantaro Valley sample.

In the Mantaro Valley, several households migrated. Given the proximity to and commercial integration with Lima, this is not surprising. Also, the Ministry of Agriculture carried out a farm survey to evaluate the land titling program during the same dates as our survey. Several households refused to participate in our survey because they

Table 1. Summary of sample size

Region	Survey Type	1997	2003	2004
Piura	Household	547	504	486
	Community	0	0	60
Mantaro Valley	Household	0	326	309
	Community	0	0	80

had already participated in the Ministry's survey. Nonetheless, we were pleased with the field team's thoroughness and tenacity in reaching households. One innovation this year was to mark the household's residence and primary agricultural plot with GPS. This will permit us to link to governmental data bases—such as soil quality—and to incorporate spatial considerations into the

analysis. The data set is now posted on the following website: <http://perudata.ucdavis.edu/>.

Community Survey

Price and infrastructure (physical, social and financial) data were collected from key informants (usually the local elected officials) and from market vendors. As the sample frame was area based (as opposed to household based), our clusters are relatively concentrated in terms of agricultural land but much less so in terms of community of residence. The survey team carried out 140 community surveys at the village or *centro poblado* level. Data are being cleaned and should be available for analysis by February 2005.

Completed Papers

Drafts of two papers were completed. The first is a theoretical paper on the role of risk in determining sectoral choice (formal versus informal) in credit markets. Entitled, "Risk, Wealth and Sectoral Choice in Credit Markets," it was submitted to the *Review of Development Economics*. The second is an empirical paper examining the relationship between credit constraints and participation in land rental markets. Entitled, "Land Market Liberalization and Wealth Differentiated Land Access: Panel Evidence from Honduras and Peru," it was presented at the American Association of Agricultural Economics meetings in August 2004.

2. Data Collection in Mexico

We continued to experience challenges getting the Mexico fieldwork off the ground. The first round of the household survey was not undertaken. An unexpected benefit of the delay has been the connection the team has made with a government-led research project on financial markets that is strongly complementary to the BASIS project.

Our original plan to carry out household surveys was to work with research teams composed of professors and students from local universities in Sinaloa, Guanajuato, and Oaxaca. This methodology was meant to mimic the strategy used in the National Rural Household Survey carried out by UC-Davis and Colegio de Mexico in 2002.

By late winter last year, it became clear that we needed to alter this strategy. First, researchers at the universities in Sinaloa and Guanajuato were unable to commit the time and student resources required for carrying out the surveys. Second, analysis of the National Rural Household Survey data revealed significant quality problems in the data collected by

those teams. In sum, it became clear that in order to work with the local teams, we would have to invest significant time and monetary resources into revamping the field team and methodologies.

See the workplan below for details on how we modified the fieldwork strategy and the motivation for the change.

II. WORKPLAN 2004-05

A. Research Plan

1. Peru

The primary tasks to be accomplished in the upcoming year include implementing the second round of the household survey and pushing forward data analysis and writing.

Household Survey

Data entry and cleaning has not been smooth. Several glitches in the data entry program were compounded by single entry of the data, even though we had contracted for double entry. As a result, the cleaning process was long and costly. The final round of cleaning has been completed, and we are now ready to begin analysis.

Community Survey

Higher than anticipated costs for the household survey forced us to cut costs elsewhere. We took the decision to carry out the community survey only once—in the final year—over the course of the three-year project.

Lender Survey

This survey was applied to 35 informal lenders in Piura. During the upcoming year, the survey will be applied to as many of the informal lenders identified in the household survey as possible. The primary limitation to the lender survey is informal lenders' refusal. In Piura, one of the causes of rejection is the sensitivity of rice millers (who are a primary source of informal funds) to divulge economic information. Milled rice is subject to a value added tax. As a result, millers who purchase, mill and resell rice are subject to this tax. Most millers, however, attempt to avoid the tax. Periodic inspections by tax agents lead to suspicion. We will address this issue by continuing to build relationships and confidence with the millers so that they are willing to discuss lending technologies.

Design 2nd Round Household Survey (September 2004)

Design pre-printed formats. In order to aid the enumerators in their second visit, specific data from the first round will be printed on the second round survey. For example, the household roster will be

pre-printed so that the enumerator can confirm and update data from the previous year. This both allows for correction of suspect data from the previous year and reduces the time required to record the updated information.

Design follow-up module for last year's credit contracts. We are designing a new module to understand the degree to which contracts are "state-contingent." We are especially interested in loans that were not paid on their due-dates. We will ask the reasons for this and the actions that lenders took (none, foreclosure, re-finance with penalty).

Design new risk module. During the 2003 cropping year, both survey regions in Peru suffered a major drought. This module will explore the information households had regarding the drought, the strategies they employed to deal with the drought and the economic impacts they suffered.

Enumerator training (October)

We will have a workshop for the enumerators in Lima. As there will be some turnover in enumerators and field supervisors, the same procedure as Year 1 will be followed. Five days of classroom training will be followed by three days of field application.

Data collection October-December)

The household surveys will occur during this period. Similar to last year, we will install a regional supervisor/ coordinator in each region.

Data entry (December)

Last year, data entry was carried out contemporaneously with data collection in each region. While this allowed for very quick initial entry, the quality of the data entry was very low. Ultimately, this cost us huge amounts of both time and money in data cleaning. There were two main problems. First, local data enterers with less experience and of lower quality were hired. Second, there were serious coordination problems in across the two regions. As a result, this year we have decided to carry out all data entry in Lima.

Lender survey (December 2004-July 2005)

Surveys will be carried out with both informal and formal lenders. These will include both lenders

identified in the household survey as well as other lenders identified in the course of the interviews. This year, a new module will be applied to the formal and semi-formal institutions. This module will collect recall data for the last ten years regarding loan portfolio and default rates for each institution. It will also ask lenders about the primary risks (climatic, price, political) that threaten their portfolios and the means they use to mitigate them. A current area of policy debate in Peru is the feasibility of providing index based insurance to the agricultural sector, either to financial institutions to insure their portfolios or directly to farmers. This historical data on portfolios and risk, accompanied by the household data on shocks, will be useful to policymakers as they evaluate the feasibility of this type of insurance. The two regions of the survey are of special interest to policymakers as they are regions most strongly impacted by El Niño events which, due to the availability of surface water temperature measures, is one of the potentially insurable events.

Planned Papers

The following were planned last year but not completed. They will be our priority papers for this year.

Descriptive paper on credit market structure: Demand side. This will use the first round household survey data to describe the structure of financial contracts in Peru, the degree of participation and rationing among sample households and the patterns of sorting and matching across different borrowers and lenders.

Sources of risk paper. This will be a detailed analysis of the sources of risk facing rural households. This work dovetails with a current project directed by the Office of Agrarian Information of the Ministry of Agriculture. In October of 2003, Office of Agrarian Information included a brief module on agricultural risk in their annual national agrarian survey. This is the first step in the Ministry's effort to study the possibilities of implementing new forms of agricultural insurance in Peru.

Panel econometric analysis of rationing mechanisms and productivity. Last year, 500 of the 550 households surveyed in Piura in 1997 were re-surveyed. We will use panel econometrics to examine the determinants of rationing and the

impact of credit rationing on investment and productivity.

2. Mexico

The main activity for the 2004-05 year is to carry out the first round of the household and community surveys and begin data analysis and writing.

As mentioned in the activities section above, we modified our fieldwork strategy. The primary change is that we will restrict household surveys to the state of Oaxaca. Within Oaxaca we will work in the following three regions: Sierra Mixteca (Western Highlands), Sierra Sur (Southern Highlands), and Sierra Mazateca (Northern Highlands). These are highly marginalized areas dominated by indigenous communities. In total, we will carry out 800 surveys across the three regions.

The reasons for selecting Oaxaca are as follows. First, we continue to have a good relationship with the local research team from the Instituto Tecnológico de Oaxaca. A professor of Development and Planning at Instituto Tecnológico de Oaxaca, has three graduate students that are interested in developing theses in topics related to migration, risk and financial markets. These three students will integrate themselves into the field research team as regional supervisors. Second, by restricting the surveys to a single state, we will reduce costs, especially of coordination of supervisors. Third, there is sufficient heterogeneity of farm size, tenure status, agro-climatic risk, and financial market development across these three regions to permit testing of the research hypotheses. Fourth, the prevalence of indigenous communities and both national and international migration in Oaxaca will allow for interesting analysis of the role of social capital and migration in financial market access.

Oaxaca is an excellent location to evaluate the impacts of the new Popular Savings and Credit Law (*Ley de Ahorros y Crédito Popular*). Oaxaca has witnessed a rapid expansion in informal financial institutions such as *cajas populares*, *microbancos*, and *cajas solidarias* since 2000. In an effort to protect depositors and promote the financial soundness of these institutions, the government of Mexico passed the new law in 2002. The law requires these institutions to meet minimum capital and membership requirements and develop standardized accounting practices. To monitor and

enforce the requirements, institutions are required to join a Federation—a private institution that itself is supervised by the Bank Superintendency—that will serve as the supervisory agent and, if requested, also as consultant to the financial institutions. The government hopes that this “formalization” of the slew of informal financial institutions will enhance access of the poor to services offered by the formal financial sector.

The government is carrying out a large scale panel survey of households and communities in 8 states of Mexico in order to evaluate the changes in household access to financial services associated with the new law. The survey is being carried out by BANSEFI (Banco de Ahorro Nacional y Servicios Financieros) with consultation from the Ministry of Agriculture. The total sample size is 5,600 households of which 1,400 come from rural areas. Households will be surveyed annually during five years with the first round having been completed in July of 2004. BANSEFI defined rural, however, as communities with fewer than 20,000 inhabitants. That survey will thus have minimal representation of the most marginalized rural areas. Since the target population of our survey is households in communities with fewer than 2,500 inhabitants, we will be able to provide a better picture of access to financial services of this population which is of special interest both the BANSEFI and the Ministry of Agriculture. We have begun conversations with representatives of BANSEFI and the Ministry of Agriculture that are responsible for the government survey—to explore potential means of collaborating, including sharing data and jointly carrying out analysis. Given the strong complementarities and common methodologies of the two projects, we are hopeful that this collaborative relationship will develop quickly.

Finalization of Household Survey (September 2004)

In June/July of 2004, we field tested the household survey in two of the target regions in Oaxaca. Two tasks remain to finalize the survey. First, we are incorporating the insights gained from the field test—primarily the land tenure and socio-cultural specificities of the indigenous communities in Oaxaca. Second, we are modifying the format of the survey to make it more closely resemble the survey form utilized by the BANSEFI survey.

Final Field Testing of Household Survey (November 2004)

We will supervise the final field testing of the household survey in Oaxaca. The field testing itself will be carried out by a local survey firm. We have opted to hire this survey firm both because of the difficulties we have faced in putting together a local team of enumerators and supervisors and because it carried out the BANSEFI survey. This will again promote compatibility across the two data sets. The November field test will be carried out with 40 households and will provide a trial run from data collection through data entry. On the basis of the field test, the final budget will be negotiated and the precise sample size will be determined.

Selection of sample communities and households (October-December 2004)

The sample will be divided into treatment and control communities. Treatment communities are those with relatively high access to formal financial services, while control communities have relatively low access. We are discussing with the survey firm and BANSEFI both the appropriate conceptual definition of treatment versus control as well as strategies for identifying the communities. The three strategies we are considering are:

Household census. In this strategy we would select communities and carry out a brief survey of all households in each community that asks how many household members are currently members of financial institutions. Based on percentages of households with members, we would then classify communities into the treatment versus control groups (for example, communities with more than 20% of households that have a member would be classified as treatment communities.) While this is the ideal strategy, it is likely to be prohibitively costly, especially since we want to include at least 30 communities in the survey.

Secondary data. The second strategy is to use existing data at the community level to classify households into treatment versus control groups. We are currently pursuing access to the community census carried out by the government educational subsidy program *Oportunidades* (previously *Progresá*) to classify communities as qualifying or not for the program. If this census is sufficiently recent in communities in our target areas and if it has information about participation in financial

institutions it would serve the same purpose as the household census strategy.

Interviews with financial institutions. The final strategy is to interview managers of the financial institutions that operate in each region. We would ask them to provide the number of members they have in each community and, after crossing the information provided by each institution, we would classify the communities into control and treatment groups. The main problems associated with the strategy are that institutions may be unwilling to share this information and, even if they do, they may require a long time to prepare the information.

Enumerator Training (January 2005)

As in Peru, enumerator training will be split into five days in the classroom followed by five days in the field.

Household data collection (January-March 2005)

We will supervise the firm that will carry out the data collection. In addition, three students from the Insituto Tecnológico de Oaxaca will be part of the survey team as regional supervisors.

Data entry and cleaning (February-April 2005)

Data entry will be centralized in Mexico City and will begin one month after the start of the household surveys. Entry will be completed two weeks after the surveying is completed. An

additional month will be dedicated to cleaning the data.

Analysis and write-up (May-October 2005)

The following papers which were programmed for last year will be pursued in the upcoming year:

Descriptive paper on credit market structure: Demand side (May-August 2005). This paper will use the first round household survey data from Mexico in a similar fashion to the descriptive paper for Peru.

Comparative credit market structure paper (May-August 2005). This paper will draw initial comparisons and contrasts in the financial market structure in the two countries.

Financial markets, risk and migration paper (May-August 2005). A primary difference between Mexico and Peru is the proximity of the United States to Mexico. This permits rural households to use migration as both a means of overcoming credit market imperfections and for managing risk. This paper will be an initial econometric exploration of the inter-relationships between credit constraints, migration and remittances.

LONG-TERM EFFECTS OF ACCESS TO FINANCIAL SERVICES ON ASSET ACCUMULATION, ECONOMIC MOBILITY, AND THE EVOLUTION OF WELLBEING:

Revisiting Agricultural Commercialization in Bukidnon, 1984-2003

Global Constraint 3: *Poverty and Food Insecurity Traps*



Interview with corn farming household
(Photo by Agnes Quisumbing)

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PROJECT PROFILE

The research program provides a rare opportunity to study the long-term impact of credit constraints on human and physical asset portfolios, economic mobility, and wellbeing by resurveying original respondents and their children from a sample of 448 agricultural households in the Mindanao region of the Philippines previously surveyed by the same collaborating institutions in 1984 and 1992.

Detailed economic and nutrition information was collected for individual household members and at the household level. The site was selected to study the effects of agricultural commercialization on consumption and nutrition outcomes. Construction of a sugar mill in 1977 led to a major shift from corn to sugar production for many households.

This site provides a policy-relevant case study of possible avenues for asset accumulation under credit constraints under different crop production regimes and land tenure distributions. The original case study examined the effects of the shift from subsistence corn production to sugarcane after the construction of a sugar mill. The main effects of the introduction of export cropping were a significant deterioration in access to land, as smallholder corn tenant farms using primarily family labor were

consolidated into larger sugar farms using primarily hired labor, an increase in incomes for households that grew sugarcane, a decline in women's participation in own-farm production, and very little improvement in nutritional status as a result of increased incomes from sugarcane production, primarily because of high levels of preschooler sickness in sugarcane-growing households. The issue of deteriorating land access in the face of increased commercialization is especially important in Mindanao, the Philippines' poorest region, which has a long history of armed conflict.

Policymakers recognize the need to reduce poverty in Mindanao and improve financial services. Priorities are: (1) develop banking and capital market, including support to microfinance institutions; (2) develop Mindanao as a food basket and exporter of high-value agriculture and fisheries products; (3) protect vulnerable groups through better delivery of social services.

USAID is carrying out a wide range of activities aimed at equity-oriented economic growth in Mindanao, which emphasize introduction or expansion of agricultural commodities that offer promise as export crops.



Support

BASIS core funding. Additional funding from IFPRI, Department for International Development, UK, CGIAR Biofortification Challenge Program and Inter-Center Initiative on Collective Action and Property Rights, Government of France.

Outputs

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Questionnaires and interviewer manuals

2003 Bukidnon Panel Survey Questionnaire and 2004 Migrant Questionnaire (in English and Visayan). Interviewer's Manuals for the 2003 and 2004 Survey.

I. ACTIVITIES 2003-04

A. Accomplishments

1. First wave of household survey

The RIMCU team interviewed 311 original respondents (61% of the original 510 households and 69% of the 448 households with observations for four rounds) and 261 households formed by children living in the same villages as their parents.

2. Pretesting questionnaire

In February/March 2004, we pretested the migrant and community questionnaires, and conducted interviews with various suppliers of rural credit.

3. Ph.D. students join team

After a BASIS seminar at the University of the Philippines School of Economics in 2003, a Ph.D. student expressed interest in working on the Bukidnon data for her dissertation. The team invited her to join us in the field, and assigned her to pretest the community questionnaire and gather secondary data on the survey *barangays*. We eventually asked her to spend two weeks at RIMCU coordinating data cleaning.

We invited a Ph.D. student from the University of Paris 1-La Sorbonne to participate in the pretest and to spend six months at IFPRI working on the credit papers, which will form part of her dissertation.

4. Discussions about training activities

These discussions were with Xavier and other economics faculty in the region. We held additional discussions with the officer-in-charge of the Economics Department to discuss the proposed training for economics department staff. We decided to hold a three-day training in April or May 2005 to coincide with the summer break so that more faculty members could attend.

5. Qualitative study based on life history methods

Cases were chosen from the original sample households from the 1984 study, and a case study approach was employed, using a number of data collecting techniques such as life histories, oral histories, in-depth interviews, and observation of

the participants. The case studies were conducted between April and June, 2004, by five graduate students from the Department of Sociology and Anthropology at Xavier University. All five students completed their course work and were preparing their thesis proposals. The cases have been written and are being edited.

6. Mini-sabbatical at IFPRI

Burton spent three weeks at IFPRI in May, writing up the qualitative study. She also gave a seminar on the Bukidnon project at Virginia Tech.

7. Second wave of survey

The second wave of data collection began in April 2004 and ended in August 2004. The survey team interviewed any household formed by children who no longer live in the survey area, based on addresses and phone numbers provided by the original respondents and other family members. This includes a large group of households in three major urban areas in Mindanao (Cagayan de Oro, Valencia, and Malaybalay) as well as many households in other rural areas of Bukidnon. The sample size from the migrant wave consisted of 257 households (18 in Malaybalay, 38 in Valencia, 21 in Maramag, 91 in Cagayan de Oro, and 69 in rural areas outside the original survey *barangays*)—about 75% of potential migrants to be interviewed.

8. Data entry, cleaning and analysis

Data entry for the 2003 and 2004 surveys has been completed. IFPRI hired a consultant to work with RIMCU to do cleaning and consultancy checks for the first round of the survey.

9. Paper on financial services

RIMCU completed revisions to his paper on the history of financial services in Bukidnon; this paper has been professionally edited and submitted to BASIS.

10. Analytical work for papers on credit

The IFPRI team began creating analysis files and undertaking preliminary analysis of the data, focusing on characterizing credit markets and

analyzing credit constraints. Three draft papers have been submitted to BASIS.

12. Additional Activities

IFPRI was able to raise additional funds from the CGIAR Inter-Center Initiative on Collective Action and Property Rights to analyze the role of social networks and collective action in helping households cope with shocks in the Philippines and Ethiopia. The study will be conducted 2005-07.

B. Collaboration

The research program strengthened partnerships between IFPRI, developing country universities and developed country universities. Seven graduate students are involved in the research program, six of whom are from the Philippines. The IFPRI and RIMCU teams developed and pretested the survey instruments jointly, and data cleaning and consistency checking are being done jointly by an IFPRI and RIMCU team.

This project is one of the four core longitudinal studies in IFPRI's new Global Research Program on Pathways from Poverty. (The other three studies are in Guatemala, South Africa, and Ethiopia). The IFPRI researchers on the team are part of the other country teams, so that comparable analysis can be conducted across countries, to facilitate synthesis work and the production of "global public goods."

The team is collaborating with the CGIAR HarvestPlus program, with major funding from the Gates Foundation, and the IFPRI multi-country program on urban food security, with funding from DFID. The project received funds for the 24-hour recall and diet quality survey for a sub sample of 500 households (Harvest Plus), and for the urban migrant survey (DFID).

The project also laid the foundation for a new BASIS project, "Pathways from Poverty," which will undertake policy-relevant research using newly collected longitudinal data on individuals, households and communities in Ethiopia, Mexico, the Philippines and South Africa, together with findings from qualitative fieldwork and well-defined identification strategies to understand the policies, interventions and other factors that lead to sustainable rural poverty reduction. It addresses three questions: (1) How do poverty and other dimensions of wellbeing change over time, (2) What are the causal factors underlying these

changes, and (3) What role do policy, program and project interventions play in these pathways from poverty? The study will be undertaken jointly by researchers from the United States, Ethiopia, Mexico, the Philippines and South Africa and will incorporate joint research, in-country training and capacity building activities and dissemination to policy-makers, other civil society actors as well as USAID.

Finally, the project will be part of a 15-country global study of the World Bank, *Moving out of Poverty: Understanding Growth and Freedom from the Bottom Up*. The World Bank is funding additional work to be based on the Bukidnon panel study. The additional work is designed to: (1) take advantage of the existing panel data to understand the *dynamics* of how people move out of poverty or remain trapped in chronic poverty over time; (2) explore economic, social, political and institutional variables which are not covered in the IFPRI data sets; (3) examine particular questions in the new data collection that may be raised by initial findings from the IFPRI data and which are important for policies to reduce poverty; and (4) continue efforts to strengthen capacities in developing countries for mixed methods poverty research by collaborating with RIMCU.

C. Key Findings

The research results obtained from the second year provide information that would help achieve the BASIS objective of improving the quality of life for the rural poor, by creating more effective ways to access and use resources. The findings on the nature of rural financial markets (their being dominated by informal sources, greater access by the wealthy to credit, the extent and nature of credit constraints, and the impact of credit constraints on production and consumption decisions) provide information that would help policymakers broaden access to and improve efficiency of financial markets. The results point to the importance of credit programs operating in the *barangay* and proximity to commercial banks and rural banks in reducing the probability that credit constraints affect production decisions.

Our results demonstrate the strong linkages between land and credit markets in the rural Philippines. We provide evidence on the potential role of social capital in obtaining credit: households

that are migrants to the area may have less social capital and thus are more likely to report being credit constrained. Our results suggest that increasing education and increasing access to titled land reduce the probability of being credit constrained. The finding that sugar producers were more likely to be credit constrained, supported by evidence from the life histories, suggests that commercial agriculture, while it may have higher returns, may also be more risky because of higher credit needs.

The following summarizes research results from Burton et al. (2004), Godquin and Sharma (2004a, 2004b), Gilligan et al. (2004) and Morales (2004).

Borrowing is the most common financial transaction among survey households. This reflects both need as well as the lack of saving services in rural Bukidnon. While the informal sector has established a thriving market for credit, provision of saving services belongs to the domain of commercial banks that operate in the nearby cities, but have yet to penetrate the rural landscape or successfully design saving products that suit the demand patterns of the rural poor.

The informal sector dominates transactions by poor rural households in Bukidnon. Not only did more than half the households covered by the survey transact in the informal sector, nearly 40 percent of the households transacted *exclusively* in this sector. An important feature of the informal sector is the maintenance of continuous credit lines with financial agents ranging from *sari sari* stores, local moneylenders, agricultural input suppliers, to larger stores specializing electrical appliances. The bundling of credit services with the supply of other goods and services is therefore an important feature of the informal credit market in Bukidnon.

Access to land affects the demand for and access to various types of financial services. Larger cultivators borrow more and have better access to both semi-formal and formal sources of credit. However, non-agricultural households are increasingly able to access credit from formal and semi-formal sources, a likely result of microfinance institutions and of microfinance products provided by the formal banking sector. Developments in transport and communication infrastructure have also reduced the cost of transacting with urban-based financial agents that are more likely to specialize in non-agricultural loans.

Almost two-thirds of households are credit constrained. Based on direct questions on households' experiences with credit market, we estimated the percentage of credit-constrained households at 65%. This estimate would even be higher if it included households that report they would not use more credit if available to them because interest rates were too high or because they lack the appropriate collateral.

Credit constraints have differential effects on the household's production and consumption decisions, depending on its credit needs and the availability of loan products from financial intermediaries. Credit constraints affect the scale of production, production technology or input use of 37% of the farming households of our sample and of 31% of the households operating a non-agricultural business activity. Since some farm households are also operating a family business, the total percentage of households for whom production choices were affected by credit constraints is 39%. This result suggests that better provision of credit to rural household might translate to higher growth of the rural economy where poverty is still pervasive. Credit constraints also affected consumption choices of 21% of our sample households.

Risk reduction through the development of risk-reducing agricultural technologies or credit bureaus could increase poor households' access to credit. The most frequent reasons for not borrowing more funds are that interest rates are too high or that the household is afraid it will not be able to pay back. This indicates that access to credit would benefit from a reduction of risk and that the development of risk reducing agricultural technologies or credit bureaus would also be appropriate in this setting. The presence of credit programs operating in the *barangay* and proximity to commercial banks and rural banks reduced the probability that credit constraints would affect production decisions. Households whose heads had little education, households that own little or no titled land, and sugar producers were more likely to be credit constrained.

In the 1984/85 data, lack of social capital, the number of children, distance to town centers, and lower wealth levels increase the probability of being credit constrained, using a classification based on direct elicitation methods. Household head age and education and the number of adult

males and females have no significant association with the probability of being credit constrained, because these variables have offsetting effects on credit demand and supply. Being Catholic, from Misamis Oriental, and not Cebuano all significantly reduce the probability of being credit constrained. Being Cebuano probably indicates being a migrant to the area and possibly lack of accumulated capital in the destination area and lower levels of social capital, which may limit access to lenders. The number of children in the household raises the probability of being credit constrained by increasing demand for liquidity. Distance to the town center increases credit constraint probabilities through higher transaction costs for obtaining credit. Households with larger cultivated area per household member are significantly more likely to be credit constrained, but having more valuable land makes credit more available. The poor are more likely to face credit constraints than wealthier households, but the extremely poor are not, probably because of fewer opportunities to use credit productively. Households with credit are significantly more likely to report being credit constrained, which is evidence that quantity rationing is another source of credit market imperfections. Obtaining the desired amount of credit appears to be a larger problem than entry into the credit market as a borrower.

Validating direct elicitation methods of credit constraints against predictions of credit constraint status from consumption smoothing models provided little support for self-reported credit constraint status and raised questions about the power of theoretical models to identify constraints. We tested whether relying on reported credit

constraint status to divide the sample led to expected changes in estimates of the sensitivity of consumption to income changes. Although the sensitivity of consumption changes to income generally grew in magnitude as we isolated credit constrained households and separated credit market imperfections from the role of insurance, we found no statistically significant evidence of credit constraints for those predicted to be constrained based on reported credit constraints. These results could be due to the relatively weak power of the tests performed. They may also indicate limited fungibility of credit within the household, since we apply credit constraint status reported in the production modules of the survey to test a model of consumption variability. If credit is not entirely fungible across uses, even accurately reported credit constraints for production activities may not reliably be used to explain consumption behavior.

Life histories of 17 households show that different factors contribute to sustained success, or to an inability to move out of poverty. Successful households had at least a high school level of education, a strong work ethic, the ability to take risks (as in trying out a new crop, sugarcane), entrepreneurial skill, and diversified income-earning activities. Households that succeeded but were not able to sustain what they achieved were similar to the successful households, but were beset by shocks such as ill health or the death of a household member, from which they never recovered. The most disadvantaged group of households were landless, were either tenants or wage laborers, and because of lack of resources, could not send their children to school, perpetuating the intergenerational cycle of poverty.

II. WORKPLAN 2004-05

A. Research Plan

1. Analysis and paper-writing

October 2004-December 2005

Data analysis and paper-writing will be the main activity, as all the quantitative data collection has been completed. The papers produced in the 2003-2004 project year focused on characterizing credit markets in Bukidnon and comparing them with credit markets in 1984/85. In the final year of the project, we will examine the impact of credit constraints on capital accumulation (human and physical), wellbeing (measured using consumption and nutritional status), and economic mobility (measured using consumption)

2. Training and capacity building

April or May 2005

Training and capacity building is postponed to 2005. Both the IFPRI and RIMCU teams were involved in the migrant pretest and could not devote time to this activity in February. Also, the Chair of the Economics Department was on leave and it was difficult to coordinate the schedule of the training. We have decided to ask another division at IFPRI, the Training and Capacity Strengthening Program, to conduct a one-week training course (with computer exercises).

The course will be based on the food policy analysis courses that IFPRI has been conducting in developing countries, and will be held at Xavier University. It will consist of an intensive one-week course on applied microeconomics/special topics in microeconomics/food policy for economics/agricultural economics faculty from Xavier University and other universities in Cagayan de Oro and Mindanao. Attendees will receive certificates of training to be issued jointly by Xavier and IFPRI.

3. Dissemination workshops

Workshops on rural finance: August 2005;
workshops on the impact of credit constraints:
January 2006

We envision two sets of dissemination workshops, one focusing on the results from the rural finance

studies, and another on the impact of credit constraints on asset accumulation, wellbeing, and economic mobility. The first series of workshops would be held in Bukidnon, Cagayan de Oro, and Manila, and the second in Cagayan de Oro and Manila. The audience for the workshop would be policymakers from Bukidnon province, the Northern Mindanao Region, and policymakers and academics in Manila. We would prepare policy briefs suited for dissemination to an audience of host-country policymakers for the workshops.

4. Analysis and field work for add-on projects

Descriptive analysis: March-June 2005;
quantitative analysis: June-December 2005;
qualitative field work: August 2005; institutional
analysis: January-March 2006

We raised additional funds from the CGIAR Inter-Center Initiative on Collective Action and Property Rights to examine the role of social networks and collective action in helping households cope with shocks. This work, to be conducted in the Philippines and Ethiopia, will overlap with the new BASIS project, "Pathways from Poverty."

The project will evaluate how collective action can be used by groups to buffer rural peoples exposure to shocks in the short-term, and to break the vicious cycle of poverty in the long-term. Quantitative analyses from panel datasets in Ethiopia and the Philippines will be used to purposively choose case study analysis of specific collective activities and networks that are most relevant for the poor. Results of the analysis will help policymakers identify what types of networks work best for the poor, enabling them to design interventions that enhance and/or compliment these network.

Under this grant, IFPRI would first undertake a descriptive analysis of the quantitative survey data that would be used to draw the sample for the qualitative work to be undertaken by RIMCU. The first phase would consist of a descriptive analysis of existing networks, and characteristics of participants, and the benefits and costs of participation. The second phase would consist of a quantitative analysis of factors affecting network density and organizational development, the

concomitant impact of networks on households' ability to manage risk and cope with shocks, and the long-term impacts on households' capacity to avoid poverty and/or escape from poverty. The third phase would be based on qualitative work in the survey communities. It would comprise an institutional analysis of the structures and functions of existing networks, and processes of institutional change, with a detailed analysis of the ways in which different types of people access these networks, their benefits and costs from this access, and their role in institutional change.

5. Anticipated outputs

We plan to write the following research papers and a policy brief for each of the papers:

- Qualitative study synthesis on the impact of credit on asset accumulation, wellbeing, and economic mobility

- Synthesis of life histories: qualitative study on the role of credit constraints
- Effect of past credit constraints on education outcomes of children of original respondents? (delayed enrollment, grade attainment, schooling progression)
- Effect of past credit constraints on asset accumulation
- Effect of past credit constraints on attained adult height and indicators of adult nutritional status
- Long run effects of credit constraints on welfare, investment, economic mobility

We will also hold in-country workshop(s) on credit markets and rural finance and on the impact of credit constraints and asset accumulation, wellbeing, and economic mobility.

New BASIS Research Projects Beginning 2004

PROFILE

In 2004, BASIS solicited proposals for two-year projects with innovative research plans that would add significantly to knowledge about core BASIS research themes: (1) Identify pathways from poverty and break constraints to asset accumulation by rural poor, (2) Institutional innovations that manage risk, broaden access to capital and other factor markets, or enhance the use of land, water, labor and other productive resources, (3) Enhance the allocation and sustainable use of environmentally sensitive resources. Proposals were required to formulate plans to build research capacity with host country researchers, demonstrate the capacity to engage with local policymakers, work toward the adoption of policies that emerge from the research findings, and show relevance to the objectives of the USAID mission in the target country. The following were selected:

1. **Pathways from Poverty: A Multi-country Study.** PIs: Alain de Janvry (University of California-Berkeley) and Tassew Woldehanna (Addis Ababa University, Ethiopia)
2. **Property Rights, Environmental Services and Poverty in Indonesia.** PIs: John Kerr (Michigan State) and Suyanto (ICRAF Indonesia)
3. **Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment.** PIs: Dean Karlan (Princeton University) and Pieter Le Roux (University of Western Cape)
4. **Regional Diversity in Pathways out of Rural Poverty in Brazil.** PIs: Steven Helfand (UC-Riverside) and Eustaquio Reis (Institute of Applied Economic Research, Brazil)

PATHWAYS FROM POVERTY:

A Multi-country Study

Principal Investigators

Alain de Janvry: Department of Agricultural and Resource Economics,
University of California-Berkeley, USA

Tassew Woldehanna: Addis Ababa University, Ethiopia

Collaborating Institutions and Researchers

International Food Policy Research Institute: John Hoddinott, John Maluccio,
Agnes Quisumbing

Oportunidades, Mexico

RIMCU-Xavier University, Philippines: Linda Montillo-Burton

University of the Philippines-Diliman: Emmanuel Esguerra

University of KwaZulu-Natal, South Africa: Julian May

University of California-Berkeley, USA: Elisabeth Sadoulet

University of Wisconsin-Madison, USA: Michael Carter

PROJECT PROFILE

Pathways from poverty are the combination of specific policies or interventions that affect asset endowments, the setting where assets are used, and the choice of livelihood strategies. A successful pathway will eradicate poverty for the households affected by the policy or intervention.

The study will undertake policy-relevant research on pathways from poverty using newly collected longitudinal data on individuals, households and communities in Ethiopia, Mexico, the Philippines and South Africa, together with findings from qualitative fieldwork and well-defined identification strategies to understand the policies, interventions and other factors that lead to sustainable rural poverty reduction.

It will address three questions:

1. How do poverty and other dimensions of well-being change over time?
2. What are the causal factors underlying these changes?
3. What role do policy, program and project interventions play in these pathways from poverty?

The study will be undertaken jointly by researchers from the United States, Ethiopia, Mexico, the Philippines and South Africa and will incorporate joint research, in-country training and capacity building activities and dissemination to policymakers, civil society actors, and USAID.

PROPERTY RIGHTS, ENVIRONMENTAL SERVICES AND POVERTY IN INDONESIA

Principal Investigators

John Malcom Kerr: Michigan State University, USA

John L. Pender: International Food Policy Research Institute

Suyanto: World Agroforestry Center (ICRAF), Indonesia

Collaborating Institutions and Researchers

World Agroforestry Centre (ICRAF): Fiona Chandler, Chip Fay, Brent Swallow,
Meine Van Noordwijk

International Food Policy Research Institute: Nancy McCarthy, Ruth Meinzen-Dick

University of Lampung, Indonesia: Bustanul Arifin

PROJECT PROFILE

The last decade has seen a rapid increase in interest in payment for environmental services. Problems of identifying and measuring environmental services remain a challenge in many contexts, and hopes for using the reward system to benefit poor people are balanced by fears that the mechanisms might bypass poor land users, or even make them worse off. Moreover, where land rights are unclear, there are concerns that the reward system might compel powerful people to usurp otherwise marginal lands and evict poor land users.

The Rewarding Upland Poor for Environmental Services (RUPES) project was established in 2001 to address possibilities for these reward mechanisms in Asia, with particular emphasis on potential for the upland poor to benefit. RUPES calls such arrangements Rewards for Environmental Services (RES). RUPES conducts action research at sites across Asia to examine the provision of environmental services, who benefits, who pays, and the institutional and policy environment to enable fair and equitable distribution. The accumulated and ongoing experience of RUPES provides an excellent opportunity for value-added research.

This BASIS project will investigate the following aspects of RES mechanisms: (1) social-spatial placement, (2) the within-village distribution of costs and benefits, particularly those related to enhanced property rights, and (3) the most appropriate

institutional mechanisms to enhance benefits for the poor. The research program will be conducted in RUPES sites in Lampung and West Sumatra, Indonesia, where RES mechanisms are being put in place for watershed protection and carbon sequestration services.

The central hypothesis of this research is that environmental service reward mechanisms may provide marginalized social groups with new opportunities for generating income, obtaining more secure rights to land and water, and being included in environmental governance processes. There are two ancillary hypotheses. First, due to limited spread of information and incomplete appreciation of the opportunities, there is a tendency for RES mechanisms to be located in communities with high levels of interaction with the outside world. Second, there is a tendency for the benefits of RES to be captured by well-advantaged households within communities. BASIS research has the goal of helping show how RES mechanisms can be designed to reduce or overcome these tendencies.

The research will target all three priority concerns of the BASIS CRSP through its focus on an institutional innovation designed to help poor people break constraints to asset accumulation by gaining better access to capital, while enhancing their use of land, water and labor and protecting environmentally sensitive areas.

OBSERVING UNOBSERVABLES:

Identifying Information Asymmetries with a Consumer Credit Field Experiment

Principal Investigators

Dean Karlan: Princeton University, USA

Pieter Le Roux: University of Western Cape, South Africa

Collaborating Institutions and Researchers

University of California-Berkeley: Lia C. Fernald

Federal Reserve Bank of New York: Jonathan Zinman

PROJECT PROFILE

This project encompasses related research conducted throughout South Africa and the Philippines and focusing on the responsiveness of borrowing and repayment to interest rates, the impacts of access to consumer credit on borrowers, and the impacts of access to credit on microentrepreneurs. Results will bear directly on critical questions, answers to which can lead to effective policy. Does access to capital help poor borrowers accumulate assets and working capital? What interest rate policies should regulators and donors set? What disclosure requirements should regulators mandate? Can credit scoring help microfinance institutions expand outreach faster and more efficiently? Can the private sector deliver microcredit that is socially beneficial?

Three experiments will be carried out:

1. testing the responsiveness of borrowing and repayment to interest rates
2. testing the impacts of access to consumer credit on marginal borrowers by implementing a credit scoring system, which also deepens outreach and improves efficiency

3. testing the impacts of access to credit on micro-entrepreneurs, also by implementing a credit scoring system, which also deepens outreach and improves efficiency.

These projects will produce several public goods in addition to the research output and related policy implications. First are replicable methodologies that can be used by other researchers and microfinance organizations, and financial institutions more generally, to optimize pricing, marketing, and underwriting practices, and thereby enhance sustainability. Second are rich data, to be made publicly available, that can be used for future work on contract theory, household decision-making, experimental design, and other questions. Third is the training of two South African graduate students at the University of the Western Cape.

The project will provide direct support for the USAID Mission in South Africa, and for the Microenterprise Access to Banking Services, a USAID-funded initiative in the Philippines.

REGIONAL DIVERSITY IN PATHWAYS OUT OF RURAL POVERTY IN BRAZIL:

Implications for the Design of Public Policies

Principal Investigators

Steven M. Helfand: University of California-Riverside

Eustáquio J. Reis: Institute of Applied Economic Research

Collaborating Institutions and Researchers

Institute of Applied Economic Research, Brazil: Ajax Reynaldo Bello Moreira,
Gervásio Castro de Rezende

National School of Statistics, Brazil: Kaizo Iwakami Beltrão

Pontifical Catholic University of Rio de Janeiro, Brazil: Juliano Junqueira Assunção

State University of Rio de Janeiro, Brazil: Antônio Salazar Pessôa Brandão

University of São Paulo, Brazil: Gerd Sparovek

University of California-Riverside, USA: Anil Deolalikar

Queens College, USA: Edward S. Levine

PROJECT PROFILE

Rural poverty in Brazil is pervasive. Roughly half the rural population was estimated to be living in poverty in 2002, with half of these living in extreme poverty. Rural poverty is tremendously heterogeneous across regions, with the percentage of the poor living in extreme poverty varying by a factor of six across states. Although rural poverty as conventionally measured is estimated to have fallen by almost ten percentage points in the 1990s, there are reasons to doubt the extent of the decline, and the causes of the improvement are not well understood. Two factors that almost certainly contributed to rural poverty reduction in the 1990s were the growth of social security payments to rural families, and an exodus of 11% of the rural population. Little is known, however, about who migrated from rural areas and whether they succeeded in escaping poverty.

The Brazilian government has made poverty reduction and the elimination of hunger two of its highest priorities. Unfortunately, the information base necessary to accurately measure rural poverty at a disaggregated level does not exist. Thus, the ability to analyze the impacts of policies on rural poverty is severely constrained.

This project will help provide state-of-the-art methods for combining existing small and large data sets to take advantage of the strengths of each. After estimating a consumption based measure of rural poverty at the municipal level, we will extract policy lessons from an analysis of alternative pathways out of rural poverty. Special attention will be given to regional diversity in pathways from poverty and policy implications.

The alternative exit paths studied are:

1. agricultural productivity growth for small farms
2. non-agricultural sources of earned income
3. government transfers via social programs
4. land, credit, and labor market reforms
5. migration out of rural areas.

Policy recommendations will be derived for existing government programs, improving official data on rural incomes, and new programs in need of creation. Due to Brazil's regional diversity and heterogeneity, the lessons will have direct relevance for USAID's goals of rural poverty reduction throughout Latin America.

BASIS CRSP Outreach

PROFILE

Targeted Policy Information

BASIS delivers policy information through workshops and conferences. Often these are solicited by USAID Washington or the Missions. Examples include the following, which are profiled in this section:

- Establishing Farm-based Equity-Share Schemes in KwaZulu-Natal: Lessons from USAID's BASIS Research Program
- Enhancing Land Access to Broaden the Base of Economic Growth: An International Conference for Central America and Mexico
- Local and national level policymakers workshops in Malawi
- Institutional Transformation and Agrarian Change in Kyrgyzstan: Bridging Legal and Economic Reforms for Agricultural Development
- Migrant Remittances and the Financial Market in Moldova.

Also, BASIS research findings are delivered directly to policymakers. The individual projects in countries such as Ethiopia, Kenya, Kyrgyzstan, Madagascar, Malawi, and Russia engage in intensive policy dialogue with government agencies and NGOs. The work in these countries feeds directly into current discussions about land, water, labor, and finance, as well as broader poverty issues. Interactions with policymakers occur throughout the project cycle to facilitate engagement in design, implementation, findings and recommendations.

Another mechanism for targeted policy information comes in the form of the *BASIS CRSP Policy Conferences*. "Combating Persistent Poverty in Sub-Saharan Africa," held in November 2004, was the first such conference; it is profiled in this section. These conferences deliver development strategies and inform the broad policy community by integrating themes and findings from BASIS projects. By drawing on expertise gained from the projects, the conferences serve as the primary vehicle for cross-regional synthesis and learning.

Mission Outreach

BASIS provides ongoing support to USAID missions as they address emerging opportunities in economic growth, agricultural development, and trade. The following are examples of this outreach.

Ethiopia: BASIS has a long-term working relationship with the Ethiopia mission and contributed to the development of a 5-year strategic plan for the country. A recent disaster relief project in Ethiopia was based, in part, on the asset accumulation work done by BASIS researchers.

Kenya: BASIS regularly meets with mission staff to update them on the research and new findings. Information supplied to REDSO in Nairobi contributes to the development of new strategies for the region and identifies gaps in research knowledge that, if filled, will enhance policy outcomes.

Kyrgyzstan: BASIS contributed project outputs to an assessment team that visited Kyrgyzstan to identify funding priorities. BASIS works closely with mission staff, who have indicated that the research information is very useful for their work.

Madagascar: BASIS works with the mission through the Ilo Project and the Landscapes Development Initiative Project. These projects contribute to the analysis BASIS is doing on poverty traps and rice technology adoption. BASIS findings are being integrated into a broader policy dialogue about Madagascar's poverty reduction strategies.

South Africa: BASIS regularly meets with the Pretoria mission as part of a USAID-sponsored project to establish rental markets for cropland in the communal areas of KwaZulu-Natal. BASIS has provided information to both the mission and the Department of Land Affairs to help inform the ongoing debate about South Africa's land reform process. Information gathered by BASIS research has proved vital to this process.

ESTABLISHING FARM-BASED EQUITY-SHARE SCHEMES IN KWAZULU-NATAL:

Lessons from USAID's BASIS Research Program

26 July 2004

Principal Investigators
Michael Roth and Mike Lyne

PROFILE

This regional conference had two main objectives: to disseminate results of BASIS research and to inform policymakers and other agents driving agrarian reform in South Africa about flaws encountered in the design and application of the Land Redistribution for Agricultural Development (LRAD) program. Those attending included representatives from national and provincial government departments of Land Affairs, Agriculture and Housing, commercial banks, equity-share schemes, nongovernmental organizations, USAID/Pretoria, and BASIS.

The conference highlighted the need to accelerate LRAD. Detailed estimates were presented on the rate of land redistribution in KwaZulu-Natal from 1997 to 2002. These estimates were compared to the performance of private and government-assisted land transactions with respect to the quantity and quality of land redistributed and the gender sensitivity of these transfers. The session also identified best institutional practices for equity-share schemes by using cluster analysis to group indicators of good project performance, sound institutional arrangements, effective worker empowerment and competent management observed in case studies conducted in the Western Cape during 2001.

Two experimental projects initiated in KwaZulu-Natal during 2002 were outlined at the conference. The innovative organizational and financing arrangements developed for one equity-share scheme was detailed, yet also the conference showed that policy problems continue to hold up implementation of these arrangements. The other equity-sharing scheme faces a different obstacle. This second scheme requires relocation of farmworker homes. The farmer is willing to donate land to the workers but legislation governing the establishment of townships (and hence the award of housing grants) creates prohibitively high costs when applied to a small rural development. Many opportunities for equity-sharing on commercial farms will be lost if the policy divide between land reform and housing is not bridged.

Finally, the conference also considered equity-sharing from the perspective of a beneficiary household and showed how misconceptions can be corrected using appropriate methods to communicate difficult concepts. The problem of measuring and monitoring the performance of equity-share schemes was discussed, and performance indicators, ranging from financial ratios to measures of poverty alleviation, empowerment and good governance, were detailed.



Outputs

Conference proceedings online at:

<http://www.basis.wisc.edu/institutions.html#pubs>

ENHANCING LAND ACCESS TO BROADEN THE BASE OF ECONOMIC GROWTH:

An International Conference for Central America and Mexico

30-31 August 2004

PROFILE

New research findings show the impacts of recent land market reforms and programs on land access and welfare of low wealth households in Guatemala, Honduras, Mexico, and Nicaragua:

1. Land is disproportionately valuable to poor households.
2. Assigning land rights to women enhances the impact of land access on household wellbeing.
3. The transfer of land to the rural poor has been slow in the wake of recent reforms.
4. Limited access to capital negatively impacts the competitiveness and land access of low wealth households.

Consensus is emerging among researchers and policymakers that any policy to enhance operation of land markets to bolster land access of poor rural households must be matched with measures that simultaneously broaden access to capital and other complementary inputs. Without such matching measures, the ability of less well-off households to access land through either rental or purchase markets is diminished.

While several innovative programs try to achieve the twin goals of land and capital access, to date they have had relatively little success at leveraging access to private capital to make such efforts a widespread success. This lack of success reflects the continuing reality of transactions costs and risk that inhibit private lending to small-scale agriculture. Innovative ideas such as index-based insurance against correlated risk and agricultural loan guarantee funds (perhaps underwritten by deposits from emigrant remittances) are key policies to open the way to highly leveraged land access programs to enhance growth and poverty reduction in rural areas of Central America.

Moving forward toward a next generation of high leverage land policy thus requires attention to both land and finance, and specifically to transactions costs and information constraints that inhibit the operation of private capital markets in rural areas. The consensus is that such a policy regime is both desirable and necessary. The challenge is thus to move forward creatively in an integrated fashion and be prepared to learn from innovative programs.



Outputs

Background paper, draft papers, presentations and other documents online at:

<http://www.basis.wisc.edu/events.html>

LOCAL AND NATIONAL LEVEL POLICYMAKERS WORKSHOPS IN MALAWI

5 August and 2 September 2004

Principal Investigators
Wapu Mulwafu and Anne Ferguson

PROFILE

Two workshops were held to discuss key project findings directly with policymakers. The workshop held on 5 August in Zomba brought high-level policymakers and donors together to discuss issues that emerged from BASIS research related to the new water, irrigation and land policies.

The second workshop, held on 2 September at Likangala Irrigation Scheme, involved farmers from the Likangala and Domasi Schemes, agricultural development district officers,

traditional authorities and members of local government who have participated in the study. This was the first time that farmers from the two schemes had been brought together to discuss their experiences with irrigation transfer. Findings were presented from BASIS surveys and qualitative research for discussion with the participants.



Outputs

Key papers that inform these workshops online at:
<http://www.basis.wisc.edu/water.html#pubs>

INSTITUTIONAL TRANSFORMATION AND AGRARIAN CHANGE IN KYRGYZSTAN:

**Bridging Legal and Economic Reforms
for Agricultural Development**

27-29 October 2004

**Principal Investigators
Michael Roth and Mike Lyne**

PROFILE

This *BASIS Policy Conference* included an overview of the state of Kyrgyzstan's agricultural sector, a panel on investment and marketing constraints, the determinants of farm size and enterprise dynamics, comparative experiences with contracts, gender and institutional change, and priority training needs. The conference was

attended by 60-70 participants from Kyrgyzstan, Kazakhstan, Uzbekistan and Turkmenistan, along with presenters from the United States and South Africa. These included a broad cross-section of policy practitioners from both government and civil society, as well as donor funded projects.



Outputs

Background papers online at:
<http://www.basis.wisc.edu/institutions.html#pubs>.

MIGRANT REMITTANCES AND THE FINANCIAL MARKET IN MOLDOVA

Fall 2004

Principal Investigator

Cerstin Sander

PROFILE

Moldova's recent economic growth has been largely consumption-led and driven by remittances. Estimates are that about one quarter of Moldovans live abroad and send money home. Statistics and estimates for remittance inflows vary between US\$400 million and 1 billion. In the region, Moldova is the top remittance receiver; with some 25% of remittance inflows relative to GDP, it ranks within the top ten recipients among developing countries. As much as half of the remittances flowing to Moldova may reach there via informal channels. A seemingly growing share of remittances, however, is sent using formal regulated services offered by banks and express transfer services. This trend is in part a result of the greater availability of such express services and at lower prices.

Both the continued use of informal means to transfer remittances and the preference to keep savings outside of banks are partly a reflection of constraints in the financial infrastructure in Moldova. Banks are the only licensed and regulated provider of money transfer services in the country. The volume of remittance receipts through them has increased steadily; however, banks are not realizing as much of the market share as they could.

This study explores the financial market for remittances in Moldova. It provides an overview of the financial services available for money transfers, looks at whether and how to better attract and integrate remittances with the financial system

away from informal transfer channels and also into savings to contribute, for instance, to longer-term deposit mobilization for lending, and identifies constraints in the services as well as in their regulatory environment.

Based on the service profiling and feedback from remittance recipients and senders, the study closes with areas for improvements to attract a greater share of remittances to the formal financial system, such as: product refinements to money transfers, cross-selling of services to attract remittance recipients to use banking services rather than fully encash their funds; and in corollary regulatory aspects such as licensing and considering remittances as income in loan assessments.

The study draws on data provided by several domestic commercial banks and the National Bank of Moldova along with interviews with Moldovan commercial banks and representatives of the Government of Moldova. Focus group discussions with remittance senders and receivers in 31 villages throughout Moldova supplement and illustrate, especially in questions such as preferences for formal or informal services. The analysis combines findings from these sources with secondary studies and analyses, in particular with the results of two recent studies on migration and remittances using household surveys. This study complements such surveys with a mapping of the financial service infrastructure for remittances with a view to better attract and integrate remittances.

COMBATING PERSISTENT POVERTY IN AFRICA:

Structure, Causes and Solutions

15-16 November 2004

BASIS CRSP Policy Conference

PROFILE

Held in Washington, DC, this conference brought together academics, development professionals, donors and researchers from across Africa and the United States. The conference took an assets-based approach to thinking about the causes of poverty and poverty dynamics. Also, several case studies showcased different programming interventions and their successes and potential improvements.

With the overwhelming majority of poor Africans residing in rural areas, and depending directly or indirectly on agriculture for their livelihood, it is crucial to ignite rural farm and non-farm productivity growth. To both help households climb out of poverty and prevent others from falling into poverty traps, it is important to:

- increase productivity of assets
- facilitate asset building and protection
- remove exclusionary mechanisms.

Increased productivity of assets can be achieved through market access and improved technologies. Access can be improved by reducing the cost of market participation by improving roads to facilitate travel to and from markets, as well as establishing favorable contracts for a wider variety of producers. In addition, providing smaller producers with business skills, support services, and access to farmer groups can help improve their competitiveness in markets.

It is important to build all kinds of capital—human, natural and physical—to give households the asset base they need to stay out of poverty. Human capital can be improved through education, which is a road both to more lucrative off-farm

employment, and helps to facilitate uptake of new technologies which can improve production. The improvement (or maintenance) of natural capital requires soil and water conservation, soil nutrient replenishment, and sound water management. Finally, physical capital can be built through improved access to credit, as well as access to, and use of, savings instruments.

It may be necessary to remove existing exclusionary barriers that make pathways out of poverty inaccessible to certain segments out of the population. One common barrier is a lack of access to financial markets. In order to help protect themselves, households need the ability to borrow, insure and save. Having access to these financial tools can help people move out of poverty and make decisions regarding productive assets that can prevent them from falling into a poverty trap. Additionally, there are many mechanisms of socio-political exclusion that keep certain populations from getting ahead. One way to address this is to improve access to public goods including roads, electricity, education and health care.

The conference emphasized the importance of both cargo nets, which help households climb out of poverty, and safety nets which help keep them from falling into poverty. The goal is to give households the ability to make asset decisions that allow them to stay above critical thresholds while still meeting their subsistence needs. Improved health, access to credit, food aid, savings instruments, and education can all contribute to improving the long-run chances of a household staying out of poverty, and protecting their productive assets.



Outputs

<http://www.basis.wisc.edu/pubs.html#briefs>

BASIS Brief 21. “‘Churning’ on the Margins: How the Poor Respond to Drought in South Wollo, Ethiopia,” Peter Little, Peter Castro, Priscilla Stone, Workneh Negatu, and Tewodaj Mogues

BASIS Brief 22. “Shocks and their Consequences across and within Households in Rural Zimbabwe,” John Hoddinott

BASIS Brief 23. “The Differential Effects on Rural Income and Poverty of a Decade of Radical Change in Malawi, 1986-97,” Pauline Peters

BASIS Brief 24. “Poverty Dynamics in Rural Kenya and Madagascar,” Christopher Barrett, Paswel Phiri Marenya, John McPeak, Bart Minten, Festus Murithi, Willis Oluoch-Kosura, Frank Place, Jean Claude Randrianarisoa, Jhon Rasambainarivo and Justin Wangila.

BASIS Brief 25. “Sense in Sociability? Social Exclusion and Persistent Poverty in South Africa,” Michelle Adato, Michael Carter, and Julian May

BASIS Brief 26. “Persistent Poverty in North East Ghana,” Ann Whitehead.

