



BASIS CRSP

Ninth

Annual Report

Activities
2004-2005

Workplans
2005-2006

and

Outreach

October 2005

BASIS CRSP

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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: REVIEW OF BASIS FINDINGS AND POLICY RECOMMENDATIONS

Basis for solutions to rural poverty

IN 2001, BASIS PHASE II BEGAN with a set of research projects designed to research ways to improve the quality of life for the rural poor in the developing world. These innovative projects targeted three global constraints that impede broadly-based and sustainable growth:

1. Ineffective agricultural resource use in post-reform economies
2. Unsustainable use of degradable resources
3. Poverty and food insecurity traps.

The goal of each research project was to provide policy recommendations for overcoming the missing or imperfect factor markets that often prevent rural households from accumulating assets, getting a good return on their labor, accessing finance credit, weathering sudden crises such as droughts, or using their resources in sustainable ways.

These core BASIS projects ended in the past year, and researchers have been turning the findings into policy recommendations. Principal investigators for each project contributed to the following review of key findings and policy directions.

Input market constraints upon the growth of Russian agriculture

PIs: Eugenia Serova, Analytical Center on Agri-food Economics, Russia; Bruce Gardner, University of Maryland, USA.

In Russia, the transition to a market economy has not been smooth, and the agricultural sector faces the most severe constraints. Access to modern inputs is limited throughout the country, and it is difficult to overcome barriers to marketing agricultural products. The goal of the BASIS project was to quantify the extent to which factor market constraints impair the ability of Russian agriculture to function efficiently and profitably, establish which constraints are the most vital to overcome, and provide analytical knowledge that will lead to sound policies to remedy the constraints.

The project ended with the BASIS Policy Conference “Promoting Agricultural Growth through Policy in Transition Economies,” which brought together



BASIS CRSP seeks to find ways to break cycles of poverty while helping rural people sustainably increase their incomes and wellbeing. These women in the Philippines were able to open a *sari* store with a line of credit from an informal credit lender.
(Photo by Agnes Quisumbing.)

leading researchers, development professionals and policymakers to develop a set of well-grounded policy and programming recommendations. Several BASIS policy briefs were produced that outlined the project’s findings on a range of issues.

Farm structure and ownership. Russia’s transition to a market economy ended the dominance of the large collective and state farms that characterized the Soviet era. Today, Russian agriculture is characterized by a wide spectrum of organizational forms, from giant corporate farms to household plots. The share of large corporate farms in agricultural resources and production has steadily declined since 1990, while small, independent enterprises have become the main producer, employer, and source of income for the rural population. Yet, Russian policy continues to channel support to the largest farms, ignoring the increasing role of small enterprises. As a result, government support programs and subsidies have had virtually no impact on the efficiency of

agriculture. BASIS findings suggest that the government must revise its policy priorities in view of the changing structure of agricultural production.

Ownership. The new farm structures in Russia include exceptionally large commercial operations, ranging between 10,000 and 250,000 hectares and often externally owned and managed. Agriculture is typically a very risky enterprise, with a high potential for losses and a low return on investment. To help ensure profits, the “new agricultural operators” who run these large commercial farms are introducing organizational changes such as vertical integration, custom and contract farming, land leasing, and central machinery stations.

The new agricultural operators have the potential to bring Russia’s vast agricultural resources into world agricultural markets. There are signs that some operators are turning to organizational solutions that allow greater operational freedoms through the creation of subunits run by a small group of individuals. Transformations of this type move Russia away from a plantation agriculture toward a family-owned structure linked through markets and contracts to the entire supply chain, as is common in market economies. Such organizational innovations have the short-run potential of reducing or mitigating factor and product market distortions. In the long run, however, they can lead to inefficiencies or inequities through concentration of power in the hands of a few.

Land market. In Russia, private ownership of agricultural land was made legal in 1990, yet the ban on buying and selling land was only lifted in 2003. Therefore, the land market has yet to become vigorous or highly functional. Most agricultural land is still used by non-owners. BASIS researchers generated information on land transactions, buyers and sellers, and supply and demand. The findings reveal that access to market information about land is limited or difficult to obtain, transactions are marred by complex bureaucratic procedures and high costs, and agricultural land is often used for non-agricultural purposes. The researchers detail how these problems might be overcome through creation of a market information system, reduction of transactions costs, and protecting agricultural land from non-agricultural uses.

Labor market. In the Soviet era, as many as ten million workers were employed on collective and state farms. Since then, employment on large corporate farms has declined dramatically. By

drawing labor from the commercial farms, individual farming—independent peasant farms and household plots—is emerging as a strong alternative employer in rural areas. Yet, the rural population is faced with shortage of alternative employment opportunities, extremely limited mobility of labor, and total lack of political lobbying power. These factors produced agricultural labor markets in which unemployment is held in check by reducing the effective working time and lowering wages. As a result, there has been a massive shift of agricultural labor from wage employment in corporate farms to subsistence and semi-commercial farming on household plots. Russian agriculture is characterized by large-scale underutilization of labor, primarily in subsistence household farming, which only deepens rural poverty by creating an illusion of employment but without sufficient income.

Policy interventions should focus on increasing rural incomes through measures that improve agricultural productivity and create job opportunities outside agriculture. This is a costly process that requires significant government budgets to support investment in modernizing agriculture and rural infrastructure. Rural non-agricultural activities should be encouraged and expanded by promoting small entrepreneurship through credit facilities, tax breaks, and simplification of administrative requirements for small business creation. Education and training programs should be established to teach the rural population relevant marketable skills. The large cohort of subsistence farmers working on their household plots as the main or sole occupation should be given the legal status of “economically employed” with all the associated rights for pension, medical insurance, and unemployment benefit. This would eliminate the sweeping tax exemption that household plot operators continue to enjoy, but correct a major distortion between different categories of individual farms. Efforts also should be made to raise the political conscience of the rural population and encourage it to start lobbying for better wages and living standards.

Financial market. Though the large corporate farms no longer dominate Russian agriculture, they still receive virtually all the bank loans and government subsidies that go to the agricultural sector. BASIS researchers identified the characteristics of the best and worst financial performers among a sample of corporate farms in the St. Petersburg region and then matched these findings to a picture of loans and

subsidies. Findings reveal that, despite low profitability and lack of repayment capacity, even the worst performing farms can count on bank loans and buying inputs on credit. Government subsidies seem to be allocated mainly from considerations of social equity and not economic performance. Furthermore, the data show that subsidies are of relatively low importance for farm finances. One-third of the sample farms account for the vast majority of sales, profit and employment. Government policies should support these “best performers” instead of spreading support among all farms. This strategy can produce the highest impact in terms of output and profits.

BASIS also examined determinants underlying a farm’s ability to access credit. Analysis of data from the larger BASIS survey of commercially-oriented household plots, independent peasant farms, and large corporate farms reinforced the finding that bad credit history does not impair the ability to borrow. Yet, analysis also showed that farms with higher profitability have a higher probability of borrowing, which suggests that the Russian rural credit system, though limited and thin, behaves to a certain extent according to market principles. Nonetheless, asset endowments such as land and capital stock have a weak effect on the ability to borrow. This finding is understandable since land is not used as collateral.

A final study under this theme examined the factors underlying the general failure of state support mechanisms for farms. The insolvency of many corporate farms, combined with the generally high risks associated with farming, make agriculture the least attractive sector for financial capital. The government has attempted to create mechanisms for farm credit support, yet nearly three-quarters of farm managers interviewed say that they find it impossible to use subsidized credit. The main obstacles are their farms’ high rates of indebtedness, the risks that would result from not being able to repay the loans, and the lack of collateral. Providing agricultural enterprises access to financial capital is one of the most difficult tasks in the overall reform effort in Russia. The marginal impact of government support programs requires careful rethinking of the role of government in agricultural finance. To be successful, Russian corporate farms probably need fewer barriers to the proper functioning of market channels, not necessarily more support.

Input market. National agricultural policy emphasizes reimbursement of input costs to producers and substitutes government or quasi-government

organizations for market institutions. BASIS evaluated the availability of purchased farm inputs, the efficiency of their use, and the main problems in the development of input markets. The state no longer has a role as a direct supplier of inputs to agricultural producers. This function has shifted to wholesalers, traders, and manufacturers who sell mainly for cash and bank transfers. The strong imperfections that prevail in input markets have encouraged vertical integration, with fertilizers, fuel, and machinery delivered in substantial quantities through internal channels of large holding structures. Cash shortages are forcing farms to substitute land and labor—the two cheapest factors of production—for some purchased inputs, a process that leads to extensification of farm production and abandonment of productivity-improving technologies. Although the government no longer delivers farm inputs, it has a strong negative influence on input markets through a wide range of federal and regional support programs. Government-sponsored leasing programs, with their restrictions of approved suppliers and models, have created severe obstacles to the development of dealer networks; this in turn will have a detrimental effect on the competitiveness of Russian manufacturers.

While the policy implications of the BASIS research in Russia are not definitive, the work suggests that the preferred path to economic growth and prosperity in Russian agriculture is a generally liberal economic approach to markets, leaving scope for new management and organization forms to flourish or fail, with governmental efforts focusing on mitigating some of the risks faced by agricultural investors.

Institutional dimensions of water policy reforms in Malawi

PIs: Wapu Mulwafu, University of Malawi; Anne Ferguson, Michigan State University, USA.

During a famine in Malawi in 2002, 1,000-3,000 people died because of policy, political, and weather-related failures. Irrigated agriculture is regarded as a way of increasing food security as well as boosting incomes. Government support for smallholder irrigation schemes was phased out and control handed over to newly-created water user associations and other institutional structures. At the same time, informal irrigation by smallfarmers along streambanks, drainage lines, and wetlands was promoted. To intensify production and broaden access in irrigated areas, the government, with donor support, implemented a targeted inputs program

(TIP) that delivers small amounts of maize, bean seed, and fertilizer free to dry-season farmers. Also, use of treadle pumps by farmers' groups and individual farmers was promoted to benefit the poor, increase the cultivation 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, redefinition/reduction of the role of the state, and promotion of decentralized, stakeholder-driven, and community-based management institutions. BASIS research looked at how the handover of irrigation schemes to farmers and the intensification of informal irrigation were affected by reforms in the land and water sectors. Researchers sought to discover if the reform initiatives broadened disadvantaged groups' access to irrigated land or entrenched privileged interests.

The findings suggest that irrigation scheme farmers are, on average, better off than Malawians who do not have access to dry-season irrigated fields. The schemes constitute the major source of livelihood, including production of food for household consumption and cash earnings. The farmers involved in the schemes generally own more plots, have greater access to labor, and accumulate more assets. Many scheme farmers are able to plant twice or more each year and consequently are not as likely to experience food deficits.

Yet, an asset profile reveals that Malawi's poorest farmers, many of whom are irrigation scheme plot holders, remain vulnerable. Membership and annual plot fees on the schemes are currently low, yet costs of maintaining the schemes may result in higher membership, plot, and water fees. Poorer farmers may not be able to cope with these increasing costs, particularly if the scheme marketing and credit facilities are not substantially improved.

The research reveals that the decentralization called for in land, water, and irrigation policies has created a climate of ambiguity and uncertainty. The value of watered land is increasing, as is competition over this land. Competition is driven by the growing population in the areas, the ability of these lands to provide two or more harvests a 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

treadle pumps and the TIP program to increase production. The growing commercialization of these lands is 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. Many traditional authorities are engaged in asset accumulation benefiting themselves, not their communities. Women's rights are particularly precarious. To avoid seeing women lose 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.

Malawi's draft law requires all 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. The government may want to consider 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 water use and dispute settlement without having to register and collect fees from all of them—an impossible task.

As a result of the BASIS research program and outreach activities in the region, Chancellor College, University of Malawi, has taken a lead role in the regional consortium that builds capacity in integrated water resource management. BASIS contributed to capacity at Chancellor College with degree training of two graduate students and the participation of one of the principal investigators in academic conferences and policy fora in Malawi and other southern African countries. Prior to BASIS there was little focus on water-related research in the social sciences at Chancellor College and very little attention was paid nationally to the social dimensions of water management or irrigation reform.

BASIS researchers provided input into a number of major policy and project design initiatives undertaken by government and donors since 2001. Project recommendations for changes in the 1999 Water Policy were incorporated when the policy was revised in 2004. These included recommendations concerning the sustainability of forming catchment management councils nationally and the need to harmonize the water policy with the local government act, decentralization policy and natural resources policies.

BASIS provided input for the final report issued by the World Bank-funded team, “Strengthening the Water Resources Board.” The project also supplied findings to the design team of the “Malawi Irrigation, Rural Livelihoods and Agricultural Services Project.” This World-Bank funded project is likely to fund the rehabilitation of many of the smallholder irrigation schemes in Malawi. The project supplied USAID/Malawi with information on the informal irrigation sector and the role of *dimba* (streambank gardens) in food security and income generation.

In 2005, two workshops were organized to share key findings. One workshop involved farmers from irrigation schemes, agricultural development district officers, traditional authorities, and members of local government. The second workshop brought together high-level policymakers and donors to discuss key issues that emerged from the research and related to the new water, irrigation and land policies. Numerous journal articles resulting from BASIS research, along with presentations at professional meetings and workshops, have helped bring Malawi’s experiences with water and irrigation reform to the attention of audiences in Malawi, the region and internationally.

Rural markets, natural capital, and dynamic poverty traps in East Africa

PIs: Festus Murithi, Kenya Agricultural Institute; Jhon Rasambainarivo, FOFIFA, Madagascar; Frank Place, International Centre for Research in Agroforestry; Christopher Barrett, Cornell University, USA.

The poorest people in the world often rely most on the natural resources used in agricultural activities. The poverty suffered by many farming households can become chronic when they have little choice but to degrade the lands they cultivate and graze simply in order to feed themselves. Studies show that nearly two-fifths of the world’s agricultural land is seriously degraded; that problem is most acute and growing worse in poor areas such as Central America and Sub-Saharan Africa. If capital-strapped smallholders cannot maintain, much less improve, the natural resource base on which their livelihood depends (as well as their children’s future), the households can be trapped in chronic poverty for generations. The poverty spiral continues because the degraded local agroecosystem further lowers productivity, which makes escape from poverty less and less likely.

Assets and their productivity are the ultimate determinant of long-term poverty. Therefore, the

BASIS research project in Kenya and Madagascar studied the dynamics of assets and asset productivity. This enabled the empirical testing of competing hypotheses of economic growth, which have quite different implications for policy.

The “convergence” hypothesis: given universal access to finance and markets, poverty is transitory; getting prices right will suffice to induce accumulation and growth.

The “conditional convergence” hypothesis: barriers hold certain groups back, but if those barriers can be overcome, even the poor will enjoy growth. This logic underpins efforts to break down legal restrictions based on race, religion or gender, and initiatives to redouble infrastructure and technology development for remote rural areas.

The “poverty traps” hypothesis: 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. This implies not only a need for targeted interventions to break down exclusionary barriers and to create assets for the poor, but also 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.

BASIS research repeatedly rejects the convergence hypothesis in favor of the second and third hypotheses, each of which demands a more activist profile for governments and NGOs than has prevailed over the past twenty years. The 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—the research revealed asset dynamics that show that households with a certain low level of assets are unable to escape poverty, while households above a certain asset threshold remain safely above the poverty line.

Families appear to understand this. 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, 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, BASIS research shows how household-level livestock marketing and risk management behavior 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.

This phenomenon does not appear universal, however. For example, the research found no evidence of such effects in the most prosperous rural region of Madagascar, the Vakinankaratra highlands around the city of Antsirabe. This raises the question of why poverty traps emerge in some places but not others. One important issue seems to be access to finance. Those who can borrow and insure themselves can afford to undertake new investments, while those without access to financial services typically either cannot afford an investment or cannot take the chance. This seems to describe patterns of adoption of a promising new rice production method, the system of rice intensification (SRI), in Madagascar. The research demonstrated that a farmer who uses SRI methods instead of other methods to plant the same plot with the same other inputs should enjoy an 80% greater harvest.

Yet, a minority of farmers use SRI; the poor in particular hardly ever adopt the method. SRI is initially labor intensive during the *soudure* (hungry season) when poor households must work off-farm as 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. Also, yield risk is greater with SRI; uninsured poorer households typically will not 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 riskier but far more rewarding rice production strategy. The result is that the poor are stuck in a low-productivity poverty trap and the better-off enjoy productivity and income growth that pushes them further above the poverty line.

Similar financial liquidity barriers appear to impede 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 independent sources of cash income or credit. As a consequence, smaller, poorer households cultivate less well-diversified farms on soils that are degrading, while wealthier neighbors' soils commonly exhibit stable or improving quality. The predictable consequence is that the former group's situation deteriorated while the latter group enjoys economic growth.

Poverty traps may arise due to phenomena at more aggregate levels as well, as the BASIS researchers pointed out in their work on "fractal poverty traps." Results from Muranga District, Kenya, show that coffee cooperatives severely underperform their potential as co-op 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. In Embu District, Kenya, 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 that sustain soil quality and long-term productivity.

Similarly, in Madagascar, BASIS research revealed important 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 the 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 submarkets, some of which lack market-level competition necessary for farmers to enjoy incentives to invest in productive new technologies. The consequence is geographic poverty

traps of the sort revealed by BASIS survey data for Fianarantsoa, the poorest province in the nation.

These regional-scale markets problems are compounded by electoral politics that similarly complicates the distribution of essential public goods and services. The research shows that because the provision of public goods and services attracts votes, incumbent politicians have an incentive to distribute such goods and services to maximize their chance of re-election, leading to deviation from allocation appropriate to poverty reduction goals. Data from the BASIS 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.

In theoretical work motivated by the observations in rural Kenya, the researchers modeled the educational disincentives created by spatial differences in public goods and services that affect labor productivity. 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 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. Yet, 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 migrate 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 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.

Throughout the project, investigators engaged with policymakers involved in the Poverty Reduction Strategy Programs in Kenya and Madagascar, with the most senior levels of the agricultural research communities in each country, and with local communities. Researchers shared practical, science-based strategies for improving access to markets and productive inputs, including soil nutrients, in order that the poor would be able to overcome the problems described above and ultimately improve their livelihoods and wellbeing.

Assets, cycles, and livelihoods in Ethiopia and Honduras

PIs: Workneh Negatu, Addis Ababa University, Ethiopia; Peter Little, University of Kentucky, USA.

Droughts, hurricanes, floods—natural disasters such as these are especially devastating for rural families. The assets on which they depend, such as livestock, often are lost either as an immediate result of the disaster or as a consequence of the families' need to survive in the aftermath. In areas of weak market access and poor infrastructure, recovery of assets can be impossible, even after the passage of time.

The BASIS project set out to identify successful approaches to development and disaster assistance to help the people most vulnerable to the ravages of natural disasters. The goal was to find ways to improve market policies, asset use, and livelihood strategies so that these vulnerable groups could avoid the disaster *after* the natural disaster: lingering, hopeless poverty.

In the wake of a natural disaster, rural people often are left with the stark alternatives of either depleting their remaining assets in order to survive day to day, or else hanging on to those precious assets at the cost of immediate consumption needs. Depleting assets can lead to a "poverty trap" where the household has fewer and fewer assets and eventually cannot recover the assets it has lost. Hanging on to assets also can have long-term consequences: by forgoing consumption in order to retain valuable assets, the health and development of household members, especially children, suffers severely.

Droughts are common in the study region in Ethiopia, and their effects on livelihoods can linger for years. Livestock is the key measurement of wealth in the region, and when a drought occurs the poor find it harder to hold onto their livestock than do the better-off families. During this "coping period," therefore, the asset levels of poor households are in danger of falling below a critical minimum threshold of assets identified by researchers as leading to long-term poverty. When families' productive assets fall below this threshold, they become unable to rebuild their holdings and therefore it is impossible for them to improve economically over time.

Many poor rural families recognize this danger, and, instead of selling assets in order to cope with the drought, they choose to reduce their consumption. This has been shown to seriously effect the health of women and children especially, yet it might seem the

only way to avoid being trapped in poverty for generations to come.

BASIS research revealed that many households in the region “churn” in and out of poverty as a result of a drought’s effect on assets. With many households churning below the poverty trap threshold, and other households dangerously reducing consumption to avoid a poverty trap, cash and food safety nets can be viable short-term aid options. Yet, BASIS researchers revealed that uncertainty surrounding the amounts and timing of food aid delivery has taught local farmers not to depend on it. The findings suggest possibilities for more sustainable and longer-term solutions to poverty in the region.

Access to non-farm income can help families protect existing assets and accumulate more. Developing viable market towns, with reliable infrastructure and tax and credit incentives to bring in small-scale industries, would improve the options for non-farm employment. Halting the mini-land redistributions that have occurred since 1991 would increase land tenure security, since these redistribution programs cause many individuals to fear leaving their land to pursue non-farm employment. There are possibilities to improve fodder management, water harvesting techniques in dryland areas, and the extension of drought-adaptive packages. Local grant and loan programs can help the poor to take advantage of these mechanisms to avoid poverty traps and even enjoy the type of economic growth that would allow them to weather future shocks.

Unlike the lingering, slow effects of a drought, the hurricane that hit Honduras and neighboring countries in 1998 had a more immediate effect on the assets of rural households. BASIS research shows that, before the disaster, the poorest households actually were accumulating assets at a slightly higher rate than wealthier households. Thus, they were slowly “catching up” to the better-off households in terms of economic growth. Yet, poorer households are much more sensitive to the effects of a shock, and the modest growth they experienced was destroyed by the hurricane. The asset losses suffered by poor households only became worse after the disaster, continuing to decline until many households were trapped under the poverty-asset threshold.

Meanwhile, even in areas with weak or missing markets, better-off households managed to remain above the poverty trap threshold and were able to recover assets and eventually exhibit growth.

Natural disasters and their impacts are development problems and not mere short-term humanitarian problems. BASIS research shows how the impact of an environmental shock can go well beyond the initial coping phase. Family wellbeing can suffer for generations due to desperate coping strategies that attempt to maintain household assets. Yet, the inability to hang onto assets can trap poor households in persistent long-term poverty. Guaranteeing food needs or minimal cash income could allow the poorest households to avoid destructive coping strategies and instead engage in activities that build assets and pull them out of poverty. Building social safety nets could prevent vulnerable households from losing assets in the first place. Social networks and institutions play an important role in keeping households from falling into poverty, and development policy must be aware of how such social networks operate so as to minimize the potential negative impact of programs on existing social institutions.

Yet, programs must also build around the key role played by markets in creating livelihoods that help families avoid the erosion of valuable assets. Policies that improve non-farm employment opportunities, rural market infrastructure, and availability of credit—especially during the coping period—can help limit long-term asset depletion. Market conditions do make a difference in how shocks affect communities and regions. Policies that make markets more accessible to the chronically poor and vulnerable will mitigate the widespread human suffering now associated with natural disasters.



Combined, the BASIS projects that closed in 2005 are leading to effective policy interventions based on a foundation of innovative research and findings. See the following page for a listing of the scholarly outputs created by the projects.

BASIS OUTPUTS

Books, chapters and journal articles from BASIS projects that finished their research agenda in 2005.

Input Market Constraints upon the Growth of Russian Agriculture

- Bogdanovskij, V. 2005. "Labor in Agriculture: Establishment in Transition Economy Context." *Economics of Agricultural Business*: 1.
- Bogdanovskij, V. 2004. *Agricultural Labor Market Development*. Moscow: FGUP.
- 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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- Lerman, Z. and P. Schreinemachers. 2005. "Individual Farming as a Labour Sink: Evidence from Poland and Russia." *Comparative Economic Studies* 47(4).
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BASIS CRSP: Project Portfolio

Project findings

- ◆ “Input Market Constraints upon the Growth of Russian Agriculture”
- ◆ “Institutional Dimensions of Water Policy Reform in Southern Africa”
- ◆ “Rural Markets, Natural Capital, and Dynamic Poverty Traps in East Africa”
 - ◆ “Assets, Cycles, and Livelihoods in Ethiopia and Honduras”

Ongoing projects

- ◆ Pathways from poverty: A Multi-country Study
- ◆ Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment
- ◆ 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: A Comparative Study in Peru and Mexico
- ◆ The Long-run Effects of Access to Financial Services on Asset Accumulation, Economic Mobility, and the Evolution of Wellbeing: Revisiting Agricultural Commercialization in Bukidnon, 1984-2003
 - ◆ Property Rights, Environmental Services and Poverty in Indonesia
 - ◆ Regional Diversity in Pathways out of Rural Poverty in Brazil: Implications for the Design of Public Policies

New initiatives and outreach

- ◆ Promoting Agricultural Growth through Policy in Transition Economies: BASIS CRSP Policy Conference
 - ◆ Migrant Remittances and the Financial Market in Moldova
 - ◆ Conceptual and Statistical Foundations for the Estimation of Poverty Traps
- ◆ Agricultural Insurance Policy and Farmers' Exposure to Idiosyncratic and Covariate Risk on the Peruvian Coast
 - ◆ Rural Finance and Insurance on the North Coast of Peru
 - ◆ Chronic Poverty Research Report

BASIS CRSP online at <http://www.basis.wisc.edu/>

Acronyms

BANSEFI	Banco de Ahorro Nacional y Servicios Financieros	IPEA	Applied Economics Research Institute
BASIS	Broadening Access and Strengthening Input Market Systems	Hkm	<i>Hutan Kamasyarakatan</i> , or community forestry
CCT	Conditional Cash Transfer Programs	KIDS	KwaZulu-Natal Income Dynamics Study
CGIAR	Consultative Group on International Agricultural Research	MFI	microfinance institution
CRSP	Collaborative Research Support Program	NGO	nongovernmental organization
CSG	Child Support Grant	PNAD	National Household Surveys
DFID	Department for International Development	POF	Household Budget Survey
EEPSEA	Environmental Economics Program for Southeast Asia	RES	reward for environmental services
ICRAF	International Centre for Research in Agroforestry	RIMCU	Research Institute for Mindanao Culture
IFAD	International Fund for Agricultural Development	RUPES	Rewarding Upland Poor for Environmental Services
IFPRI	International Food Policy Research Institute	SRI	system of rice intensification
		TFP	total factor productivity
		TIP	Temporary Inputs Program
		UNP	United Nations Development Programme
		USAID	United States Agency for International Development

**PATHWAYS FROM POVERTY:
A Multi-country Study**



**Farming in East Africa.
(Photo by Chris Barrett)**

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http://www.basis.wisc.edu/global_pathways.html

PROJECT PROFILE

Poverty reduction is the central objective of international development. Attaining this requires many conditions, including good governance, a genuine political commitment to poverty reduction, and increased resources. For these resources to be used effectively, there must be clear understanding of the mechanisms by which poverty can be reduced and the roles that can be played by individuals, markets, states and other civil society actors.

This study provides policy-relevant research on mechanisms and interventions that can create pathways from poverty. The researchers use newly-collected longitudinal data on individuals, households and communities in Ethiopia, Mexico, the Philippines and South Africa, together with

findings from qualitative fieldwork, to understand the policies, interventions, and other factors that lead to sustainable rural poverty reduction.

The study examines pathways from poverty in these countries in three phases. The first involves a descriptive assessment of how poverty and other dimensions of wellbeing change over time. The second involves country-specific analyses on causal factors underlying these changes. The third will synthesize work focusing on the extent to which pathways from poverty are similar across diverse environments and the implications this has within the countries being studied for poverty reduction as well as for global efforts toward poverty reduction.



Support

Core funding : BASIS. Add-ons: UC-Berkeley, IFPRI, World Bank.

Outputs

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I. ACTIVITIES 2004-05

A. Accomplishments

1. Ethiopia

Having finalized data cleaning across all rounds of the Ethiopian Rural Household Survey (a longitudinal study of approximately 1400 rural Ethiopian households), we constructed comparable measures of poverty and other dimensions of wellbeing from 1994-2004. (One paper was completed on the impact of shocks on consumption. Work began on three other papers: a description of poverty dynamics, a comparison of observed and self-reported changes in welfare, and the role of public investments in facilitating income and consumption growth.) We sought to determine to what extent poverty and consumption changed over the 10 years covered by these panel data.

Findings

We find that over this period, mean real pre capita consumption increased by about 30% and that the percentage of households considered poor has fallen from 48% to 35%. More specifically, between 1994 and 1999, we find a decline in poverty, with exits from poverty outnumbering entry by a ratio of 2:1. There was little change, however, between 1999 and 2004. Drought and illness shocks are the two principal adverse events that lower consumption in rural Ethiopia.

Despite these findings, many respondents do not perceive that a change for the better has occurred. In fact, self-reports suggest that poverty has increased over this time period. We explored this divergence, and our findings suggest that some of this is brought about by differences in the impacts of household and community level consumption growth. While household consumption growth reduces both measured and perceived poverty, community-level consumption growth is associated with increased perceptions of poverty and wellbeing along some, but not all, measures of subjective wellbeing. In short, where households' own consumption grows more slowly than village consumption, households perceive themselves to becoming worse off.

Preliminary explorations of the causes of growth in consumption suggest that growth in crop incomes

may be an important driver for consumption growth, particularly for poorer households. We also undertook a preliminary analysis of attrition bias, but have found little systematic evidence of this.

2. Mexico

The Mexico component of the project focuses on the long-term impact of human capital formation using the *Progresa* program as a laboratory. We looked at conditional cash transfer (CCT) programs introduced to induce poor parents to invest in the human capital of their children. In the perspective of pathways from poverty supported by education, the analysis focused on the role of CCT programs in protecting the education of children in poor households from income shocks that would make them drop out of school.

We focused on the long-term impact on school achievement of parents' responses to short-run income shocks. In contexts where access to credit and insurance are insufficient to cope with shocks, parents typically save on school costs by taking children out of school and putting them to work either on the labor market or as substitutes for parent activities at home. We analyzed how children whose parents receive *Progresa* transfers respond to shocks.

Findings

Our analysis of the *Progresa* randomized experiment led to the following conclusions:

1. There is a high incidence of shocks in marginal rural communities, both idiosyncratic and covariate. Most important are unemployment and illness of the household head and exposure to natural disasters at the level of the community.
2. Children are taken out of school when parents are exposed to these shocks. This can be to send them to work, or to save on school costs.
3. There is strong state dependence in child education: a child who dropped out of school for a semester has a much higher chance of not returning to school the following semester. Results show that a child in secondary school who misses a semester has a 23% lower chance of being enrolled the following semester. Girls

are also more likely not to return (-12%) than boys (-10%). Therefore, a short-run response in taking children out of school as a risk coping instrument, has long-run consequences on their levels of educational achievements.

Vulnerability contributes to replenish the stock of future poor.

4. *Progresa* transfers fully compensate for the impact of shocks on school attendance. Hence, CCTs are effective not only in raising the educational achievement of the chronic poor, but also in helping their children stay at school when hit by a shock.
5. For the chronic poor benefited by *Progresa*, we calculated that a quarter of the gains from the CCTs were due to their insurance value.
6. These results suggest the possibility of using CCT programs as a social safety net to protect the human capital of children from shocks not only for the chronic poor, but also for vulnerable non-poor households when they are hit by a shock.

Results from the project in Mexico show that a CCT approach to child human capital formation is justified when imposing a constraint on behavior creates social gains, or protects children from decisions taken by parents that are not optimum for them. Imposing a constraint on behavior also has to be administratively feasible, which was the case in the middle-income countries where the approach has been extensively implemented. Use in other contexts with weaker institutional and bureaucratic structures such as Sub-Saharan Africa would deserve adaptation. In the case of Mexico, we show that the CCT approach is vastly more efficient than a non-CCT approach. We estimate that a dollar of CCT induces 16 times more educational gains than a dollar of unconditional transfer, i.e., a pure income effect.

Important policy implications of the research are:

1. CCT programs might be more cost effective by targeting the transfers to children at risk of not going to school, instead of making transfers to children already with a very high likelihood of going to school even without a transfer. Proper targeting on risk and calibration of transfers to induce school enrollment could increase the efficiency of these programs by 30-40%, a major gain.

2. There is considerable heterogeneity in program response. This suggests the need for complementary interventions for specific categories of children less able to take advantage of the program. This includes children far away from a school, with uneducated parents, and with parents who are in occupations with low returns to education.
3. CCT programs only work if the supply side of schooling is sufficiently in place. We show that there are strong interactions between supply-side (quantity and quality of school) and demand-side (CCT) investments. Hence, the demand and supply sides of education must be carefully balanced for optimum results.
4. CCT are effective to protect children from income shocks suffered by their parents. We calculated that a quarter of the gains from the CCTs were due to their insurance value. This suggests that possibility of extending application of CCT programs to the children of vulnerable non-poor households. The design of such programs has been explored in several papers and discussed with task team leaders at the World Bank.

3. Philippines

The Philippine study examines focuses on the role of educational investment, labor markets, and migration in pathways from poverty. Analysis is based on the Bukidnon Panel Survey, a recently completed survey of parent households who were originally surveyed in 1984/85 and 1992, their children who have formed separate households in their origin villages, and children who have migrated to other villages and urban areas in Bukidnon and Misamis Oriental. The 2003 round of the resurvey yielded 311 original respondents (61% of the original respondents) and 261 households formed by non-co-resident children living in the same villages as their parents. The 2004 wave of data collection, focusing on migrants, interviewed 257 households—about 75% of potential migrants to be interviewed.

The team was able to raise funds from the World Bank as part of its Moving out of Poverty Global Project. This study has both qualitative and quantitative components, and investigates what factors enable some households to move out of poverty while others stay behind.

The 2003 and 1984 data were used to select households for the quantitative household survey, based on their positions in the 1984/2003 consumption expenditure quintiles. Households that moved up one or two quintiles (“movers”) were oversampled relative to those who had stagnated or fallen behind. Qualitative work using focus groups, key informant interviews, and ladder of life rankings was then conducted in 10 communities in which most of the movers were located. Field work was conducted from January to June. McNiven and Quisumbing wrote up the quantitative analysis plan for all 15 country case studies, with examples from the Philippine case study. In October 2005, the quantitative analysis plan was disseminated to all country teams. Preliminary analysis of the quantitative data collected as part of this study has also been undertaken.

Two data dissemination workshops were conducted on July 20 and August 3 in Quezon City and Cagayan de Oro, respectively. These workshops introduced Philippine academics and researchers to the Bukidnon Panel Study.

Year 1 was spent largely in computing consumption estimates and calculating the sampling weights. Because the recall period was one year, the consumption estimates were not strictly comparable to the earlier survey, in which a four-month recall period was used. The team also calculated sampling weights that would apply to the 1984/85 sample; these weights had never been used in previous analysis even if a stratified design was used in drawing up the original sample.

Under separate funding from the World Bank, IFPRI and RIMCU conducted a study in the same study villages. The emphasis of this study is obtaining data on people’s perceptions of their quality of life and changes in various indicators of quality of life over the past 10 years. Around 250 households were interviewed; these households were selected by comparing their position in the consumption distribution and oversampling those who had moved up in their of their quintile ranking. Communities selected for the study were those which had more than 10 households that increased their quintile rank. Our intention is to use results from the qualitative survey to inform the quantitative analysis to be undertaken as part of the World Bank funded project as well as the BASIS Pathways project.

Findings

Aside from measures of economic mobility based on the position in the expenditure distribution, the Moving out of Poverty study generated other measures of mobility, such as movements up steps in the ladder of life (an individual’s ranking of his/her own or the household’s position in the ladder). Movements up the ladder are associated with a lower dependency ratio 10 years ago, having more land and assets 10 years ago, fewer disasters in the last 10 years, the implementation of a government land reform program in the community in the last 10 years, and the construction of an upper secondary school in the community.

Relative to no change, the probability of going down one or more steps of the ladder of life is associated with being female-headed, having a higher dependency ratio 10 years ago, less land 10 years ago, a higher percentage of households with unemployed members, the absence of a land reform program in last 10 years, and the absence of upper secondary school construction in the last 10 years.

In contrast, the probability of moving up two or more steps is associated with a lower dependency ratio 10 years ago, having more assets, being Cebuano-Visayan, having a higher credit index 10 years ago, and the construction of an upper secondary school in the last 10 years.

To summarize, factors that predict movement out of poverty are: lower dependency ratios, higher initial levels of assets (land and non-land assets); higher initial levels of schooling; a higher initial credit index; the absence of negative shocks; and government programs such as land reform and secondary school construction.

4. South Africa

The South Africa country study has been designed to highlight two features of the South African landscape that we anticipate will influence the feasibility and sustainability of pathways from poverty. The first is reorientation of government social welfare programs. In addition to significant efforts to increase the supply of affordable housing and local services, the South African government has initiated several new means-tested cash transfer programs. Chief among these is the Child Support Grant (CSG), which was recently modified to extend coverage to all children in poor families from birth to age 14.

The second feature of South Africa is the HIV/AIDS epidemic. The availability of panel data that predate the epidemic will permit us to better understand the impact of HIV/AIDS on the trajectories of households.

Last year saw the completion of the third round of the KwaZulu-Natal Income Dynamics Study (KIDS). Approximately 72% of the core respondents from the original 1993 study were successfully re-interviewed in 2004. In addition, children of the original core respondents have also been interviewed, further expanding the range of analytical strategies for studying the inter-temporal transmission of poverty and economic status. Basic consumption aggregates, poverty measures, etc. were calculated during the visit of Professor Ingrid Woolard to Wisconsin from September-December 2004 period. Professor Woolard's visit was supported by an add-on grant from USAID-Pretoria.

The research team carried out final cleaning of the 2004 rounds of the KIDS data. A usable data set was ready by October 2004, with other data modifications and cleaning continuing throughout the 2004/2005 period. Consumption aggregates and other similar variables were created and cleaned over this period as well. A fully documented data set will be released for public use in late 2005 or early 2006.

Julian May (University of KwaZulu-Natal) traveled to the University of Wisconsin in May 2005. Working with Carter, Aguero and Ravindranath, May developed initial poverty dynamic measures and estimates of livelihood functions using the new KIDS data.

Aguero and Carter traveled to South Africa. Primary outputs included a first draft of a paper describing poverty trends in South Africa. Findings from this work were presented to a seminar audience at the University of Capetown. In addition, important methodological advances were made in the design of the econometric analysis of the child support grant. The revised analysis was subsequently presented at the annual meetings of the American Agricultural Economics Association at a session organized to examine the impact of cash transfer programs in Brazil, Mexico and South Africa.

Butelezi (University of KwaZulu-Natal) traveled to IFPRI to work with Yamauchi on an analysis of the

impact of HIV/AIDS deaths on human school attendance and labor supply of surviving family members. The resulting paper ("Labor Supply Effects of Prime Age Adult Mortality in South Africa") was completed and circulated for peer comments.

Two major pieces of analyses were completed. The first documents the trends in poverty and mobility over the 1998 to 2004 period, contrasting those trends with those observed over the 1993-1998 period. Among other things, government transfer programs are shown to have played a role in the improving fortunes of some poor households over the later period. The second piece of analysis analyzes the child health impacts of one government transfer program, the CSG. Despite the unconditional nature of these transfers, they are shown to have large and significant effects on child health outcomes.

Findings

The South African work on poverty dynamics based on KIDS shows that the headcount measure of poverty decreased over the 1998-2004 period, following a substantial increase over the 1993-1998 period. Much of the improvement in wellbeing at the bottom end of the income distribution appears to be the result of increased government transfer programs. There is some evidence that the next generation households (now grown, independent adult children of original survey respondents) are doing significantly better than their parents in economic terms.

While these trends are welcome news, especially in comparison to the gloomy pattern of income distribution dynamics over the 1993-1998 period, a closer look at the data reveals a continuing process of bifurcation. Nearly 60% of households that were poor in 1993 are still poor in 2004. Moreover, households that were near poor in 1993 seemed to have split into two equally-sized groups. One group has successfully negotiated the new economy and moved ahead economically over time. The other has fallen below the poverty line. These patterns match earlier findings of a poverty trap in South Africa, and pose a challenge to future research to better understand the forces that underlie this bifurcation.

The South African work on the CSG cash transfer scheme notes that cash transfer programs have

become an increasingly important element in the anti-poverty programs of low- to middle-income countries, including South Africa. While such transfer programs obviously increase the current expenditure power of poor households, do they actually increase assets and place households on a long-term pathway from poverty? To answer this question, this study analyzes experience with the South African CSG. Taking advantage of a slow program roll-out that partially randomized the extent of CSG treatment received by beneficiaries, the research utilizes continuous treatment method and estimate that receipt of the CSG during the critical first 36 months of life gives a large and significant boost to child health as signaled by increased height-for-age. Best estimates in the literature are used to calculate the direct effect of this increased height on adult wages. While indicative at best, these calculations indicate that investments in the CSG will generate between a 60-130% rate of return. This research has stimulated significant discussion in South Africa and will be presented to various government audiences in October and December of 2005.

B. Collaboration

This project contributes to synthesis activities in IFPRI's Global Research Program on Pathways

from Poverty. Three of the study countries (Ethiopia, the Philippines, and South Africa) are core study countries in the program. Hoddinott and Quisumbing co-lead this program, so that comparable analysis can be conducted across common countries to facilitate synthesis work and the production of "global public goods."

The South Africa component of the work interfaces with a DFID-funded effort to promote evidence-based decision-making regarding social welfare programs in South Africa. The South African Department of Social Development is the primary client for this effort (along with the Treasury department), and the University of KwaZulu-Natal is the primary academic partner for the effort.

There is extensive interest and controversy about the CCT approach among international development agencies. This has led us to collaborate with several agencies in discussing and reviewing implementation of the CCT approach: Development Economics Research Group, World Bank, British DIFID, French AFD, and USAID. These development agencies are our primary audience and collaborators in analyzing the CCT approach and discussing its extension to a safety net function.

II. WORKPLAN 2005-06

A. Research Plan

1. Ethiopia

This year we will finalize the analysis of changes in consumption levels as well as turning to two additional analyses. The first will focus on understanding the factors that have led to higher incomes. The second will focus on shocks and the ability to mitigate the impacts of shocks.

2. Mexico

This year we will use a 2003 follow-up survey to analyze the impact of school and child labor on longer term employment, wage earnings, and migration decisions. Analysis will focus on these children who went to school and worked less because they were at the critical age of entering secondary school when benefited by *Progresá* transfers. We have secured access to the 2003 survey and this research is currently in progress.

3. Philippines

This year analysis will result in two papers. The first will explore the determinants of movements out of poverty—what factors predict what households move up or stay behind. Among the factors to be considered are family background (education, assets), community characteristics, and aggregate and idiosyncratic shocks. The two major shocks identified in the survey are the El Niño drought (an aggregate shock) and health problems (idiosyncratic shocks).

The second paper will focus on the role of educational investment, migration, labor markets, and remittances in providing a pathway out of poverty. We will exploit differences in the timing of construction of secondary schools (secondary education was mandated to be free since 1986) to see whether exogenous changes stimulated further investment in schooling. Possible instruments for remittances include weather shocks in migrant destinations (we do not have enough international migrants in our sample to use exchange rate shocks as instruments).

4. South Africa

This year work includes a December 2005 conference in Pretoria that will be hosted by the South African National Treasury, which is the branch of government responsible for pro-poor budgeting. Two pieces of work supported by BASIS will be presented:

- “The KwaZulu-Natal Income Dynamics Study (KIDS) 3rd Wave: Methodology, First Findings and an Agenda for Future Research,” by Agüero, Carter, May and Timaeus. This paper uses the KIDS data to explain the major trends in income distribution, poverty, government grants and services, and HIV/AIDS.
- “Do Unconditional Cash Transfers Enhance Human Capital Accumulation? Analysis of the South African Child Support Grant,” by Agüero, Carter and Woolard. This paper finds strong evidence that CSG has enhanced the human capital accumulation of poor children.

Three additional pieces of work are planned. The first will be an analytical effort to decompose the striking income distribution changes revealed by the KIDS data. How much of the recent income growth in the bottom deciles of the income distribution is the result of government transfers, how much from an expansion of informal/self-employment, etc.?

The second new paper will explicitly focus on the next generation, i.e., the children of the original KIDS respondents. Preliminary analysis suggests that these now grown children are doing very well. We propose to analyze the fate of various cohorts to see how wages, employment and self-employment opportunities are changing and shaping the livelihood outcomes for the next generation of South Africans.

The third new paper will employ a treatment effect approach to study the impact of HIV/AIDS on asset accumulation and trajectories of household wellbeing. The KIDS data should give us a unique opportunity to understand the deeper effects of HIV/AIDS.

5. Workshop on cash transfers

There is considerable interest among developing country governments and the donor community in using cash or quasi-cash transfers to the poor as an instrument for asset creation. The objective is to reduce immediate poverty through the transfer, and to reduce future poverty through the ability to generate autonomous incomes by making use of the accumulated assets. Transfers can be unconditional or conditional, where the condition is assets accumulation, such as child human capital development, to qualify in receiving the transfer. This approach has been widely used and is rapidly

spreading to new country settings. There is a need to take stocks of the lessons learned and to discuss adaptation of the approach to different contexts.

USAID has indicated interest in hosting a workshop on the subject in Washington DC in summer 2006. Our project will contribute to the workshop by focusing on the long-term impact of these interventions on poverty reduction through reduced vulnerability and through the assets accumulated as a consequence of the transfers. The workshop will also explore the relative merits of unconditional versus CCTs in different country setting and according to project objectives.

**MICROFINANCE IN THEORY AND PRACTICE:
Field Experiments**



**Better practices in microfinance can help entrepreneurs gain the capital to start small businesses. This woman in the Philippines started an electrical shop with her first-ever loan, which she received from rural bank in Mindanao.
(Photo by UMABS)**

Principal Investigators

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http://www.basis.wisc.edu/microfin_practice.html

PROJECT PROFILE

The project studies fundamental questions related to microcredit markets using field experiment methodologies conducted in South Africa, the Philippines and Peru. The project encompasses several issues: responsiveness of borrowing and repayment to interest rates, impacts on borrowers of access to consumer credit, and impacts of information asymmetries in microfinance.

For policymakers, our results will bear directly on critical policy questions. 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? What product and process designs can most effectively minimize credit

market failures that result from information asymmetries?

For microfinance institutions, we examine how interest rate, marketing, credit evaluation, and product and process policies can be optimized in order to deepen financial sustainability and outreach to the poor, and mitigate information asymmetries.

For academics, we address open theoretical and empirical questions across various fields: development economics, contract theory, behavioral economics, banking, finance, public health, psychology, and decision sciences.

Our findings and methodologies will develop the template for further research on policy and practice worldwide.



Support

Core funding: BASIS.

Outputs

- Karlan, D. and J. Zinman. 2005. "Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment." Center Discussion Paper No. 911. New Haven: Yale University Economic Growth Center. http://www.econ.yale.edu/growth_pdf/cdp911.pdf
- Karlan, D. and J. Zinman. 2005. "Elasticities of Demand for Consumer Credit." Center Discussion Paper No. 926. New Haven: Yale University Economic Growth Center. http://www.econ.yale.edu/growth_pdf/cdp926.pdf

I. ACTIVITIES 2004-05

A. Accomplishments

1. Borrower behavior and credit market efficiency

This aspect of our work builds on an experiment that will shed light on fundamental questions related to contract theory and consumer choice. The experiment randomly assigned interest rates and marketing strategies to 57,703 former clients of a South African lender, and was implemented as part of the lender’s day-to-day operations from July to December 2003. We designed the experiment to:

- estimate the importance of specific information asymmetries typically thought to be prevalent in credit markets for the poor,
- derive price elasticities of demand,
- test several stylized facts about consumer choice from behavioral economics, experimental economics, and psychology.

The experiment contains two novel features. One is randomized interest rates offered along two different dimensions, first on a direct mail solicitation and second after the borrower applies (hence accepting the direct mail offer rate). By separating the “offer rate” from the “contract rate,” we can identify cleanly any adverse selection on interest rates. Further components of the experiment test theories of the impact of debt burden, including specific types of moral hazard and refinancing incentives on repayment.

The second novel feature randomizes marketing treatments on the direct mail solicitation. These are designed to test several influential stylized facts from behavioral and experimental economics that have yet to be validated in the field. Specifically, we use scripted communications to test whether consumer choice is sensitive to manipulations such as reference points (e.g., presenting the offer itself vs. as a comparison to a competitors’ rate), the amount of information provided (e.g., few vs. many loan options), deadlines (sooner to stimulate a sense of urgency vs. later to provide more time to accept the offer), subtle cues (e.g., a photo, an ad for a

prize drawing), and suggestions (on borrowing needs, loan term).

The experiment proceeded as follows. The lender randomized interest rates attached to “pre-approved,” limited-time offers that are communicated by directed marketing that contains randomized treatments. Two rates are randomly assigned to each client, an offer rate included in the solicitation, and a contract rate that is equal or less than the offer rate and revealed only after the borrower has accepted the solicitation and applied for a loan. For 60% of the clients, the contract rate is identical to the offer rate. Final credit approval and maximum loan size

Figure 1: Analytical Framework

	High Contract Rate	Low Contract Rate
High Offer Rate	← Moral Hazard / Repayment Burden →	↑ Adverse Selection ↓
Low Offer Rate	N/A	

are set “blind” to the experimental interest rates. Therefore the two interest rate randomizations enable us to distinguish selection effects from moral hazard effects, since some clients will select based on different interest rates, but then have identical repayment burdens thereafter, while other clients will select based on the same rate, but have different repayment burdens. Figure 1 depicts this intuition.

We also randomly assigned differential “contract rate windows,” with some clients receiving the lower rate for one year, and others obtaining it for just the first loan. This “dynamic repayment incentive” enables us to test whether access to future financing at preferable rates reduces any moral hazard found in this market.

Field work was completed in December 2003. During 2004-05, we analyzed data, presented

preliminary results in several conferences, and prepared several publications.

Findings

We found evidence of moral hazard among male borrowers and adverse selection among female borrowers. The former finding is consistent with the widely-held belief that it is more difficult to monitor repayment behavior among men. Yet the finding that only women select adversely is surprising, and presents new puzzle for practitioners and researchers.

Overall the asymmetric information problems appear to be severe, accounting for perhaps 20% of defaults in our sample. Moreover 20% is likely a conservative lower bound on the true extent of information problems in this microcredit market, given that we were working with a sample of high-performing prior borrowers, and that we find evidence suggesting that asymmetric information problems are less pronounced for borrowers with more prior borrowing history with the lender. It stands to reason that first-time applicants pose even greater adverse selection and moral hazard problems for lenders.

The presence of asymmetric information problems may help explain the prevalence of credit rationing even in a market that specializes in financing high-risk borrowers at very high rates. This suggests that interventions to expand credit access could indeed have beneficial impacts for borrowers, who may be denied loans they have the ability to repay, and on markets, via the creation of public information on marginal applicants. These positive impacts could lead to improved economic growth.

Our findings suggest the value of exploring investments in improved risk assessment (e.g., through credit scoring) to mitigate adverse selection, and in improved monitoring (e.g., through incentives to increase loan officer productivity) to mitigate moral hazard. The academic working paper from this first project can be found on the web at <http://www.karlan.net>.

2. Impacts of access to consumer credit

This aspect of our work has been or is being implemented in three countries: South Africa from September to December 2004, the

Philippines since May 2005, and Peru beginning in July 2005.

In South Africa, we ran a pilot in seven branches of the lender in three provinces. The lender was bought out by a South African bank late in 2004, so we will not be able to expand this project to more branches nor to develop new experiments with this lender. We pilot tested the survey instrument and finalized the survey procedures in the second half of April 2005. The collection of follow-up data for loan applicants involved in the pilot took place between May-August 2005.

In the Philippines, we developed a credit scoring system for a Rural Bank based in the Metro Manila area, and pilot tested it in one branch of a MABS-affiliated lender between June and September 2005. Taking part in the project were 305 applicants, of which 127 were randomly approved or denied, constituting the sample size for the impact analysis. Due to the small size of the sample, no data collection took place during the pilot. Default went down in the pilot branch for loans granted during the pilot, showing that the credit scoring was successful and can confidently be expanded to all branches. Full launch of the project will occur in 2006.

The Green Bank of Caraga, another MABS-affiliated lender, agreed to start a similar credit scoring experiment in Mindanao Island. This experiment started with a round of data collection on 400 past applicants in an effort to develop a rigorous data-base scorecard.

Findings

This project identifies the impacts of microcredit using an experimental design that randomly assigns credit within a pool of marginal applicants, and then follows-up with extensive household surveys that compare outcomes across the randomly “derationed” and “rationed” individuals.

Preliminary data does not reveal any significant impact of the loan on borrowers’ wealth or health. The lender in South Africa, however, only makes consumer loans to permanently employed individuals. Further research needs to look at the impact of microloans for microentrepreneurs, which will be addressed by similar projects implemented in the Philippines and Peru.

B. Dissemination of Findings

We finalized and submitted three papers on the responsiveness of borrowing to interest rates and the occurrence of information asymmetries in microfinance.

- “Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment,” by Karlan and Zinman. Submitted to *Econometrica*.
- “What’s Psychology Worth? A Field Experiment in the Consumer Credit Market,” by Bertrand, Karlan, Mullainathan, Shafir and Zinman. Submitted to *Journal of Political Economics*.
- “Elasticities of Demand for Consumer Credit,” by Karlan and Zinman. Submitted to *American Economic Review*.

We presented our findings to academics and policymakers. Findings on information

asymmetries, based on the “Observing Unobservables” paper, were presented at universities, two Federal Reserve Bank conferences on consumer credit, the World Bank Research Group, an World Bank/IMF conference on financial development, and the Econometric Society meetings.

Findings based on the paper “What’s Psychology Worth” were presented to universities, the Federal Reserve Bank conference on consumer credit, the Econometric Society meetings, and a conference on psychology and economics in Toulouse, France.

II. WORKPLAN 2005-06

A. Project Plan

1. Borrower behavior and credit market efficiency

We now seek to extend this experiment to *new* potential clients of the lender; i.e., consumers who have not previously transacted with the lender. To-date only *former* clients have been subject to the interest rate and marketing treatments. The distinction between new and former clients is especially critical in estimating the prevalence of information asymmetries. Preliminary evidence based on former clients finds some evidence of adverse selection, and relatively strong evidence of moral hazard. The question naturally arises whether private information (e.g., on a borrower's "type," or inherent riskiness) may be revealed over time via the process of transacting with the lender. If this is true, then our existing estimates may understate the extent to which information problems (particularly adverse selection) prevent borrowers without a prior lending relationship from obtaining credit. Extending the experiment to new borrowers will also permit exploration of any heterogeneity in consumer sensitivity to loan price and marketing.

2. Impacts of access to consumer credit

By working with a lender that has agreed to grant loans randomly to some clients who normally would be rejected, this project can study "derationed" households that are by definition marginal borrowers, and hence likely to be both credit constrained and the target of policy interventions. Rationed (rejected) applicants form the control group.

The research team will follow up the experiment with household data collection designed to measure loan uses and impacts, and then compare the observed behavior and outcomes of the derationed to the rationed. This experiment addresses the fundamental question of whether microcredit produces measurable benefits, broadly defined. There is remarkably little convincing evidence on this question relative to

the amount of resources allocated to microcredit initiatives across the world.

This project is also designed to generate unique evidence on the decision-making behind the impacts (or lack thereof) of microfinance. On the borrower side, we will explore how preferences and choice mechanisms, including household bargaining and financial sophistication, map into loan uses and outcomes. Our methods here will link the experimental design with survey modules incorporating practical insights from psychology and behavioral economics on preference elicitation and cognition. On the lender side, we will test how specific types of qualitative and quantitative information can be used to predict repayment and thereby optimize risk assessment models. Our methods will layer randomizations designed to capture the influence of specific types of information on underwriting decisions.

This project will shed light on several critical policy issues facing microfinance markets in South Africa and elsewhere:

1. Clean measurement of impacts will address the multi-billion dollar question of whether microcredit is an effective anti-poverty tool. Does microcredit help the poor accumulate assets? Or does debt burden cause the poor to accumulate *fewer* assets in the long run? Moreover the market setting will generate evidence on the specific issue of whether for-profit microlenders can deliver such benefits to borrowers.
2. Measurement of borrower investments and related decisions will shed light on "affordability" issues that dominate microcredit policy debates. We will test whether poor households make optimal decisions in the face of high rates and uncertain cash flows, and, if not, whether mistakes are systematic in ways that can be remediated through policy.
3. Experimentation with credit underwriting procedures will help reveal the optimal mix of "hard" and "soft" information, and the effectiveness of decision-making tools, and thereby shed light on sustainable risk assessment practices. This will provide critical

information for South African policymakers dealing with “reckless” microlending operations that appear to have caused the recent failures of two large commercial banks.

4. Our methodology can be replicated to test impacts and/or optimize underwriting procedures in any setting.

An initial household survey will be modeled after the World Bank’s Living Standards Measurement Study. The primary survey components will cover to following areas.

Debt. We will ask about any loans applied for over the prior six months and all loans currently held. For each application, we will ask about the result, and if a loan was given, how the funds were spent. These questions will first focus on formal sector borrowing, and then on informal borrowing from moneylenders as well as from peers and family. A catalog of household balance sheets will inform ongoing efforts to promote credit market efficiency via information sharing.

Consumption. Presumably, if marginal debt is not used to pay down existing debt, then it will be used to either invest or accelerate the timing of consumption. This section examines the latter, and is divided into two parts: durables and non-durables. For non-durables, we will collect data on basic consumption in the household such as the amount consumed in the last 30 days on food and drink, transportation, domestic employees, entertainment, etc. We then will examine expenditure on durables, such as children’s clothing, furniture, radios, bicycles, household appliances, household improvements, etc. For each consumption item, we will focus on the timing of the expenditure in order to understand the impact of access to credit on the intertemporal tradeoffs made by the recipient.

Investment. Preliminary data collection suggests that there are several types of investments made by borrowers in this market. Many borrowers report making human capital investments in their children, so we will ask about paying for school fees and health care. Another common use appears to be home repairs. Borrowers also report wage-employment related uses, so we will ask about car repairs, clothing for work, and employment status. There appears to be some entrepreneurial investment as well, so we will ask

simple questions about business activity and related assets.

Welfare, wellbeing and stress. Since peace of mind is presumably an important component of utility, we are particularly interested in whether credit serves to alleviate psychological stress (by facilitating productive investments, or providing buffers to adverse shocks) or exacerbate it (by creating a repayment burden). These measures of mental health are of special interest in the South African setting, given high levels of HIV and crime.

Migration and remittances. Internal migration is a major issue within South Africa, where many workers live far from their family home, to which they only return occasionally and/or remit funds. Providing credit to the working poor potentially alters the incentives for and consequences of these patterns.

The effect of access to credit in *rural* areas to these issues is unclear. It could reduce incentives to migrate to urban areas if the credit provides rural citizens better opportunities to prosper in their current environment. On the other hand, it could provide the funding which enables those in rural areas to migrate to urban areas. The effect of access to credit in *urban* areas is not so ambiguous: it should increase the incentives to migrate from rural to urban areas, particularly if remittances can be sent back home. Because this study will take place in both rural and urban settings, we can treat the two settings as two distinct experiments and in each area separately evaluate the causal relationship between access to credit and the decision to migrate internally, remit funds back to family, or receive funds from family members living away.

Household decision-making. This component speaks to the particular concern that vulnerable borrowers are prone to overborrowing. We will focus on measuring three types of parameters here: preferences, rationality (decision-making), and bargaining power. We will draw questions designed to elicit relevant features of preferences (e.g., self-control, impatience) and decision-making skill (e.g., overconfidence) from recent advances in psychology and behavioral economics. These measures will permit examination of whether these proxies correlate with loan uses and ultimate outcomes, and

thereby shed some light on the mechanisms underlying any observed impacts. Intrahousehold bargaining power is potentially another important mechanism, as evidenced by the microcredit industry's particular focus on female borrowers and the extensive literature on the impacts of intrahousehold resource control on family and child outcomes. As such, the survey will include questions that review specific important decisions (related to large purchases, employment, borrowing, school attendance, etc.) and ask who discusses these decisions and who ultimately decides in the face of conflict. We also will examine whether access to credit impacts power and decision-making itself.

Household demographics. Attributes including gender, age, and education will be measured in order to assess the distribution of impacts across different subsamples. Such analyses on smaller subsets of the data should be productive given the targeted sample size. Our empirical strategy will enable us to test whether (and how) derationing works by estimating directly whether the derationed (relative to the rationed) enjoy a greater quantity of financial intermediation, obtain a greater quality of financial intermediation, are more likely to make investments, make profitable investments.

One limitation in terms of direct policy implications is that the product under consideration is *consumer* debt. Borrowers must demonstrate stable wage income to be deemed creditworthy by the lender. In contrast, the worldwide "microfinance revolution" has focused on expanding access to credit for *entrepreneurial* activity. The project outlined next deals directly with this market.

3. Expanding access to entrepreneurial finance

This new project will take place in the Philippines with a rural bank. First Macro Bank is an affiliate of the MABS program, which is interested in this project because of its ability to expand outreach and improve efficiency of the lending operations of First Macro.

This project will apply our methodologies to a new setting, microentrepreneurs in the Philippines. We will systematize the lender's experimentation with entrepreneurial risk assessment by testing the ability of different types of information, and different types of underwriters, to predict the performance of loans to micro-entrepreneurs. We will modify our borrower/applicant sample frame and survey instrument to focus more on business investment and related decision-making (e.g., risk assessment and project choice by the *borrower*), and less on consumption smoothing. As before, we expect that 2,000 completed surveys will be required to identify impacts on the outcomes of interest.

This work has clear policy and practical implications. The ability to measure impacts of entrepreneurial finance with this project meshes with the worldwide focus on expanding credit access for microenterprises. And the focus on optimizing the mechanics of risk assessment speaks directly to widespread concern with developing sustainable, cost-effective business models of microfinance delivery. An additional benefit is that this project will provide a case study on launching a new microfinance product line via rigorous experimentation. We expect that this will provide a boilerplate that can be used by practitioners, and promoted by policymakers, to derive sustainable practices that effectively extend access to capital.

The experiment will be built into normal operations for the lender, so that throughout the year the sample size will grow, and the experiment itself may change as needed in order to balance the needs of research and operations (e.g., the credit scoring model should change as further data are gathered).

In order to hedge the risk in working with this new lender, we are also pursuing another lead with a bank in Bolivia. We have had preliminary conversations with the bank officials, but we are proceeding slowly so as to see the results of the Philippines project first.

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



Field research in San Cristobal, Guatemala.
(Photo by Karina Vargas Rebatta)

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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: 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.

These two factors create a huge host of (mostly semi-poor) borrowers who have, in the past decade, established experience and reputation with microfinance lenders. Private capital markets are increasingly extending loans to these poorer clients. This intersection of factors means that credit reporting can be a natural mechanism through which economic mobility may be enhanced.

The research focuses on Peru and Guatemala. Peru was selected because of the presence of a resurgent smallholder agricultural lending sector side-by-side with an active microfinance sector. Guatemala was selected because a confederation of major microfinance lenders recently instituted a new credit bureau. Using 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, which have allowed us to assemble unique datasets for the analysis of information sharing in Guatemala. Not only do we have extensive data on the client base of several of the country's largest microfinance lenders (providing us with the ability to measure important, non-experimental components of client composition over time) but we are organizing an ever-increasing battery of experiments in Guatemalan microfinance markets. This combination of several forms of experimental identification with extensive client data provides a very rich laboratory for the understanding of policy impacts.

Through 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 several 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, and high-frequency panel data on a very large group of borrowers will allow us to make fine-grained policy recommendations.



Support

Core funding: USAID/BASIS. Add-on: FAO Latin America Offices.

Outputs

McIntosh, C., and B. Wydick. 2005. "Competition and Microfinance." *Journal of Development Economics*.

de Janvry, A., E. Sadoulet and G. Rafert. 2005. "The Impact of Credit Bureau Use on Loan Performance and Client Selection in Microfinance Lending." Conference working paper.
<http://gemini.econ.umd.edu/cgi-bin/conference/download.cgi?db_name=NEUDC2005&paper_id=126>

"Report on Microfinance Institutions in Ayacucho, Peru." GRADE.

I. ACTIVITIES 2004-05

A. Accomplishments

1. Impact of credit bureaus in screening clients

Genesis Empresarial, one of Guatemala's largest microfinance lenders, agreed to share the information it collects on its clients. This includes basic information on the client and his/her business at the time, and records on loans and repayments. We also obtained the information that the credit bureau, Crediref, collects on the Genesis clients. We matched a large number of the records, with a more systematic matching now being done. During the period analyzed (2001-2004), clients were not aware of the use by Genesis of the credit bureau; therefore, any change in performance observed among the clients can only be attributed to the change in the selection of clients by credit officers.

Findings

We analyzed the change of performance on the first loan that any client takes, and show that as branches started to use the credit bureau, their selection of clients was followed by an improvement of repayment performance. We also analyzed the changing pool of clients, and find that, while credit officers initially select relatively more wealthy clients when using Crediref, they progressively returned to their targeted clientele of poorer entrepreneurs.

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

Credit bureaus have a significant impact on borrower performance, even when operating 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, and within six months branches using the bureau have

arrears which 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.

Using individual level information, we show that the use of information from the bureau results in a large and significant decline in arrears, thus suggesting that the microfinance institution achieves large efficiency gains. The use of credit bureau information results in a concurrent initial increase in the average wealth of new clients. However, we also find that as branches continued to use the bureau, the average wealth of new clients decreased, indicating a move back toward the poor.

2. Training group loan clients

We completed training group clients in Genesis by November 2004. Training was designed to impart the maximum information to clients, many of whom are illiterate. Administration of the training was randomized in a stratified fashion, which allows us to measure not only the direct effect of the training, but the way in which information spills over to untrained clients. In September 2005, i.e., one full loan cycle after the training, we collected complete data on the clients' performance from Genesis. We are in the process of cleaning data and merging it with information received prior to the training in August 2004.

Subsequent to training, we expect a difference in repayment rates to emerge between treated and control groups, 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 questions can be tested.

1. How does the behavior of more informed agents differ from the control?
2. 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 "full" information about how their information is used?
3. 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?

3. Impact of credit on volatility and covariance of agriculture vs. non-agriculture returns

This project encountered endless difficulties in the field, the latest one being that the area was struck by mudslides. We have had many delays and have had to adjust the procedure several times. The current scheme is to randomly select an intervention and a control village in each of 18 pairs of villages. In the treatment village, FUNDEA proceeded to its regular selection of clients and extended a new loan. We are collecting household data on all new clients of the treatment villages and all household of the control villages. We also leave a ledger to be completed by the household during the full nine months of the experiment.

Intermediate surveys and verification will be done every four months. Data collection is done by another firm. The baseline survey has been conducted in four communities, for a total of 319 households.

4. Analysis of ex-FINCA clients

This project, which follows up a large survey conducted by our collaborators in 2001, will utilize a quasi-experimental identification on how the increasing use of a credit bureau in Ayacucho has altered the experience of clients leaving a pre-existing MFI, FINCA. In May 2005 we completed the survey of all clients who had left FINCA during the period since the last survey, and concurrently we completed a detailed survey of every lending institution in the Ayacucho area. The individual

surveys focused on the experience of those who had left FINCA as a function of their repayment performance while clients, and of the degree of information-sharing which prevailed at the time they left. The institutional survey focused on the exact nature and timing of information sharing, and the process for screening new clients. Using the latter, we can assemble a dataset for quasi-experimental identification of the impact of information shared by FINCA on the subsequent experiences of departing clients. Of particular interest are those who left FINCA and began taking loans immediately from other lenders, because here we see the graduation impacts of information sharing in a very clear form.

Data double-entry was completed as of the end of July 2005, and cleaning of data is complete.

B. Collaboration

Karlan and Valdivia have been surveying FINCA clients in Ayacucho, Peru for several years as a part of a follow-up for a business skills training project that they completed in 2002. In collaboration with these researchers, we completed a follow-up survey of all clients of FINCA who have left and gone on to seek credit from other sources, allowing us to pursue questions related to the role of information sharing in altering the subsequent experience of clients who have established a track record with one lender and are now seeking loans from others. An institutional survey paid for under our BASIS grant will help to enrich the understanding of the contractual environment for their other project as well as giving us the “treatment” variable for the number of cooperating lenders.

II. WORKPLAN 2005-06

A. Research Plan

1. Training group loan clients

As Genesis started to cover the cost of consulting the credit bureau in July 2005, it also informed its individual clients of the existence and use of Crediref. This has made it irrelevant to continue with the project of individual training of clients. We, however, will be able to see if there is a decrease in moral hazard in repayment with the diffusion of the information. We are proceeding with analysis of these data.

Analysis by January 2006.

2. BanCafe project

We signed an agreement with BanCafe, the second largest micro-lender in Guatemala, to get access to their entire client database for their small- and micro-enterprise lending sector. Using these data we can greatly augment our database and investigate much more subtle hypotheses with regards to the impacts of competition, cherry-picking of clients, and incentive effects across lenders under different information-sharing environments. In the short term we have committed to provide the following deliverables for BanCafe:

1. A study of the impact of BanCafe's entering Crediref, which we will accomplish by comparing loan sizes and repayment performance in the Banco Comunal and Grupo Solidario loans before and after the data at which BanCafe began to use the bureau.
2. A study of the determinants of successful clients, which can be used by BanCafe as a scoring model to help them in selecting new clients. This study will be accomplished by using the information available at the time a loan begins (gender, household expenditures, age, location, business type) to explain subsequent performance. This scoring model can be used to predict failure (default, small loans and dropout) as well as success (clients who take large loans without repayment problems).
3. A performance report, where we compare the different offices and credit officers of BanCafe to give the institution an exact sense of where

the successes and where the failures within the institution lie.

4. A report on the evolution of the client base over time. We will separately examine the Banco Comunal, Grupo Solidario, and Individual accounts to prepare a report on the expenditure levels, gender composition, and business types of these different loan types, and how they have been changing over time.
5. An analysis of the ways in which the additional information available through Crediref has changed the value of information used by Credit Officers in the screening process. This may allow for the streamlining of the application process, by eliminating questions that have no additional screening value once the information from Crediref is available.

February 2006: Presentation of an initial written research report to BanCafe. At this time the research team will receive feedback from the directors of BanCafe as to which parts of the report are most useful, and additional work that could be done to improve the strength and applicability of the results.

March-April 2006: Revision of original report, preparation of final report.

May 2006: Presentation of the final results of the research collaboration to the Junta Directiva of BanCafe.

3. Competition project

The purpose of the study is to answer how the presence of Crediref altered the impact of competition between lenders, and how different kinds of lending products were differentially effected and how they interact. We will compare the effects of increasing competitor activity on outcomes in the period prior to Crediref, and then use the natural experiment of the entry to Crediref to gauge impacts.

We break lenders' clients into three mutually exclusive categories (communal banks, solidarity groups, and individual loans). We take data observed at the level of the administrative unit of the institution, so we have branch-level data for a nearly-comprehensive group of lenders over the past five-year period.

From each participating institution, we ask for the following data:

- number of new and continuing clients in each lending product in each administrative unit by month for the past five years,
- average repayment performance of clients in each lending product in each administrative unit by month for the past five years,
- exact date at which each administrative unit began to use Crediref to screen clients, and exact date at which each unit put data into Crediref.

We now have firm commitments of participation from BanCafe, Genesis, Fundemix, and two other small MFIs. We are pursuing commitment from BanRural, with which we would then have all the largest micro-lending institutions in the country.

November 2005: Complete agreements of participation with collaborating institutions.

December 2005-March 2006: Obtain data from all collaborating institutions and analyze.

April 2006: Presentation of final results to the managing board of Crediref.

4. Credit officers' use of different types of information in screening, Genesis

We have simplified it to the game stage only and are in the process of selecting someone to conduct the project.

December 2005: Prepare the case study client files, including personal assessments.

February 2006: Organize and implement the experiment.

March: Report and analyze outcomes.

May: Final report to Genesis of the results on randomized training evaluation we conducted in

2004, experimental games that will be conducted in part using credit officers from Genesis, and quasi-experimental results, using the latest updated round of data, of the impact of Genesis' staggered entry into the credit bureau Crediref.

5. Impact of credit on volatility and covariance of agriculture vs. non-agriculture returns

The project is now well on its way, with about half of the new clients incorporated by FUNDEA.

September-November 2005: Baseline surveys in all treatment and control villages. Also, all new loans disbursed.

March 2006: Preliminary analysis based on the first five months of information.

June-August 2006: Collect data from the full cycle of experimentation.

September 2006: Presentation to FUNDEA of the final results of our collaborative research efforts. This will include (a) presentation of the differential impacts of credit on households that invest the loans in microenterprises versus agriculture, (b) an analysis of repayment performance and profitability across these investment types from the perspective of the lender, and (c) an analysis of seasonal variability and risk in lending, with recommendations on the client types that would allow FUNDEA to minimize portfolio risk while continuing to lend to poor agriculturalists.

6. Analysis of ex-FINCA clients

Data double-entry and data cleaning are complete. Analysis will be conducted this year.

November-December 2005: Initial analysis of data.

January-February 2006: Write-up of results and submission for publication.

APPENDIX: FIELD WORK REPORT: INVESTIGATING THE EFFECT OF MICROCREDIT ON RURAL GUATEMALA IN THE AREAS OF HOUSING STRUCTURES, EDUCATION LEVELS AND CHILD NUTRITION

by Gonzalo Villaran, Karina Vargas Rebatta, and Adam Gorski

Gonzalo Villaran, Karina Vargas Rebatta, and Adam Gorski spent six weeks in rural Guatemala carrying out field research in towns surrounding Quetzatenango and Matzeltanango. Gonzalo's research focused on the impact of credit on household structures. Karina's research focused on the credit impact on children's education levels,

Matzeltanango offices, respectively. Our plan was to visit their clients in the surrounding rural areas. The majority of our time was spent living in Xela, where most of the interviews were conducted. Every morning we would walk from our hostel to the Fe y Alegria office where we would meet Juan Jose and Julio Cesar, the loan officer with whom we worked most frequently. Fe y Alegria wanted to visit fifteen clients a day to follow up on the progress of the client and their micro-enterprise. With the client's permission and the loan officer's introduction we would conduct the survey. The loan officers functioned as guides. They led us to their clients, introduced us, and helped clarify any questions the clients' had about our surveys. Each survey would take fifteen to twenty minutes. The time needed for traveling between each individual client was far greater than the time it took us to do the survey, so we interviewed the clients upon meeting them.

On a typical day, we were able to complete eight to ten surveys before the daily rains, which concluded our working day. On market day it was common for the majority of clients to be at the market buying or selling, which made them impossible to be surveyed. The loan officers knew which areas had markets on which days and were able to help us plan accordingly. For the implementation of our survey we bought three scales and two tape measures for weighting and measuring children. Upon visiting each client, we registered the GPS coordinates of the location. We did this in order that future students would be able to interview the same clients and research the changes that occurred. Our survey asked questions from our individual research areas (see below) and also on general areas such as age, loan size, remittances, knowledge of micro-credit, business type, and language spoken. We collected 218 surveys over the course of five weeks in Xela and Matzeltanango. We are currently in the process of entering the data.



Loan officers of Fe y Alegria
(Photo by Karina Vargas Rebatta)

while Adam focused on the impact of credit on child nutrition levels. This report is a review of the methodologies used during data collection, the process of data collection, and the theses of each individual's research project.

We spent the first week in Guatemala city and Quetzatenango (Xela) establishing connections with the Jesuit organization Fe y Alegria, which has been involved in microcredit lending in Guatemala for 12 years in various rural locations. We met with Juan Manuel Ovando Galdamez at the central Fe y Alegria Guatemalan office, where he introduced us to Juan Jose and Mildred who head up the Xela and

Xela

Xela at an elevation of more than 8,000 feet, and the communities we visited around Xela were at even higher altitudes. Generally, the only way to reach the communities was through poorly-maintained and often muddy roads. The majority of the clients lived in houses made of adobe and grew corn and bean for subsistence. The most common uses for small business loans were for financing some type of small “tienda” selling *consumo diario* products or some sort of clothing manufacturing enterprise. One of the communities is San Cristobal, which is right next to the highway making it a semi-urban town with paved roads, a municipal building, a big school, and a couple *comedores*. Like San Cristobal, La Esperanza is also close to the main highway, thus relatively urban. La Esperanza is relatively flat compared to the other towns like Pachaj. Pachaj is a community with no paved roads, fairly rural and difficult to access. Technology is rare and not a single *comedor* can be found. It has a lot of *milpa* (corn crops) and the houses are spread out between *milpa* fields. Pachaj has a lot of Fe y Alegria clients, which is why we spent a lot of time in it.

Mazaltenango

Two hours east, 20 degrees hotter and 5,000 feet lower is Mazaltenango, where we did our research the final week. The climate and environment require a different lifestyle, but in many ways the clients were similar to the clients surrounding Xela. Most lived in rural areas and used the loans for commercial activities such as market stands and little “tiendas.” Beverage delivery service, probably due to the heat and humidity, is also a popular business choice of Fe y Alegria’s clients in Mazaltenango. Subsistence corn crops are far less common than in Xela, instead large farms called “fincas” employ many rural workers. Fincas grow crops of sugar and rubber. The poorest houses are made of wood, not adobe, maybe because of the heat.

Adam Gorski:

Borrower gender and child nutrition

We were able to collect 218 surveys of rural Guatemalan microcredit borrowers. All borrowers were associated with the same credit organization, Fe y Alegria, but often lived in vastly different

spheres of urbanization, climate, and wealth. The three-page survey asked questions in many different areas such as household structures, education levels, and loan size and usage, but the part done exclusively for my project involved weighing and measuring children of the borrowers, as well as questions about diet and nutrition. At around six years of age, genetics start to play a larger role in child growth and development than nutrition, so younger children were targeted for the survey. Children as old as fourteen were weighed and measured as well. A difficulty we did not anticipate was the afternoon rains forcing us to work predominately in the mornings, which was when most children were in school. We also asked questions about vaccinations and diet, such as the number of times eating meat each week and the contents of a typical breakfast. However, these questions were merely to supplement the measurements and I hope to focus my thesis on the more concrete data garnered from size and weight measurements. Unlike much of survey data, these measurements are untainted by bad memory and personal bias.

I will be using a 2003 paper written by Mark Pitt *et al.* as a template for my thesis. The study examined the effect the gender of the microcredit borrower had on child nutrition in Bangladesh. The paper concluded that credit in a woman’s name had a significant effect on child nutrition, which was measured using height, weight, and arm circumference. However, no significant effect was found when the credit was in the hands of a man. In my thesis, I aim to test the same hypothesis on the data we gathered this summer in Guatemala.

I am inputting the data. Given its nature, I am unable to arrive at even a premature conclusion of what it says. The question I hope to answer is not whether the children of the surveyed borrowers are up to a certain objective health standard, but rather whether there is a difference in the health of the children of male and female borrowers. Since my project seeks to compare differences across genders, a difficulty arose in finding a comparable number of male borrowers with children. The majority of Fe y Alegria’s clientele are female, and male borrowers were often unmarried or without children. I have been formulating and discussing methodology options, but the modeling of the data, like its input, is a work in progress.

Karina Vargas Rebatta:
Microcredit and child schooling

My research project was an investigation on how microcredit lending affects child schooling in rural areas of Guatemala. I am undecided on how to focus on the type of microenterprise and how that affects child schooling. Since the different types of microenterprises could dictate the type of negative or positive affect on child schooling. A paper by Wydick demonstrates how labor market factors will affect child schooling. The paper specifically demonstrates that if there is a moral hazard involved in the microenterprise then children would most likely be the source of labor, instead of labor being outsourced, resulting in a decreased probability that the children in the household will attend school.

I focused on children's school enrollment, parents' education, type of microenterprise, and the last time children attended school if they were not currently enrolled in school. I want to analyze the presence or lack of change in children's school enrollment after credit was obtained. I have approximately 200 household surveys with approximately three to four children per household.

We are in the process of entering the data, and I have not drawn specific conclusions. I discussed with some families the reason why their children did not continue going to school. The usual reason was the cost of secondary school. Most of the children that are now teenagers attended primary school (up to sixth grade) since it is required by law and is free. However, once the children had finished sixth grade their parents would be unable to pay for secondary school education, especially if they had to pay for more than one child. As a result many children had only a primary education.

By the time of our arrival in Xela, Fe y Alegria had recently replaced its only two loan officers. The new loan officer was unfamiliar with locations of households and we spent much time looking for the households. Another challenge came from parents sometimes not remembering the last time their children attended school, we would have to ask the question in various ways to obtain an answer.

Gonzalo Villaran:
Microcredit's impact on household structures

My field research intended to collect information about microcredit holders and the quality of their households. I was particularly interested in finding out how the wealth of the family was distributed among the assets owned by the household. Questions about quality of roofs and walls, household equipment and remittances and credit histories will be analyzed in order to understand the impact of microcredit loans on household improvements. My hypothesis is that both remittances and credit access will have a positive effect on the quality of the house structure. Also, the longer the credit and remittances history, the better the household equipment should be.

The surveys were done in different communities in the Xela region. Although these communities were mostly rural, some of the questionnaires were given to people living in more urban areas, giving room for differences. Discrepancies could also arise from different lifestyles and historical circumstances of the coastal region of Mazatenango, where land tenure was given by land reform; in the highlands the indigenous communities have lived there for centuries. Another source of error could arise from using recall surveying techniques. The questions required the subjects to remember the time when changes in house structures were made. A positive aspect of this issue is that because these changes are big and noticeable, the error may not be significant.

The idea is to generate a model that describes in some general way how the reception of credit is affecting the history of house improvements. When the amount of land owned changed, it was almost always because the subjects bought land; only rarely did they sell land. Structural changes to houses were frequently improvements or replacements of old materials, showing that the quality became better or stayed the same. I hope to find that MFIs do indeed improve the houses and therefore the lives of many wonderful Guatemalans.

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

A Comparative Study in Peru and Mexico



Interviewing a farmer in 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 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 have important implications for poverty reduction. In this research project we take an integrated approach to the analysis of rural financial markets in their three main capacities: (1) financing productive investment, (2) facilitating risk management, and (3) promoting savings.

Our methodology is two-pronged. First, we are constructing a detailed, household level panel data set to track consumption, wealth and investment portfolios over time and understand the evolution of these variables in relation to household participation in various niches of financial markets. This will permit us to understand the barriers that 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. A 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.

Peru and Mexico carried out similar land and credit reforms in the early 1990s. An important similarity is that smallfarmers 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.

Study sites 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 split across two of the most impoverished rural areas in the southern state of Oaxaca.



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Outputs

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I. ACTIVITIES 2004-05

A. Accomplishments: Peru

1. Household survey

The second year survey instrument was written. Significant care was taken to organize information from the first round survey and incorporate it into the second round instrument. Key variables from the household roster, landholdings, labor market participation and credit market participation from the first round were “pre-printed” on the second round questionnaires, thereby giving household specific survey forms. This strategy was useful in identifying data collection errors from the first round and making the application of the second round survey more efficient.

Enumerator training was carried out. A firm then applied the survey between October-December 2004. We were able to complete a total of 795 surveys of the 830 households, an attrition rate of just over 4%. In Piura, 486 of the 504 households were re-interviewed, while in the Mantaro Valley, 309 of the 326 households were re-surveyed.

2. Community survey

The community survey collects data on prices and infrastructure and was applied to 83 communities. This high number of communities reflects the fact that the sampling design was parcel based and not household based. As a result, even though sample parcels were drawn from regional clusters, the households that operate the parcels were drawn from a much larger number of communities. Community is defined at the *centro poblado* (roughly village) level, which is the most disaggregated rural census unit in Peru.

3. GIS data collection

During round two surveys, we collected three types of GIS data. First, we took GIS marks of each respondent’s principal dwelling. Second, we took GIS marks of the primary agricultural parcel of each household. Third, we took GIS marks of the center of the *centro poblado* (defined as the main entrance to the local government office building).

4. Household focus groups

We carried out focus group discussions with six groups of households from the survey. The primary objectives were to: (1) compare information sets regarding formal lenders of borrowers and non-borrowers, (2) delve more deeply into the contingencies that exist (either explicitly or implicitly) in contracts from formal versus informal lenders, and (3) check the accuracy of the subjective, hypothetical questions regarding credit market perceptions from the household survey.

5. Data analysis and writing

Four papers were completed in 2005. Two are under review at academic journals.

- “Risk, Wealth and Sectoral Choice in Credit Markets,” by Boucher and Guirkinger was submitted to *American Journal of Agricultural Economics*. This is a combined empirical and theoretical analysis of the role of risk in determining sectoral choice (formal versus informal) in credit markets. The empirical section uses information on contract terms from the Peru data set.
- “Risk Rationing and Wealth Effects in Credit Markets” by Carter, Boucher and Guirkinger was submitted to *Review of Economic Studies*. This paper is primarily a theoretical analysis of various forms of non-price rationing in credit markets and the role of financial (liquid) and productive (illiquid) wealth in determining rationing and investment outcomes. The paper uses the Peru data set to descriptively motivate the theoretical modeling.

Additional papers were completed in draft and presented at professional conferences. These all will be revised for journal submission in 2006.

- “Credit and Productivity in Peruvian Agriculture,” by Guirkinger and Boucher, presented at the Western Agricultural Economics Association meeting. This paper uses the panel data from Peru to econometrically evaluate the returns to households’ endowments of land, labor, and capital for credit constrained versus unconstrained households.

- “Risk and the Persistence of the Informal Sector in Peru,” by Guirking, presented at the Latin American and Caribbean Economics Association meeting. This paper uses the panel data set from Peru to examine the determinants of informal credit demand by farm households.
- “Direct Elicitation of Credit Constraints: Conceptual and Practical Issues with and Application to Peruvian Agriculture,” by Boucher, Trivelli, and Guirking, presented at the American Agricultural Economics Association meeting, August 2005. This paper describes the survey methodology we (and the IFPRI group in Philippines) for measuring households’ credit constraint status.
- “Land Market Liberalization and Wealth Differentiated Land Access: Panel Evidence from Honduras and Peru,” by Barham, Boucher, Guirking and Lopez, presented at the Western Agricultural Economics Association meeting, July 2005. This is an empirical paper examining the relationship between credit constraints and participation in land rental markets.

B. Accomplishments: Mexico

1. Household survey

The sample frame was constructed and the first round survey instrument was subjected to final field testing and finalized in the first quarter of 2005. The village sample frame was constructed as follows. All villages with populations between 500 and 2,500 inhabitants in each of the two survey regions were stratified on the basis of their access to financial markets. Three strata were defined: high-, medium-, and low-access based on the percentage of residents with accounts in a financial institution. A total of 20 villages were randomly selected from the three strata and the two regions. The team applied the survey between May-September 2005. In each of the 20 villages, 30 households were interviewed for a total household sample size of 600. Data cleaning was carried out between October-December 2005.

Given the delays in implementing the household survey in Oaxaca, the research team began exploring hypotheses related to financial markets, migration, and the agricultural sector in Mexico using alternative data sources.

C. Findings

Two key findings stand out at this early stage of analysis. First, access of rural households to commercial bank credit in coastal Peru diminished significantly between 1997-2004. We attribute this decline to the severe macro-economic shocks experienced by Peru at the end of the 1990s. Of primary importance were the strong El Niño occurrence of 1998 and the political crisis accompanying the 2000 presidential election during which several candidates (including current President Toledo) suggested that it was time to reinstate a state operated agricultural development bank. Given the potential for current borrowers to default under this announcement, many commercial banks dramatically reduced their lending.

The second main finding, again from Peru, is the dramatic negative impact of credit constraints on agricultural productivity. Our initial econometric estimates suggest that the elimination of credit constraints would raise production and income among farm households in Piura by approximately 20%. Given that, compared to other regions in Peru, Piura has a relatively solid financial landscape, the impacts of addressing credit and insurance market constraints in rural Peru are potentially large.

D. Collaboration

A primary motivation for focusing on Oaxaca is that it is an excellent location to evaluate the impacts of the new Popular Savings and Credit Law. 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. The government hopes that this “formalization” of the slew of informal financial institutions will enhance the poor’s access to services offered by the formal financial sector.

The government, with World Bank support, is carrying out a large scale panel survey of households and communities in eight 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 SAGARPA (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 less than 20,000 inhabitants. That survey will thus have minimal representation of the most marginalized rural areas. Since the target population of our BASIS survey is households in

communities with less 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 to both BANSEFI and SAGARPA. In 2005, we negotiated access to this data in order to carry out comparative analysis. This access was facilitated by Professor Mark Woodruff at UC-San Diego. Mark was involved in the original design of the BANSEFI survey and we will work closely with him over the next year to both analyze the data and to disseminate the results.

II. WORKPLAN 2005-06

A. Research Plan: Peru

With the majority of the primary data collection activities complete, we will now focus on finalizing the primary data sets, augmenting the primary data sets with available secondary data, and pushing forward with writing and analysis.

1. Finalize household and community data sets

October 2005-February 2006

Preliminary data cleaning was carried out in Spring 2005. Given the complexity and size of the survey instruments, a large amount of additional cleaning is required before analysis can begin. The primary tasks include:

“Deep” cleaning the second round data set.

Internal (i.e. within the second round survey) consistency will be checked for all variables. This requires writing STATA programs to identify inconsistencies or missing data and then checking against the paper copies of the surveys.

Consistency across survey rounds. Consistency of data for each household across survey years will be established by comparing and accounting for changes in household structure and asset holdings across years.

Cleaning the community survey. Initial cleaning was carried out. A subsequent round of cleaning will be carried out in Lima.

3. Acquire additional GIS data set and link to BASIS data

October 2005-April 2006

During the last five years, various governmental agencies have created data sets with GIS information. The publicly available information is too aggregated to be of use to our research project. However, we have learned that more disaggregated information does exist. During this year we will identify and acquire this information. The information we are particularly interested in includes data on:

- location of infrastructure, including roads, irrigation canals, and drainage canals,

- economic indicators at the *centro poblado* level, including population, education, and income,
- land, including land quality and the title status of individual parcels,
- climate, including rainfall and temperature.

All this information would be extremely valuable as instruments in our econometric analysis, especially for credit supply and risk conditions facing households across different villages. Currently, we are negotiating the cost of access to this disaggregated GIS data with several governmental institutions. Part of the terms of access will include a training workshop in the use of GIS data and the Arcview software program which allows the creation of different “layers” of GIS data. The end objective is to “layer” all of the available GIS data onto the GIS data household and primary parcel data that we collected last year.

4. Analysis and writing

In addition to revising draft papers that were presented at various professional meetings last year (see Activity Report), we will begin work on the following papers this year:

- Descriptive paper on credit market structure, demand side. This paper will use the 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. We are considering a comparative section based on the first round of the Mexican household data.
- The impacts of credit rationing on technical efficiency. We have begun work constructing technical efficiency measures for sample households using the 1997, 2003, and 2004 data. We will use panel econometric techniques to examine efficiency differences across constrained and unconstrained households.

B. Research Plan: Mexico

The primary objective of the upcoming year is to carry out the second round of household data collection, community survey, and begin analysis and writing.

1. Second round of household survey

August 2005-December 2005: We will design the second round instrument, and use the lessons learned from the Peru survey to link the first round data to the second round instrument. We will define areas to cut, as last year's survey was deemed excessively long. We will add key questions to examine the impacts of Hurricane Stan, which hit southern Mexico in September 2005.

February 2006: Enumerator training will be planned and carried out. Four days of classroom training in Mexico City will be followed by two days of field training in Oaxaca.

March-April 2006: A survey firm will carry out the household surveys. An effort will be made to re-visit each of the 600 households from the first round survey.

May-June 2006: The firm will design the data entry program and carry out the data entry.

June-July 2006: Data cleaning.

2. Design and implement community survey

November-December 2005: Boucher, Yunez, and Taylor will design the community survey form. The form will be made compatible with Taylor and Yunez' community survey from their nationally representative rural household survey of 2002.

March-April 2006: The supervisors from each of the four survey teams will apply the community survey to village leaders while the household enumerator teams are in the field.

May-June 2006: Data entry and cleaning.

3. GIS data collection

March-April 2006: While the enumerator teams are in the field, we will collect three types of GIS data. GIS marks of each respondent's principal dwelling; GIS marks of the primary agricultural parcel of each household; and GIS marks of the center of the *centro poblado*.

4. Acquire additional GIS data set and link to BASIS data

October 2005-June 2006: We will acquire additional layers of GIS data from the Mexican government to help with the econometric analysis of the household survey data. Chavez and Yunez

are exploring access to and pricing of available data sets from INEGI, the national statistics institute.

5. Design and implement Mexican fieldwork fellowship

We are working with PRECESAM to design a fellowship for Mexican university students. First, the recipient would participate as a supervisor in the household data collection in Oaxaca. Second, during the following academic year, the recipient would utilize the data to write his or her undergraduate, masters, or PhD thesis. The objectives of this fellowship are two-fold.

First, we would promote the training of Mexican students in the design and implementation of research on rural economics. Second, by training Mexican students, we would be eligible for some funds to support the direct costs of the household data collection. Given the unanticipated high costs of carrying out the survey in rural Mexico, this additional support would permit us to complete both the full second round household survey as well as the community survey. We also hope that a successful experience with this fellowship will turn into a longer term offering of this fellowship and continued promotion of applied economic research in rural areas of Mexico.

6. Analysis and writing

The following papers will be written:

- Descriptive paper on credit market structure, demand side. 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. This paper will draw initial comparisons and contrasts in the financial market structure in the two countries.
- Financial markets, risk and migration paper. One of the primary differences between Mexico and Peru is the proximity of the U.S. 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.

C. Outreach

The primary outreach activities planned for 2005-2006 revolve around disseminating the results of the Peruvian data analysis.

In November 2005, Trivelli and Escobal will present results based on the household surveys in Piura regarding profitability of small farmers and the impact of climate shocks on household well being at a public conference on the state of the rural economy, sponsored by the Regional Government of Piura. The audience includes local government officials, NGO's, farm leaders, and many of the farms from the BASIS household sample.

In January 2006, Trivelli and Escobal are scheduled to present the same results to government officials at the Ministry of Agriculture and Economy in Lima. This presentation is sponsored by the Consortium for Social Science Research in Lima.

Trivelli is the PI on a grant from this organization that is evaluating the impact of drought on resource allocation in farm households. The grant uses the Piura and Mantaro Valley samples from the BASIS survey.

In addition, Trivelli and Guirkingner have written an outreach article entitled "Limited Formal Financing: Just a Supply Side Problem?" in *Debate Agrario* (forthcoming). This Peruvian non-technical journal has a primarily non-academic audience of NGOs and policymakers.

**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



A dealer in agricultural machinery also set up shop as a microfinance lender.
(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 the area in 1977 led to a major shift from corn production to sugar production for many households in the region.

This site also provides a particularly 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 the high levels of preschooler sickness in the sugarcane-growing households. The issue of deteriorating land access in the face of increased commercialization is an especially important one in Mindanao, the Philippines' poorest region.

Policymakers have recognized the need both to reduce poverty and improve financial services in Mindanao. USAID mentions the following priorities: (1) develop the banking and capital market, including improving financial intermediation through support given 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, including microfinance programs.

USAID's wide range of activities in the region are aimed at equity-oriented economic growth, including introduction or expansion of agricultural commodities that offer particular promise for Mindanao. USAID is working with large numbers of rural banks and credit cooperatives in Mindanao to help them develop the capability to profitably serve the microenterprise market.



Support

Core funding: BASIS and IFPRI

Add ons: IFPRI, Department for International Development, UK, CGIAR Biofortification Challenge Program, CGIAR Inter-Center Initiative on Collective Action and Property Rights, Government of France, and World Bank.

Outputs

Godquin, M. and A. Quisumbing. 2005. "Groups, Networks, and Social Capital in Rural Philippine Communities." Prepared for the International Research Workshop on "Gender and Collective Action," October 2005, Chiang Mai, Thailand.

Quisumbing, A.R. and S. McNiven. 2005. "Migration and the Rural-Urban Continuum: Evidence from the Rural Philippines." Food Consumption and Nutrition Division Discussion Paper No. 197. Washington, DC: International Food Policy Research Institute.

I. ACTIVITIES 2004-05

A. Accomplishments

1. Papers and presentations

As part of the deliverable for the DfID Urban-Rural Linkages project, which funded the migrant survey, Quisumbing and McNiven wrote a paper titled “Migration and the Rural-Urban Continuum: Evidence from Bukidnon, Philippines.” This paper was submitted in May 2005, has been peer-reviewed, and has been released as FCND Discussion Paper 197.

Gilligan presented a paper on validating measures of credit constraints from surveys with theoretical predictions of the effects of constraints at the IFPRI/Cornell Conference on Threshold Effects and Nonlinearities in Growth and Development, May 2005. He also presented the paper at the Northeast Universities Development Conference at Brown University, September 23-25, 2005. This paper is currently under review at the *Journal of Economic Growth*.

Quisumbing wrote a paper on intergenerational and life-cycle aspects of credit constraints, examining determinants of credit constraints in 2003 for parent and split households and examining whether 1984/85 credit constraint status affects current credit constraints. She presented this paper at workshops in the Philippines and at the BASIS TC meeting in September.

2. Student visits to IFPRI

Rajadel, a French Ph.D. student from the University of Paris 1-La Sorbonne, visited IFPRI in March-April 2005 to create the longitudinal set linking household and individual observations from the 1984/85 to the 2003/2004 data.

Using funding from the CAPRI project, Godquin (a Ph.D. student from the University of Paris 1-La Sorbonne) visited IFPRI to work on a paper on the determinants of participation in groups and networks in April 2005.

3. Training and workshops

Rhoe, of IFPRI’s Training and Capacity Strengthening Program, conducted a course from May 30-June 3, 2005 on food security analysis. The

course was attended by 21 researchers and university professors from eight universities and institutions across Mindanao.

Quisumbing, McNiven, and Sharma embarked on a series of dissemination activities in the Philippines (July-August 2004). These included workshops at universities throughout the Philippines; some workshops were attended by policymakers from Northern Mindanao and from Southern Bukidnon.

4. Creation of sampling weights

Scott McNiven and Gilligan worked together to create sampling weights for the 1984/85 data and have written a document on sampling weights and attrition analysis.

B. Collaboration

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 also 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 project is closely linked with the BASIS Pathways from Poverty project.

The team is collaborating with the CGIAR HarvestPlus program and the IFPRI multi-country program on urban food security. The project received funds for the 24-hour recall and diet quality survey for a subsample of 500 households (Harvest Plus), and for the urban migrant survey (DfID rural-urban linkages project).

The project is 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 the Research Institute for Mindanao Culture (RIMCU). (See the Pathways from Poverty Activity Report for details.)

The research program has strengthened partnerships between IFPRI, developing country universities and developed country universities. Eight graduate students are involved in the research program, six of whom are from the Philippines. IFPRI conducted a training on food security analysis for faculty and staff of Xavier University and other universities in

In brief: (1) the project provides valuable recent information not only on rural financial markets but also their interlinkages with other markets, particularly land, (2) provides information on the relative importance of agricultural and non-agricultural incomes and how these relate to household food security, and (3) highlights, by focusing on differences in credit access across income groups, and across the life cycle, the importance of increasing the poor's access to financial and other input market services.

Specific findings under different themes follow.

1. On credit constraints across the life cycle and across generations

Risk rationing has become more important for rural households. Comparisons of the credit constraints faced by households in 1984/85 and 2003 show that while the proportion that is quantity rationed has not changed substantially—it remains at around 35%—the proportion that is rationed in the credit market due either to quantity or risk-rationing has increased significantly from 59-75%. That is, a substantial proportion of households are not borrowing more because they are afraid of being unable to pay.

Fear of losing collateral does not seem to be the primary motivation underlying risk rationing, since nearly 60% of loans do not involve collateral. Indeed, only 5% of parent households and 1% of child households mention fear of losing collateral as the reason for refusing additional credit. Rather, it seems that borrowers are afraid of being unable to pay because it would cut off future access to credit. There also is a perception that as agricultural production has become riskier with increased commercialization, as farmers are more dependent on credit to finance input purchases.

Determinants of credit constraints differ for parent and child households. Crop choice and educational attainment are important for parent households, while position in the asset distribution is more crucial for child households. This reflects differences in human and physical capital endowments between parent and child households. Relative to their parents, children are better educated, but have lower values of land and other assets, not having had the chance to accumulate assets over the life cycle. Peace and order problems decrease the probability that parents are credit



Bus terminal in Malaybalay. The buses leaving this terminal, which is in the capital of Bukidnon, stop at the typical destinations of migrants in our survey.

Photo by Agnes Quisumbing

Mindanao, where the state of economics education has lagged behind that in Manila. Dissemination activities in the Philippines reached audiences of policymakers in Manila, Bukidnon, and Cagayan de Oro, and academics from three universities.

C. Findings

Research results will help achieve the BASIS objective of improving the quality of life for the rural poor through a better understanding of the determinants of credit constraints for different types of households, the ability of the asset-poor to accumulate social capital, and the role of migration as a livelihood strategy.

constrained, but increase the probability that children are constrained. NGOs, which are relative newcomers to the credit scene in the rural Philippines, reduce the probability that younger households are credit constrained. Some variables have the same impact on parents and children. Existing debt increases the probability that both parent and child households are credit constrained, reflecting the difficulty of obtaining additional credit after borrowing an initial amount. Negative shocks increase the likelihood that both parents and children are credit constrained.

2. Social capital and networks

Asset-rich and better-educated households are more likely to participate in groups and to have larger social and economic assistance networks. This may reflect higher returns to social capital for the wealthy, or greater barriers to participation for the poor. Group membership is also affected by type of productive activity and distance to facilities; as expected, distance from the town center reduces the probability of joining groups owing to higher transactions costs of group membership.

Different aspects of village-level heterogeneity have different impacts on group membership: ethnic heterogeneity reduces the probability that households participate in at least one group and in burial groups, but origin heterogeneity increases participation in production groups and burial groups. Education heterogeneity reduces participation in credit groups, but asset heterogeneity increases it. The persistent negative effect of ethnic heterogeneity, even in the individual regressions, points to long-standing differences between ethnic groups that are not conducive to social cohesion. Greater exposure to shocks and a higher incidence of peace and order problems increase group membership, probably owing to insurance motives.

Men and women have equal propensities to participate in groups and do not differ significantly in the number of groups they join. However, there are clear gender differences in the types of groups to which men and women belong. Men are more likely to join productive and burial groups; women, civic groups. This may indicate a gender division of labor within the household or separate spheres of decision-making.

Economic variables are less important determinants of trust-based networks. Very few economic variables affect the size of the household's assistance networks. Network density does increase with education and assets, showing that the rich are better able to invest in informal social capital. Kinship variables are also significant determinants of the size of one's networks; households may invest less in mutual assistance networks if relatives (particularly daughters, in the Philippine context) can act as insurers.

Group membership does not, in general, increase network density, though the effect differs by type of group. Households belonging to more groups have



Public market in Valencia. Valencia is not the capital, yet it is Bukidnon's most commercial city.

Photo by Agnes Quisumbing

smaller networks that insure against economic loss, possibly because formal groups perform this insurance function. Participation in a credit group significantly increases the number of persons that a household can confide in if there are family problems, as well as the number of persons that can provide information on prices or places to sell products. Since we do not find that the total number of groups significantly affects many network formation outcomes, perhaps it is sufficient to belong to one group—in this case, a credit group—to be able to reap benefits in terms of network formation.

3. Migration

Internal migration in the Philippines is a fundamental part of rural livelihood strategies and rural transformation, not simply a way to escape rural areas. In fact, successive generations of many rural dwellers do stay in rural areas. This preliminary exploration into the migration decisions of young Filipino adults hints at the prospect that *poblaciones* (administrative centers of municipalities) can offer comparable “urban-like” services, schooling and employment to migrants from rural areas and as such may counter the migration flow to more congested metropolitan centers of the country.

As destinations, *poblaciones*, peri-urban areas, and urban areas are very similar. Most migrants to *poblaciones* and urban areas have very similar reasons for moving. Initially it is for schooling, then subsequently to look for better jobs. The exceptions are the substantial numbers of male migrants to the closer urban locations in Bukidnon, who tend to be poorly educated and work in low-wage construction and transport jobs. However, the occupational profile of migrants indicates that females in both areas seem to do better than males—perhaps because female migrants to urban areas are better-educated than male migrants.

Female migrants tend to be better-educated, and end up with better-paying jobs. Migration streams in the Philippines are dominated by females, who tend to be better-educated and who also tend to

migrate earlier than males. A large proportion of male migrants to more urbanized areas ends up in manual labor/transportation work or crafts and trades, which are not high-earning occupations. Female migrants to *poblaciones* and urban areas fare better. A large proportion of female migrants to *poblaciones* ends up working in sales occupations, while a larger proportion of female than male migrants to urban areas has professional and managerial jobs.

Social networks are important for migrants, particularly for the first move. While most first-time migrants move alone, they are most often financed by their parents and live with relatives in their new community. Later on, migrants increasingly self-finance their moves, and live with their families of procreation. Familial networks are thus very important for helping a migrant get settled into a new community.

Rural areas, poblaciones, and urban areas systematically attract different types of migrants. *Poblaciones* and urban areas generally attract better-schooled individuals, partly because young people move to those areas to further their education, or because better-educated individuals move to these areas to find better jobs. Migrants to rural areas, on the other hand, move primarily to take up farming or to get married. It is no surprise that rural migrants, as well as those who opt to stay in rural areas, are less educated than migrants to *poblaciones*, urban and peri-urban areas.

II. WORKPLAN 2005-06

A. Research Plan

1. Analysis and writing

The main activity for the final year of the project will be examining the long-term impact of credit constraints on capital accumulation (human and physical), wellbeing (measured using consumption and nutritional status), and economic mobility (measured using consumption).

We will continue analyzing data from the two waves of the quantitative survey, the qualitative study conducted in 2003, and the qualitative study conducted in 2004. This will involve regression analysis and interpretation in light of the qualitative study results. The focus of the analysis will be linking past credit constraints to asset accumulation (human and physical), wellbeing, and economic mobility.

2. Dissemination

Similar to the dissemination activities conducted in 2005, we plan dissemination activities targeted to policymakers in Bukidnon and Cagayan de Oro, and to policymakers and the academic community in Manila. The paper on social capital has been selected for presentation in a workshop on gender and collective action in Chiangmai, Thailand. We will also have a high profile end-of-project workshop in Manila, as well as seminars in Washington DC.

We completed one set of dissemination workshops focusing on the results of the rural finance studies in August 2005. The second set of workshops, scheduled for August 2006, will combine the presentation of findings on impact of credit constraints on asset accumulation, wellbeing, and economic mobility with findings from the Pathways from Poverty study. The series of workshops would be held in Bukidnon, Cagayan de Oro, and Manila. The audience for the workshop will be policymakers from Bukidnon province, the Northern Mindanao Region, and policymakers and academics in Manila. We will prepare policy briefs suited for dissemination to an audience of host-country policymakers for the workshops.

We will present papers written using the Bukidnon Panel Survey in a number of academic conferences. The paper on validating methods for determining credit constraint status will be presented at the Northeast Universities Development Conference in September. The paper on social capital has been selected for presentation in a conference on gender and collective action in Chiangmai, Thailand. We will have a high profile end-of-project workshop in Manila, as well as seminars in Washington DC.

3. Analysis, field work, and dissemination for add-on projects

Two add-on projects are continuing in this project year: the Moving out of Poverty project and the CAPRI-funded project on the role of social networks in coping with shocks.

Field work for the quantitative and qualitative aspects of Moving out of Poverty study has been completed. IFPRI and RIMCU are now analyzing the data. RIMCU staff are writing up the community synthesis reports while IFPRI staff are analyzing the quantitative data. Quisumbing has been asked to write the quantitative analysis plan for the project. This is a guidance note that would be given to the 15 country teams to ensure that analysis undertaken would be comparable across countries. The World Bank Manila office has offered to fund stakeholder consultations and dissemination activities for this project.

For the CAPRI study, IFPRI has completed the descriptive analysis of the quantitative survey data that would be used to draw the sample for the qualitative work to be undertaken by RIMCU. This phase consisted of a descriptive analysis of existing networks, and characteristics of participants, and the benefits and costs of participation. A paper on the descriptive analysis has been accepted for presentation at a CAPRI-funded conference on gender and collective action in Chiangmai, Thailand, in October 2005.

The second phase will 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 will be based on qualitative work in the survey communities. It will 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.

B. Anticipated outputs

We plan research papers on the following long-run impact of past credit constraints:

- early childhood education, and shocks on education outcomes of children of original

respondents (delayed enrollment, grade attainment, schooling progression),

- initial asset endowments, and shocks on asset accumulation,
- early childhood nutrition, and shocks on attained adult height and indicators of adult nutritional status,
- initial conditions, and shocks on welfare, investment, economic mobility.

Policy briefs will be written for each of the research papers. We also plan to hold in-country workshops on long-run impact of credit constraints and asset accumulation, wellbeing, and economic mobility.



"Lending investors" are a new type of microfinance institution in Bukidnon, and their activities are quite diversified. Lending investors are licensed by the Central Bank to operate as moneylenders with minimal regulatory requirements or supervision. They are permitted to lend money to anyone, but they can accept deposits only from a maximum of 19 individuals.

Photo by Agnes Quisumbing

PROPERTY RIGHTS, ENVIRONMENTAL SERVICES AND POVERTY ALLEVIATION IN INDONESIA



Fields in Sumberjaya, Indonesia.
(Photo by John Kerr)

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

PROJECT PROFILE

There is growing interest in compensating local people directly for providing environmental services such as biodiversity conservation, carbon sequestration and watershed protection. Payment for environmental service programs have emerged in Latin America, yet they remain uncommon elsewhere in the developing world. Identifying and measuring environmental services remains a challenge in many contexts, and hopes for using the programs to benefit poor people are offset by fears that the mechanisms might bypass poor land users or even make them worse off. Challenges of high transactions costs dealing with smallholders and unclear property rights in areas with high conservation value need to be overcome. Moreover, where land rights are unclear, the programs might compel powerful people to usurp otherwise marginal lands and evict poor land users.

The RUPES (Rewarding Upland Poor for Environmental Services) project was established in 2001 to address possibilities for these mechanisms in Asia. RUPES takes an inclusive view on payment, including rewards that provide upland farmers with enhanced land tenure security if they follow land use agreements. RUPES calls such arrangements Rewards for Environmental Services (RES).

BASIS researchers examine RES experiences in Indonesia, focusing on: (1) social-spatial placement of RES mechanisms, (2) costs and benefits of RES mechanisms, particularly those related to enhanced property rights, and their distribution within villages, (3) the most appropriate institutional arrangements to enhance the benefits of RES for the poor, and (4) land users' willingness to accept

compensation for adopting land uses that generate downstream environmental services. The research operates in the Sumberjaya subdistrict, where RES mechanisms are being used for forest and watershed rehabilitation and protection services.

The project's central hypothesis 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; their actual ability to efficiently provide the environmental service is a secondary criterion. Second, there is a tendency for the benefits of RES to be captured by well-advantaged households within communities.

The research investigates these hypotheses, with a goal of determining ways in which RES mechanisms can be designed to reduce or overcome these tendencies. The research focuses 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. Research findings will be of immediate relevance to the design of the RES mechanisms in the study site and contribute to analysis and design of RES mechanisms across Indonesia and other parts of Asia.



Support

Core funding: BASIS CRSP. Add-on: Environmental Economics Program for Southeast Asia (EEPSEA), ICRAF.

Outputs

Kerr, J., R. Meinzen-Dick, J. Pender, Suyanto, B. Swallow, M. Van Noordwijk. 2005. "Property Rights, Environmental Services and Poverty in Indonesia." **BASIS Brief 29**. Madison: University of Wisconsin-Madison.

I. ACTIVITIES 2004-05

A. Accomplishments

We embarked on three main activities and set the stage to begin on a fourth. HKm is a social forestry program in which community groups operating contiguous areas of forest-owned land receive secure tenure in exchange for practicing conservation farming and protecting remaining natural forest areas. The first activity involved investigating the determinants of program placement; a community survey of HKm groups yielded findings on this topic. The community survey also collected data related to the second activity, which is assessing the direct and indirect impacts of HKm. It yielded farmers' perceptions of the likely impacts and it helped in organizing a household survey on the same topic. The third activity is an investigation of farmers' preferences for different institutional models for environmental service rewards. Initial approaches were established and personnel recruited, and the study will be carried out in the coming fiscal year. The fourth activity is an experimental economics study of the actual reward levels required to get farmers to provide environmental services.

1. Determinants of program placement

It is possible that environmental service reward mechanisms will be installed where people are best connected rather than where there is greatest potential for providing environmental services. Our study is not able to identify where environmental services can best be provided, but additional ICRAF research addresses that aspect and we will link it to our findings later. We focused on the determinants of program placement of the HKm program in Sumberjaya's 21 villages with protected forest. We addressed the question through group interviews in early 2005 as part of a community survey.

2. Household survey and impacts of the HKm program

Field work began in Sumberjaya in January 2005 to develop and test a community-level survey that would investigate the determinants of the placement of the HKm program and its initial effects. The community survey was then conducted

in the first half of 2005 and the data entered and analyzed later in the year. The community survey covered 21 villages containing 29 HKm groups.

In May 2005, another round of field work began for the purpose of developing and testing a detailed household survey, and designing a sampling approach for the survey. The household survey covers details of respondent households, focusing on practices and investments on coffee-based agroforestry land under different land tenure conditions, including private land, government protection forest land under various stages of transition to HKm approval (permits approved, permits under application, and no permit), and national park land.

Issues of interest in the survey are the farmers' investments in agroforestry production and natural resource conservation, particularly whether they adhere to three regulations under HKm: (1) plant environmentally friendly multistrata coffee plantations, (2) invest in soil conservation, and (3) contribute to the protection of remaining natural forest areas.

It is not possible to detect income effects of HKm since agroforestry systems yield income streams over a long period of time and with a lag while trees mature; instead the focus is more on investments and management practices. Apart from HKm status, we are gathering material on social capital factors that could determine how and where HKm spreads, and demographic data that help determine economic outcomes.

The survey began in June and was mostly completed by September. Data are being entered and analysis will begin after a few months. Total sample size is targeted for 640 households.

Preliminary work in the Sumberjaya watershed identified five categories of land relative to HKm eligibility and status:

- HKm permit received by the time of the survey,
- HKm permit applied for by the time of the survey,
- HKm eligible but no application by the time of the survey,
- private land not eligible for HKm,
- national park land not eligible for HKm.

Within the first three categories, we distinguished land where users had been evicted prior to the Reformasi period and land where no evictions occurred, since we hypothesized that tenure security and land use prior to HKm could be quite different depending on whether prior evictions occurred. These eight categories of land were mapped and used as strata for the sampling procedure, which selected 80-100 plots from each land category, and surveyed those plots as well as the household operating the plot.

The survey collected information on indicators of land tenure security, land values, land management, input use, production and revenues at the plot level as well as a wide array of plot and household level factors expected to possibly influence these dependent variables.

For several time varying factors, we sought information from the year 2000 (before HKm) and at the time of the survey in 2005. However, we collected information on inputs and revenues only for the survey year. Biophysical measurements were taken related to tree growth and soil erosion on one plot per household; on all plots the measurements will be augmented by survey responses by the household respondent.

3. Institutional design of RES mechanisms

This activity utilizes conjoint analysis of people's preferences for different types of environmental service reward mechanisms. Differences could include things like the nature of the reward for environmental services (cash payment vs. secure tenure, for example), whether it is administered through groups or individually, the duration of the contract, the specification of what is being contracted, etc.

A training workshop on the conjoint analysis method was held at Lampung University in March 2004 for staff in the Departments of Agricultural Economics and Forestry. About thirty persons attended the workshop, including three ICRAF staff from Bogor. At the conclusion of the training workshop, seven people proceeded to Sumberjaya to design and pretest a prototype set of methods.

4. Evaluation of willingness to accept monetary compensation for additional environmental services

A research site was identified for this work in the Sumberjaya area where the other activities in this project are taking place.

B. Collaboration

The project is closely related to ICRAF's RUPES program and as such collaborates closely with it. RUPES aims to promote environmental services mechanisms and this project evaluates them, so this project cannot proceed without such collaboration. One RUPES study is investigating the nature of actual environmental services provided by different landscape areas in Sumberjaya. Once results from that study are available we can link them to our own investigation of where the environmental service mechanisms are actually put in place.

C. Findings

Findings are from the community survey.

1. Factors associated with placement of HKm agreements

The HKm program has made the most progress in Sumberjaya. There is clearly a regional factor at work as word of the program has spread quickly through the area. ICRAF's presence is part of the reason for this progress; ICRAF has a program in place to help people negotiate with the government for precisely this kind of program. Within Sumberjaya, bridging social capital, or social relationships that help people gain access to programs and services, appears to play a role in spreading HKm, but it is not definitive. A higher percentage of villages with HKm groups had personal relationships with forest officials or with NGO officials who were helping to promote the program, but there are exceptions. Similarly, these villages more frequently had a personal relationship with the person who actually helped them apply for the program (50% of villages with groups that have received HKm permits, compared to 26% of villages where groups have applied for HKm).

2. How groups organize

Bonding social capital refers to factors that strengthen relationships within a group, helping

them act collectively to take action and solve problems. In this regard, groups with HKm are more ethnically homogeneous, with a higher concentration of the largest ethnic group. They are also more likely to be Javanese or Sundanese and less likely to be Sumendo, which is notable as the Sumendo people are known locally for being less inclined to collective action and potentially difficult to work with. Just over half of HKm groups are based on existing groups including farmers' groups, labor sharing groups, and religious groups.

3. Participant understanding of program requirements

Interestingly, many group leaders also do not understand the program requirements. They have a fairly clear understanding that they must protect remaining natural forest, plant trees, and invest in soil conservation. Yet they aren't clear about the number and type of trees or the type of soil conservation practices they should follow.

4. Participant understanding of program benefits

Respondents often cite their interest in gaining access to a number of government programs, including those for income generation and technical assistance but also services like schools, health centers and transportation. People familiar with the HKm villages suggest that part of the motivation for joining HKm is to join the mainstream of society and no longer be considered as outlaws who are illegally utilizing restricted land, HKm is meant to bring better access to agricultural and forestry programs, but it should have no impact on other services. People expecting access to other government programs are likely to be disappointed and it may be that those who have the permit in place have already realized that such benefits will not be forthcoming.

5. Impacts on tenure security

The program is too new to have definitive impact so all discussions of impact here focus on farmers' expectations. Under current conditions, HKm agreements are believed to sharply raise the security of protection for forest land, with a steady increase from the stages of applying for HKm, obtaining the 5-year permit, and obtaining the 25-year permit. Survey respondents perceive that once

the 25-year permit is in place, tenure will be nearly as secure as on private land.

6. Impacts on land values

If tenure is secure, land value should rise due to greater certainty of future income streams. Perceived tenure security climbs much more sharply than perceived land value as the HKm permits are obtained and then extended. This suggests that that the perceived land values incorporate information other than tenure security.

7. Impacts on exposure to corruption

Farmers who illegally cultivate government land are particularly vulnerable to petty harassment by government officials who continue to allow the practice but utilize it as an opportunity for rent-seeking. Respondents reported that they are most commonly subject to the harassment of illegal fees at harvest time when they ship their product to market and government officials wait at road access points and refuse to allow them to pass without paying. However, if land tenure status becomes legalized, farmers may have greater ability to refuse to pay. Respondents in our study area indicated a decline in having to pay bribes since the start of the program. It appears that HKm contributes to reducing exposure to corruption but is not solely responsible.

8. Impacts on income

Respondents in group interviews almost unanimously indicated that they expect HKm to raise their incomes. All respondents who reported that they expect incomes to rise indicated that this is because under HKm they will cultivate more intensively and so will have higher income from coffee as well as additional income from the fruit trees they must plant under HKm. Most did not give a reason why they would raise intensity, but several stated clearly that increased tenure security will make them feel comfortable in investing more heavily in intensive cultivation, for example using more fertilizer.

9. Who gains, who loses?

From the standpoint of equitable distribution of benefits, one attractive feature of the HKm program is that it operates in groups rather than individually. Group leaders suggested in interviews that many of

their group members had little knowledge of the program or its requirements, yet they benefited from increased tenure security nonetheless. Clearly, the requirement of establishing groups means that in order to benefit from the program, more entrepreneurial, better-connected people must bring with them their less capable neighbors and this raises the chances of widespread benefits.

Working in groups, while imposing large transactions costs on group members in the form of the costs of organizing and monitoring members and preparing the application, reduces the transactions costs between the service provider and those who demand the service, whether it is the government or private interests downstream. This makes it more likely that the environmental service agreement can exist at all. In addition, to the extent that hydrological services only can be provided when a certain scale threshold is reached, the group-based mechanism may be inevitable.

Due to challenges in learning about and applying for the program, those most likely to gain from it are the ones with personal contacts in the forest department.

10. Secure land tenure as reward mechanism

Whether or not tenure security can be utilized as a reward mechanism cannot yet be answered

definitively. Household level analysis of HKm's impact on land management will help answer this question, but ultimately more time is needed to assess impacts because of the nature of the agreement. The reward mechanism is linked to tenure security. Currently local people fear being evicted and view it as a credible threat, which assists in enforcement. It is realistic to imagine that several years from now perceptions of tenure security will have increased and the threat of eviction will be weaker or very small. In that case a system of graduated sanctions, with intermediate penalties for first offenses, would make more sense.

11. Are HKm agreements more common in better-connected communities?

Our community survey findings suggest that bridging social capital does play an important role in facilitating access to the HKm program. Access to Forest Department officials, especially the officer who assists with preparation of the map, appears to be particularly important. Other indicators of social capital are also generally greater in communities that have successfully obtained HKm, though the differences are not definitive.

II. WORKPLAN 2005-06

A. Research Plan

1. Determinates of program placement

Remaining work on this activity will be to analyze preliminary data more carefully to uncover additional insights.

2. Household survey and impacts of the HKm program

The second year activity will involve entering data, analyzing them, and writing up results of the plot and household survey. The objective of the analysis of the plot and household survey in Sumberjaya watershed is to estimate the impacts of the HKm program on perceived tenure security and land values, household decisions concerning land management, use of agricultural inputs and returns to crop production. We may observe some impacts already of HKm on use of agricultural inputs and profitability to the extent that the program has increased tenure security and land values, thus increasing farmers' ability to finance inputs.

We hypothesize that the HKm program may have (differential) impacts on eligible non-participants in the program and groups that have applied but not yet received HKm permits, as well as on groups that have received HKm permits, as a result of expectations of increased tenure security that may result from the mere presence and awareness of the program, as well as the formation of social capital to prepare to apply for the program. Management of these different types of land can be compared to land that is not eligible for HKm. Thus we seek to investigate how land management and outcome variables differ among plots and households that are in different categories concerning HKm eligibility and application and permit status.

3. Institutional design of RES mechanisms

One component of the study is an analysis of the way that farmers in the area weigh off the implicit and explicit characteristics of the environmental service agreements. The HKm agreements have three explicit characteristics that are open for negotiation with the Forestry Department: duration

of secure tenure, density of trees, and amount of fee that is charged to the communities. Interviews with the affected communities indicate that they also consider implicit characteristics of the contracts, especially access to extension services and access to public services such as roads and clinics. A conjoint analysis study will be conducted by ICRAF and Lampung University to develop quantitative estimates of the preferences and tradeoffs that farmers assign to these explicit and implicit components of the contracts.

During the coming year a student or students from Lampung University will be selected to conduct the conjoint analysis study. Field work will be undertaken and the data will be analyzed and written up. Conjoint analysis refers to an overall approach and group of quantitative techniques that can be used to determine respondents' preferences for the multiple attributes of a product or service.

Data for a conjoint study are generated through a survey in which respondents are asked to rate realistic but hypothetical products that have alternative levels of important attributes. Tradeoffs among attributes can be quantified and estimates developed for the marginal value of specified levels of the attributes. The survey data can also be analyzed to test whether there are significant differences in preferences among groups of respondents.

4. Analysis of minimum compensation to providers in a RES scheme

This two-year activity is jointly funded with the Environmental Economics Program for Southeast Asia (EEPSEA) and runs from January 2006 to December 2007. Part of the budget for this two-year project has been approved by EEPSEA. BASIS will provide funding the first year.

The objectives of the activity are to design a direct incentive scheme for increasing and maintaining good water quality of the Way Besai river, based on an estimation of the range of values that would be sufficient to motivate individuals to participate in a program that restricts their land management. The project will use an actual experimental auction and an analysis of changes in conservation behavior and the perspectives of the community groups involved in the program. Research findings will fill gaps in

developing the most appropriate institutional mechanisms to enhance the benefits of RES mechanisms for the poor. The research will be conducted at the RUPES site in the Way Besai upper-watershed, where RES mechanisms are being put in place for watershed protection. This is the same research location as the rest of the BASIS-funded study. The questions to be addressed require a combination of qualitative and quantitative research methods, integrated with current ongoing action research approach of the other project activities.

The first year of activity will intensively focus on the research design and its implementation through a series of surveys, focus group discussions and experimental auctions. Contracts with farmers who are willing to participate in this program will be important outputs of the first year. The second year will mainly monitor and evaluate the farmers' performances in implementing the contracts and synthesis the whole results.

The working plan for the first year at two pilot sites consists of:

- preparing the research design, coordinating field staff, and training research assistant and enumerators,
- conducting a survey of basic socio economic and secondary data,
- selecting respondents,
- conducting a series of focus group discussions to discuss more detailed arrangement of the scheme and contract as well as to design an action plan for the auction implementation and starting date of the program,
- surveying risk preferences and time preferences,
- implementing and analyzing auction field experiment as an input for conducting the real auction,
- implementing the real auction,
- signing contracts and making payments.

The output of this activity will answer the research question of "What level of monetary payment will provider of environmental services require to participate in a RES program?" EEPSEA agreed to fund actual payments for people who participate in the project. This will enrich our analysis of the behavior and perspectives of community groups

involved in the program, and contribute to identification of the favorable components of a direct incentive scheme.

B. Anticipated Outputs

The project will produce several outputs:

- A report on the household level impacts of the HKm approach to rewarding environmental services.
- At least two masters theses by Indonesian graduate students on tradeoffs associated with the design of RES mechanisms.
- A report on households' willingness to accept alternative rewards for providing environmental services in the study sites.
- A preliminary report on the level of payment required to provide rewards for water quality protection.
- Several study teams trained in methods of qualitative and quantitative data collection and analysis related to social capital and provision of environmental services.
- At least two Indonesian masters students supervised and trained in methods of institutional and organizational analysis related to these topics.
- Dissemination of research findings through local stakeholder workshops, publications, materials on internet sites, and presentations at international fora. We plan to present findings from this study at the Biennial Meeting of the International Association for the Study of Common Property, which will be held in Indonesia in June 2006. If findings are ready in time we hope to submit a paper for the 2006 meeting of the International Agricultural Economists Association in Brisbane, Australia in August 2006. At that time we are also likely to have some kind of presentation in Bogor, where ICRAF is based, and most likely we will meet officials in Lampung Province, where our study site is based. We will also aim to meet officials at USAID to disseminate our findings to them as well as to others whom they might recommend. We will also post publications on both the BASIS CRSP and ICRAF websites, and likely on websites at MSU and IFPRI.

REGIONAL DIVERSITY IN PATHWAYS OUT OF RURAL POVERTY IN BRAZIL:

Implications for the Design of Public Policies



Agricultural family producing cassava flour in Petrolina, PE, Brazil.
(Photo by Israel Leoname F. Klug)

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PROJECT PROFILE

Rural poverty in Brazil is pervasive. Roughly half of 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.

In light of this situation, 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 proposes a solution to these problems based on state-of-the-art methods for combining existing small and large data sets to take advantage of the strengths of each one. 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 and policy implications. Five broad themes structure the project: (1) mapping and explaining changes in rural poverty in the 1990s, (2) agricultural productivity growth for small farms, (3) non-agricultural sources of income—earned income and government transfers, (4) land, credit, and labor market reforms, (5) migration and rural poverty.

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



Support

Core funding: BASIS CRSP. Add-on: the Brazilian Ministry of Science and Technology, the Institute of Applied Economic Research, Ministry of Planning, Brazilian Government.

Outputs

Helfand, S.M., and E.S. Levine. Forthcoming. "The Impact of Policy Reforms on Rural Poverty in Brazil: Evidence from Three States in the 1990s." In *Human Development in the Era of Globalization: Essays in Honor of Keith B. Griffin*, edited by J. Boyce, S. Cullenberg, P. Pattanaik, and R. Pollin, 29 pages. Northampton: Edward Elgar.

I. ACTIVITIES 2004-05

A. Accomplishments

1. Mapping and explaining changes in rural poverty

Descriptive analysis of poverty. We produced a considerable amount of descriptive data on income, poverty, and inequality in Brazil for the census years 1991 and 2000. This includes FGT poverty indices, the Gini index, and other indicators for rural Brazil, regions, states, and municipalities.

Reis began generating similar data for previous census years (1980, 1970). Constructing a municipal level rural poverty database that would become publicly available at the end of this project is complementary to the electronic Atlas of Human Development produced by the Applied Economics Research Institute (IPEA), United Nations Development Programme (UNDP), and others. The latter is an excellent source of municipal-level information drawn largely from the 1991 and 2000 demographic censuses, but none of the variables distinguish between rural and urban areas. Reis has been instrumental in creating IPEA's online database IPEADATA that has been accessed by over 1.5 million people. We are exploring the possibility of making our database available through IPEADATA.

Municipal level poverty maps for 1991 and 2000. Levine is writing a Ph.D. dissertation that seeks to estimate municipal level rural poverty maps for 1991 and 2000, and to explain changes in poverty between these two years. The approach combines data from the 2002-03 Household Budget Survey (POF) with the 1991 and 2000 Demographic Censuses. The approach permits imputing high quality data on monetary and non-monetary consumption expenditure down to the municipal level in census years. The mapping is largely a descriptive tool, while the analysis of changes in poverty between the two census years is intended to yield policy lessons.

Levine (1) finished a comprehensive literature review on small-to-large sample imputation methodology, (2) began initial processing and evaluation of the data, (3) identified additional data that is needed for this research and, with Helfand and Reis, initiated contacts to obtain that data,

(4) constructed a consumption aggregate based on the POF data to be used as a dependent variable in the analysis, and (5) computed baseline comparison rural poverty and inequality estimates by region, state, and municipality using data on income in the demographic census.

State level poverty maps for 2001 through 2004. A portion of F. Figueiredo's Ph.D. dissertation involves estimating state level poverty maps for the period 2001-04. The approach combines data from the 2002-03 POF with the annual National Household Surveys (PNAD). Figueiredo has completed an initial processing of the data as well as the construction of a consumption aggregate. His paper updates the municipal level analysis based on POF and the 2000 Demographic Census.

Paper on state level changes in poverty between 1981 and 2004. Correa and Figueiredo began writing a paper on changes in rural poverty that adopts more of a time series focus than the work of Levine and Figueiredo. (See Workplan for details.)

2. Agricultural productivity growth for small farms

One paper uses a translog production function to estimate total factor productivity (TFP) for each of the five macro-regions in Brazil, and then describes the relationship between TFP and a variety of variables of interest (farm size, location, availability of public services, etc.).

A second paper identifies the determinants of TFP in Brazilian agriculture, and seeks to address the concerns about endogeneity that were raised at the BASIS technical committee meeting and at our project work meetings at IPEA.

A third paper uses the microdata in the Agricultural Census to directly address the question of the extent to which TFP can boost agricultural income and raise rural families out of poverty. Models are estimated to explore the extent to which policy related variables such as rural electrification, rural infrastructure, technical assistance, etc. can reduce the probability of being poor, and increase the agricultural incomes of the rural poor.

A fourth paper explores alternatives for incorporating a spatial econometric component into a stochastic frontier production function. This

should inform how we model spatial effects in the other papers.

3. Non-agricultural source of income: Earned income and government transfers

Descriptive data on the importance of alternative income sources was calculated and analyzed from the 1991 and 2000 Demographic Censuses. Income sources include agricultural earned income, non agricultural earned income, income from secondary occupations, social security transfers, and a relatively small category that includes all others sources.

As part of his dissertation, Jonasson is writing on non-agricultural employment as a potential exit path from rural poverty. Jonasson conducted a literature review on employment in the rural non-farm sector as a potential poverty exit path for the rural poor. He also completed an empirical paper on this topic with Peruvian data.

Vicente is working on a paper that describes the evolution and spatial variation of access to key public services in rural areas (such as electricity and piped water), and is using a hedonic pricing model to estimate the value of access to public services and the implicit rental value of owned homes in rural areas. This information will complement the Demographic Census data on monetary income.

A study by Correa and N. Figueiredo is intended to address to the debates in Brazil about the growing importance of non-agricultural income in rural areas, and the difficulties of distinguishing between rural and urban areas. They intend to disaggregate rural households into three groups: those specialized in agricultural activities, those specialized in non-agricultural activities, and those who are not specialized. They will then add a fourth group: urban households who are specialized in agricultural activities. This group represents around 7% of urban households and 30% of rural households. The elasticities of poverty with respect to a variety of variables will be calculated separately for these groups and compared. Comparisons will also be made between “rural” households versus “agricultural” households.

4. Land, credit and labor market reforms

Two papers are close to completion, a third is underway, and a large new project has been secured in part due to collaboration that began with BASIS.

Rezende and Silva are close to completing an historical paper that seeks to provide context for our project about the obstacles that the laws and institutions inherited from the 1960s continue to create today for employment in agriculture and small scale family farming. They argue that labor and credit market reforms could play an important role in increasing the demand for labor in agriculture, reducing the attractiveness of substituting machines for labor, and thus increasing the incomes of the rural poor.

Assunção and Feres completed a draft of a paper on credit rationing. They create a measure of wealth derived from a principal component analysis of durable goods, living conditions, and access to public infrastructure. Controlling for a large set of observed variables, this variable is used in regressions of (1) the probability of the household head becoming an entrepreneur, (2) education of children, and (3) child labor. They first evaluate the situation of credit rationing in 2000. Then, they analyze the change between 1991 and 2000 in order to document recent structural changes. Their final objective is to produce maps of credit rationing considering each type of decision, representing the current situation and recent trends.

Silveira, Buainain, and Almeida organized a conference on “Strategies to Combat Rural Poverty in Brazil: Current Situation and Perspectives” held at the University of Campinas in the state of São Paulo, Brazil. They have begun writing a paper about the potential contribution of land rental markets to rural poverty reduction in Brazil. This is the topic of the Almeida’s Ph.D. dissertation.

Helfand, Sparovek, and F. Figueiredo explored the possibility of writing a paper evaluating state led land reform in Brazil. The empirical strategy was planned to rely on a comparison of a variety of welfare indicators for households on land reform settlements with a control group of “similar” households in the rural areas of the same municipalities. The data were going to come from a census of over 4000 land reform settlements that Sparovek was involved in producing, and information from the Demographic Censuses. Upon closer inspection, however, these researchers determined that the data were not sufficiently comparable, and they abandoned this project.

Sparovek, Helfand and a large group of other Brazilian researchers have recently been chosen to

conduct a three-year evaluation of the market assisted land reform program in Brazil. Sparovek will lead that project, and it should create numerous opportunities for collaboration with BASIS researchers, and for continuing the BASIS research once the project period has ended.

5. Migration and rural poverty

Reis and Golgher produced a considerable amount of descriptive information on the characteristics of migrants and migration flows based on the 2000 Demographic Census. The descriptive work covered four major areas: differences between migrants and non-migrants, migration flows across states, alternative types of migration flows (rural-rural, rural-urban, urban-urban, and urban-rural), and migration flows across municipalities. This work was intended to provide a solid descriptive background for the econometric models that they plan to estimate in Year 2.

B. Collaboration

The core group of researchers collaborated on a project on spatial models and studies called NEMESIS. In the initial months of the BASIS project, before contracts were signed and resources flowing, NEMESIS shared some resources so that the BASIS project would not fall too far behind.

Sparovek has had a number of projects funded by the Brazilian government on topics related to generating GIS databases on soils and climate in Brazil, and land reform settlements. He shared information on both of these topics with our BASIS project. We, in turn, provided feedback about how to improve the quality of these databases.

Silveira and Buainain recently organized a conference on “Strategies to Combat Rural Poverty in Brazil,” and they both have active research agendas in this area. Our BASIS group has been networking with them and has begun to collaborate.

Sparovek is leading a group that will conduct a evaluation of the market-assisted land reform program in Brazil. Some members of our BASIS group are involved in this, and we intend to collaborate with them as much as possible

C. Findings

Important preliminary findings regarding income, poverty, and inequality include the following.

1. *For Brazil as a whole in the 1991 to 2000 period, rural poverty fell by 16% between 1991 and 2000, yet the positive impact of growth was offset by rising inequality.* The decline was largely explained by a 32% increase in household income per capita. The increase in the Gini was due mainly to a considerable increase in the concentration of agricultural earnings. The sluggish growth and increasing concentration of agricultural earnings combined to pose a significant obstacle to greater poverty reduction.

2. *The nationwide picture conceals substantial heterogeneity in the poverty-reduction performance of the five macro regions between 1991 and 2000.*

The most striking contrasts are between the northern regions (North and Northeast) and the Center-South (Southeast, South and Center-West). The northern regions were initially the poorest in the country. This initial poverty gulf was widened by a far inferior performance in reducing poverty there than in the Center-South. While the sharpest contrast is between the poor performance of the northern regions and the much better performance of the Center-South, the three regions of the Center-South illustrate different pathways to rural poverty reduction. In the Center-West, for example, income grew enough to substantially reduce rural poverty, despite rising inequality that was due almost exclusively to the increased concentration of agricultural earnings. The South, in contrast, experienced rapid income growth with no increase in inequality. The reason for the stable level of inequality was that increased concentration of agricultural earnings was off-set by a reduction in the concentration of non-agricultural and “other” income.

3. *There was considerable regional heterogeneity in the reasons for income growth.* At the national level, household income growth in rural areas was due mainly to growth in social security income and non-agricultural earnings. Social security transfers accounted for 48% of income growth in this period, while income earned in non-agricultural activities accounted for another 38% of income growth.

Table 1 illustrates that the importance of alternative income sources varied greatly across macro regions. In the South, agricultural earned income, non-agricultural earned income, and social security transfers each accounted for about a third of income growth. In the Southeast, non-agricultural income

**Components of Rural Household Income Per Capita
and Their Contribution to Change in Per Capita Income**

	NE	SE	South	CW
	Change			
Income Per Capita (R\$ of 1/2002)	7.2	56.4	73.2	64.6
Agricultural earned income				
Average	-8.4	4.5	22.9	22.1
Share of total	-0.19	-0.14	-0.10	-0.10
Contribution to Change in Income (%)	-118%	8%	31%	34%
Non-agricultural earned income				
Average	1.8	31.2	23.3	23.1
Share of total	-0.01	0.07	0.01	0.03
Contribution to Change in Income (%)	24%	55%	32%	36%
Income from secondary occupations				
Average	-0.9	0.2	1.2	-1.3
Share of total	-0.02	-0.01	0.00	-0.01
Contribution to Change in Income (%)	-13%	0%	2%	-2%
Income from social security				
Average	12.2	16.1	23.0	12.5
Share of total	0.18	0.07	0.09	0.05
Contribution to Change in Income (%)	171%	29%	31%	19%
Other Income				
Average	2.5	4.4	2.7	8.2
Share of total	0.04	0.01	0.00	0.03
Contribution to Change in Income (%)	35%	8%	4%	13%

explained more than half of income growth. In the Center-West, agricultural and non-agricultural earned income were the two most important sources. And in the Northeast, social security transfers fully explain the meager growth in household income per capita.

Important preliminary findings regarding productivity:

1. Small farms are more productive than large farms in four of the five macro regions of Brazil.
2. Farm size explains only a very small share of the variance of productivity.
3. Other important determinants of productivity are access to institutions such as credit and markets, and access to public goods and services such as electricity and technical assistance.
4. Location factors are an extremely important determinant of the variance of productivity.
5. The variance of the municipal effects is explained largely by geographical characteristics such as soils and climate, as well as by a spatial trend that captures unobserved spatial variables that move gradually through space. Socioeconomic variables play a much smaller role.
6. Because farm size explains only a small share of the variance of productivity, our results suggest that the efficiency effects of land reform will likely depend much more on the type of reform, and accompanying policies, than simply on the transfer of land from large to small farms.

WORKPLAN 2005-06

A. Research Plan

1. Mapping and explaining changes in rural poverty

The descriptive database will be built further. Helfand and Kapoor will also write a paper on the importance of non-monetary income for estimating rural poverty in Brazil, based on analysis of the 2002-03 Household Budget Survey.

Levine will continue the dissertation that seeks to estimate municipal level poverty maps for 1991 and 2000, and to explain changes in poverty between these two years.

F. Figueiredo will continue his work on a dissertation that estimates state level poverty maps for the period 2001-04. The paper is intended to update the municipal level analysis based on POF and the 2000 Demographic Census. Figueiredo intends to impute consumption expenditure by state, cohort, and occupation, which will provide a richer set of information for analyzing changes in poverty over time.

Correa and N. Figueiredo will write a paper on changes in rural poverty that adopts more of a time series focus. They will use annual state level panel data for 1981-2004 to estimate the elasticity of rural poverty to growth in agricultural income, non-agricultural rural income, macroeconomic variables (stabilization plans, inflation, exchange rates), and government policy variables. Predetermined state level variables from 1980 will condition, and in some cases be interacted with, the explanatory variables in this model.

2. Agricultural productivity growth for small farms

Moreira, Helfand, and A. Figueiredo will estimate TFP growth over time with data from the Agricultural Censuses of 1985 and 1995/96. They will construct a panel of census data disaggregated by farm size, type of land tenure, and municipality. With panel data, Data Envelopment Analysis can be used to construct a Malmquist TFP index, and a dynamic stochastic frontier production function can be estimated. Both approaches permit decomposing the growth in productivity into components that are

attributable to changes in efficiency, in the scale of production, and in technology.

Once we obtain estimates of changes in productivity, efficiency, and technology, we will then explore their determinants over space and time using spatial econometric techniques. This should produce important insights for how small farms have fared in the policy environment of the 1990s, and for the types of policies and production practices that could contribute to increasing the productivity and incomes of small farmers. Sparokvek will continue to contribute to this research with data and expertise on soils and climates. Schmidt and Fonseca have been elaborating a spatial econometric version of the stochastic frontier production function. They will assist us to estimate this model in Year 2.

One of the important outputs from this track of the project will be to estimate TFP for all municipalities in 1985 and 1995. This information will contribute to the data base that will be used for studying municipal level changes in poverty in the 1990s.

3. Non-agricultural sources of income: Earned income and government transfers

There are four sub-activities that fall under this theme: a paper by Assunção on the impact of the expansion of the social security program on rural poverty in Brazil, a paper by Deolalikar on the impact of anti-poverty programs on rural poverty, a paper by Jonasson on non-agricultural employment as a possible exit path from rural poverty, and a paper by Vicente which seeks to estimate the value of access to public services and the implicit rental value of owned homes in rural areas. This last paper will provide an important complement to the poverty mapping that is being pursued by Levine and Figueiredo. Levine and Figueiredo both seek to estimate non-monetary consumption expenditure largely in the form of non-marketed agricultural production. Vicente will complement this by providing estimates of the non-monetary value of public services and owner occupied homes. Thus, by the end of Year 2 we should be able to construct poverty maps based on a measure of welfare that includes monetary consumption expenditure, non-monetary consumption of agricultural production,

and non-monetary consumption of public services and owner occupied homes.

Assunção will write a paper on the impact of the rural social security program on rural poverty and on household decisions. He will treat the expansion of the social security program as a quasi natural experiment. In 1992-93, the retirement age was lowered, the benefit amount increased, and women who could prove that they had worked in agriculture became eligible to receive benefits. Rural poverty was eradicated for households comprised solely of elderly members, and rural poverty fell much more rapidly for those households that had an elderly member versus those that did not. Assunção will examine the impact of this policy change on poverty, and on household decisions such as the education of children. If this policy change helped families choose to keep their children in school longer, then there would be important implications for the intergenerational transmission of poverty.

Deolalikar will continue working with the 2002-03 POF. He will describe the importance of government transfers for rural household income, and will use a propensity score matching model to examine the impact of anti poverty programs on rural poverty.

Jonasson was a graduate student at UCR, and is now working on his Ph.D. dissertation at Lund University in Sweden. As part of his dissertation he wrote a paper on non-agricultural employment as a rural poverty exit path in Peru. He will now write a similar paper for Brazil using the 2002-03 POF data. He intends to test to what extent there is better earnings potential for rural households in the non-farm sector as opposed to engaging in own farming or agricultural wage labor, and to explore the factors that condition access to non-farm employment. His results from Peru show that there is an earnings differential ranging from 50-240%, keeping individual and household characteristics constant. This supports the view that non-agricultural employment could be an important exit path from poverty. Furthermore, he shows that education is not necessarily a prerequisite for remunerative income diversification in the non-farm sector.

Vicente will use a hedonic pricing model to estimate the rental value of owner occupied housing in rural areas, and the value of access to electricity,

water, and sewage. He will use data from the 2002 and 2003 National Household Surveys (PNAD), which are the only two years in which questions were added to the survey about the value of homes. The survey also asks about rent paid, but only about 3% of rural residents pay rent. Vicente's paper will provide important information about the value of public services in rural areas, and about non-monetary consumption expenditure in the form of housing. His paper will also contribute to the poverty mapping exercises. Our intention is to apply Vicente's estimated coefficients to households in the demographic census so that Levine and Figueiredo can map poverty with a more comprehensive measure of welfare.

4. Land, credit, and labor market reforms

Silveira and Buainain will write a paper about the potential contribution of land rental markets to rural poverty reduction in Brazil. They seek to answer the following two questions: What do we know about land rental markets and rural poverty in Brazil? What obstacles exist to making land rental markets more pro-poor?

To do this, they will provide an exhaustive survey of the last ten years of Brazilian literature on land rental markets, use the 1995-96 Agricultural Census and secondary sources to characterize the magnitude, location, and characteristics of rental markets, and identify institutions and policies that create obstacles to land rental markets playing a larger role in rural poverty reduction. They will conclude with policy recommendations and suggestions for future research.

Castro de Rezende will write a paper about the potential contribution of labor market reforms to rural poverty reduction. First, he will characterize how the legal and institutional environment governing land and labor markets in Brazil has created a bias against employment. He will describe in detail the relevant laws and institutions. He hypothesizes that this environment has created a situation in which the private cost of capital is below its social cost, while the private cost of unskilled labor is above its social cost. Even after trade liberalization and the reforms of the 1990s, he argues that these institutions continue to stimulate excessive mechanization of agriculture and the expulsion of a large portion of the rural population. He will provide empirical evidence in support of

these claims, and explore alternative policy reforms that could remove the existing distortions and contribute to an increase in the demand for unskilled labor in rural areas.

5. Migration and rural poverty

Reis and Golgher will continue the work on migration that they began in the first year of the project. Their objectives are to analyze the determinants of rural migration both at the individual and municipal levels, to assess the importance of rural migration as a pathway out of rural poverty, and to derive policy implications for poverty alleviation. The fundamental question that they address is how the incidence of poverty affects the migration decision and, on the other hand, how migration contributes to poverty alleviation.

Golgher uses Harris-Todaro variants of a human capital model to identify and quantify the motivations and constraints (such as age, education, income per capita, etc.) of the individual's decision to migrate. Reis uses gravitational models to quantify the determinants of the spatial patterns of rural migration flows between municipalities. For both the individual and aggregate level analyses, the sources of data are fixed-period information on the place (municipality and rural or urban location) of residence five years ago obtained from the Demographic Censuses of 1991 and 2000. In both cases, socio-economic data at the municipal level obtained from the Demographic Census of 1980 and the Economic Censuses of 1980, 1985 and 1995 complement the database. The organization of the database is practically complete and initial estimation results are expected by the end of 2005. In 2006, Reis and Golgher will focus on the impact of migration on poverty both for the individual who migrates as well for the municipalities of destination and origin.

B. Relationship to Key Findings

The indicators that will be measured in Year 2 relate to the findings that regional diversity in pathways out of poverty is extremely important for understanding the evolution of rural poverty in Brazil, macroeconomic factors such as stabilization plans, inflation, and maxi-devaluations are also extremely important, and non-monetary sources of income and expenditure must be measured in order to produce a reasonably accurate indicator of

welfare for rural households. Among the most important sources are own-consumption of agricultural production, owner occupied housing, and access to public services.

The importance of regional diversity is demonstrated clearly in a forthcoming paper by Helfand and Levine. The authors show that there were three distinct regional patterns of poverty change in the 1990s: income growth with no change in inequality, income growth with an increase in inequality, and little or no income growth accompanied by increasing inequality. Furthermore, the reasons for income growth were regionally distinct. For example, in the Center-West agricultural and non-agricultural earned income explained most of income growth. In the South, income from social security was also an important source. In the Southeast, only non-agricultural earned income and social security transfers were important, and in the Northeast social security by itself explained all of income growth. Thus, a single story cannot fully explain the dynamics of income growth across regions in Brazil.

The indicators that will be measured Year 2 of this project include:

- municipal level income, poverty, and inequality in 1991 and 2000 based on monetary income, monetary and non-monetary private income, and monetary and non-monetary private income, plus the value of public services,
- state-level income, poverty, and inequality for the years 2001-04 based on the same income sources as above,
- state-level income, poverty, and inequality for the years 1981-2004 based solely on monetary income,
- elasticities of poverty with respect to changes in agricultural income, non-agricultural income, and inequality based on the 1981-2004 state level data,
- the importance of initial conditions such as the distribution of land, the level and distribution of education, or the structure of employment, for influencing poverty elasticities,
- the importance of access to social security transfers, anti-poverty program transfers, or non-agricultural employment for reducing rural poverty (measured in terms of the probability of escaping poverty, or the elasticity of income

with respect to participation in these programs or activities),

- estimates of TFP by farm size, type of land tenure, and municipality in 1985; TFP growth between 1985 and 1995; and the correlates of TFP growth in this period,
- descriptive statistics on the regional diversity of rural migrants and migration flows, and the relationship of these with rural poverty; estimates of the household level factors that influence migration decisions; estimates of the locational factors that influence migration flows.

C. Anticipated Outputs

- Construction of a municipal level database for 1991 and 2000 on household consumption expenditure per capita, poverty, inequality, sources of income, and other relevant variables.
- The PIs will travel to Brasília in November, 2005 to discuss preliminary results with USAID field staff and government officials.
- A conference will be held in Brasília in September, 2006 at IPEA to discuss project findings with policymakers, USAID field staff, academics, and others. The conferences will be widely advertised and key government officials will be invited.
- Roughly 10 seminars will be given in universities, academic conferences, and research institutes to discuss the findings of the project.
- A book will be produced in Portuguese at the end of the project to disseminate the most important findings of the project.
- Thirteen research papers will be produced (listed below), with eight of these submitted to academic journals. We also plan five BASIS Briefs summarizing the policy implications from each track of the project.

1. Mapping and explaining changes in rural poverty

1. Helfand and Levine: What happened to rural poverty in the 1990s?

2. Levine: Municipal poverty maps for 1991 and 2000, and explanation.

3. Figueiredo: State level poverty maps for 2001-04, and explanation.

4. Correa and Figueiredo: Poverty elasticities and determinants, 1981-2004.

Brief: Policy implications from poverty studies.

2. Agricultural productivity

5. Moreira, Helfand, Figueiredo, Schmidt, Fonseca: Productivity change between 1985 and 1996.

Brief: Policy implications for poverty reduction from the productivity studies.

3. Non-agricultural sources of income

6. Assunção: Social security and rural poverty.

7. Deolalikar: Anti-poverty program and rural poverty.

8. Jonasson: Non-agricultural employment and rural poverty.

9. Vicente: Value of public services and owner occupied housing.

Brief: Policy implications for poverty reduction from non-agricultural income studies.

4. Land, credit and labor market reforms

10. Silveira and Buainain: Land rental markets and rural poverty.

11. Rezende: Legal and institutional constraints on rural employment.

Brief: Policy implications for poverty reduction from land, credit, and labor market studies.

5. Migration and rural poverty

12. Reis and Golgher: The determinants of migration in the 1990s.

13. Reis and Golgher: Migration and rural poverty in the 1990s.

Brief: Policy implications for poverty reduction from migration studies.

BASIS CRSP New Initiatives and Outreach

PROFILE

Understanding the underpinnings of market access problems is key to discovering workable, sustainable policy solutions. To this end, BASIS researchers are working on three new initiatives conducting baseline research on agricultural risk and insurance in Peru, financial infrastructure for remittances in Moldova, and the nature of poverty traps worldwide. The activities will help move agendas forward in each of these areas.

The Peruvian government and USAID are developing new products and activities in agricultural insurance, and BASIS research will help inform the design of pilot products and identify the risk exposures that are most crucial to help design programs for farmers. In Moldova, where remittances are an increasingly important component of the national economy, understanding how remittances are captured and managed, and helping to develop infrastructure that allows for recipients to deal with the money in a safe, cost-effective manner, will help ensure that these funds have maximum positive impact on the economy. Finally, several new development initiatives in food aid, credit, and elsewhere are looking at the existence and role of poverty traps as they limit a

household's ability to escape poverty. Understanding the determinants of poverty traps is crucial to developing safety net and cargo net policies.

BASIS also is participating in the next edition of the a report published by the Chronic Poverty Research Centre in the United Kingdom. The report identifies the reasons for chronic poverty. BASIS research contributes to understanding how such poverty can become persistent for rural families; more importantly, BASIS research contributes to ways to break cycles of persistent poverty.

In addition to research, BASIS is committed to disseminating research findings in a user-friendly, policy relevant manner. In Budapest, Hungary, in December 2005, BASIS held the second in its policy conference series: "Promoting Agricultural Growth Through Policy in Transition Economies." This event, together with a meeting of government officials and researchers in Lima, Peru and several project-specific outreach and training activities held worldwide, are helping BASIS disseminate its research findings out in a timely fashion, targeting people who are in a position to use them to make a difference in the lives of the world's poor.

PROMOTING AGRICULTURAL GROWTH THROUGH POLICY IN TRANSITION ECONOMIES

BASIS CRSP Policy Conference Budapest, Hungary

PROFILE

A decade after the initial reforms of the former Soviet economy, the results in agriculture remain disappointing. Barriers to marketing agricultural output are still present in many regions, and access to modern inputs is very limited. Agricultural output remains about one-third below the pre-reform levels of 1989-91. Incomes of workers employed in agriculture remain depressed.

Yet, new arrangements are springing up in which input suppliers or other businesses related to agriculture establish vertically integrated or other contractual arrangements with agricultural producers. These arrangements supply needed inputs in ways more promising than the barter arrangements that characterized the dealings of many former collective farms. Even without fully developed landownership rights, rental transactions are increasing and becoming economically important.

“Promoting Agricultural Growth through Policy in Transition Economies,” a BASIS CRSP Policy Conference held 2-3 December 2006, identified the types of institutions and policies that allow for the most positive growth in agricultural production in transition economies.

The conference assessed policies and progress in Russia and other transition countries in four primary categories: organizational structure and performance of farms, land and property rights, rural labor, and financial institutions, credit and capital.

For each theme, comparisons were drawn between the experience in Russia and other countries in the region. The conference identified lessons to inform future agricultural policy and outlined recommendations to ease the constraints that exist in each of these areas.



Outputs

BASIS Brief No. 42. “Promoting Strong Land Markets in Transition Economies,” by T. Ferenczi.

BASIS Brief No. 41. “Rural Labor Markets in Transition: Differences in Past Trends, Current Constraints, and Future Policies,” by K. Macours.

BASIS Brief No. 40. “Expanding the Market: Financial Institutions and Agricultural Lending,” by J. Yaron.

BASIS Brief No. 39. “The Purchased Agricultural Input Market in Russia,” by E. Serova and O. Shick.

BASIS Brief No. 38. “Farms and the Financial Market: Russian Farm Performance, Access to Credit and Government Support,” by D. Epshtein, A. Subbotin, and O. Yastrebova.

BASIS Brief No. 37. “Too Many Workers? Changes in Agricultural Employment in Russia,” by V. Bogdanovskii.

BASIS Brief No. 36. “Living with Constraints: Russia’s Agricultural Land Market,” by N. Shagaida.

BASIS Brief No. 35. “Russia’s New Agricultural Operators: Emergence, Evolution, and Impact,” by D. Rylko and R. Jolly.

BASIS Brief No. 34. Adapting to a Market Economy: Changes in Russia’s Farm Structure, by V. Uzun.

Conference briefs online at: http://www.basis.wisc.edu/Transitioneconomies_papers.html

MIGRANT REMITTANCES AND THE FINANCIAL MARKET IN MOLDOVA

Principal Investigators

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Andrei Bat, AGREX, Moldova

PROFILE

Migrant remittances are a growing factor in the Moldovan economy. Anecdotal evidence suggests that rural households have surplus liquidity, most likely from remittances. If these resources could be mobilized through the development of more formal savings mechanisms, then remittances might play an important role in expanding economic activity in the country, especially in the rural communities that are home to many migrants.

This research focused on the financial infrastructure for remittances and the potential for attracting a greater share of these funds to savings and investments. Drawing on secondary sources and primary data collected through individual interviews and focus groups, the study identified the following areas for improvement.

Transfer services. Marketing these services seems weak. Areas for attention include improving ease of partial withdrawal of remittances, refining money transfer services to better accommodate client confidentiality, and increasing awareness of the availability of money transfer services.

Deposits. As the research findings indicate, an estimated US\$90 million of remittances could be mobilized for deposits. Areas for further attention include using the money transfer service as an entry point to attract clients, improving cross-selling of

financial services, and offering attractive savings products, especially longer-term deposits.

Lending. Currently, no commercial bank takes remittance flows into account when assessing a potential borrower because the banks lack a mechanism whereby remittances could be a formal part of the income assessment for a borrower and could contribute to building a client profile with the bank, similar to regular receipts of salary payments.

Policy and regulation. While some service and product adjustments are a matter of willingness, capacity and finding solutions that make business sense for banks, other aspects hinge on the regulatory environment. Areas for further attention include identifying regulatory impediments to financial service provision to remittance recipients, engaging in dialogue with National Bank of Moldova as the regulator, and facilitating dialogue between this regulator and the financial industry.

Overall such improvements would aim to strengthen the integration of remittances with the financial system in Moldova. The banks and regulators are already actively engaged or at least interested in some of these areas and could build on this through a joint dialogue, further market data, and information on product offerings and technology adaptations in other markets.



Outputs

BASIS Brief No. 33. “Migrant Remittances and the Financial Market in Moldova,” by C. Sander, D. Nistor, A. Bat, V. Petrov, V. Seymour.

Brief online at: <http://www.basis.wisc.edu/live/basbrief33.pdf>

CONCEPTUAL AND STATISTICAL FOUNDATIONS FOR THE ESTIMATION OF POVERTY TRAPS

Principal Investigators

Michael Carter, University of Wisconsin-Madison, USA

Christopher Barrett, Cornell University, USA

PROFILE

The goal of this research program is to bridge the gap between microeconomic theory and empirical analysis of poverty in developing countries. The researchers are developing and applying appropriate techniques for estimating micro-level poverty dynamics so as to answer several questions of great intellectual and practical importance:

- Do poverty traps really exist at the micro level?
- If so, are individuals trapped by intrinsic and immutable characteristics that keep them poor, or are they unnecessarily poor in that they are caught below a critical asset threshold that keeps them from reaching an otherwise available non-poor equilibrium standard of living?
- If such critical thresholds exist, what creates them and how can they be overcome?

The broader impacts of such research are considerable because the ongoing blight of widespread, intense poverty induces repeated calls for improved design of poverty reduction measures.

Our results can usefully inform the targeting of interventions, the identification of key enabling conditions to open up pathways out of poverty for the structurally poor, and the design of safety net programming.

These questions lie at the root of high-level discussions within aid agencies, developing country governments, international organizations, and foundations and non-governmental organizations dedicated to poverty reduction.

AGRICULTURAL INSURANCE POLICY AND FARMERS' EXPOSURE TO IDIOSYNCRATIC AND COVARIATE RISK ON THE PERUVIAN COAST

Principal Investigators

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PROFILE

The research will empirically determine the relative importance of different types of weather-related risks in order to provide technical support to the design and implementation of an agricultural insurance policy for the in the Peruvian coast. The research will seek to establish the differentiated impacts of community-level (covariate) risk and individual-level (idiosyncratic) risk on farmers' crop yields, production functions and income.

Peruvian farmers face a range of risks, with high probabilities of suffering significant losses affecting their incomes and assets. Risk limits agricultural development. High-risk exposure leads farmers to choose low-risk but also low-profit crops, associated with slow technological change. Risk also seriously limits the functioning of credit and other inputs markets.

According to a national household survey, 18.6% of agricultural households suffered at least one catastrophic event during 2001 and 11.5% during 2002. The survey finds that 95.8% of those afflicted had reduced income and assets. Well over 80% of these households received no compensation for the losses.

Peru intends to implement an agricultural insurance scheme. Conventional schemes use insurance techniques applied to individual clients according to his/her specific characteristics and risk preferences. "Parametric" insurance is based upon the value of some aggregated variable (mostly climatic) which can be measured and associated to

agricultural yields. In this case, insurance payments occur when the measured value lies outside a certain range of "normality" for the climatic variable or index. This approach gives insurance to all who bought it regardless of their individual circumstances.

Riskier farmers tend to buy more insurance (adverse selection), and farmers may engage in riskier behavior because they are insured (moral hazard). Non-parametric insurance uses costly selection and monitoring techniques to reduce adverse selection and moral hazard. The main advantage is that farmers can be covered according to their risk preferences and both for covariate and idiosyncratic shocks.

The parametric approach can avoid high selection and monitoring costs, but it only offers partial coverage for covariate risk. These schemes require very reliable weather data to build an appropriate payment scheme, yet there will always be problems associated with paying farmers who do not suffer losses, or not paying farmers who may have significant losses that are not reflected in the aggregate trigger variable.

There is scant empirical evidence to support using the parametric approach in poor countries. This study will evaluate the relative importance of individual versus community risks for farmers. Such an evaluation is vitally important since Peru must decide soon regarding the nature of the insurance scheme.

RURAL FINANCE AND INSURANCE ON THE NORTH COAST OF PERU

Principal Investigators

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PROFILE

After the 1997/98 El Niño, insurance providers and farmers became more aware of the risk that such events pose for agriculture loan portfolios. As a result, both providers and farmers seek to manage the risk presented by these unexpected catastrophes. We plan to analyze how they do this and what impact this has in the rural financial market.

Two loan portfolio insurance schemes will soon be offered in the area of Piura, on the north coast of Peru. One will be available in the market and will provide insurance against El Niño. The insurance will cover the portfolio insured by each intermediary once the ocean temperature, which has a high correlation to the El Niño phenomenon, exceeds critical limits established in the insurance contract. Financial intermediaries in Piura will be able to choose the portion of their portfolio (agriculture and non-agriculture) they would like to insure.

The second product is a partial portfolio guarantee provided by USAID to a select group of formal microfinance entities in Piura. This guarantee, which will cover up to half the insured portfolio, will be available only to a limited group of financial entities and will cover the portfolio allocated to a certain type of client (basically medium-sized businesses and small- and medium-sized agricultural producers). This product will not be available in the financial market and will only cover operations involving clients in the agreed-upon sectors in the Piura area.

The implementation of the USAID program represents an opportunity to evaluate the impact the program will have on microfinance institutions' agricultural loan portfolios and on their clients. The possible offering of portfolio insurance based on indices of ocean temperature incorporates an additional dimension, as it will make an insurance product available to everyone.

The BASIS study has the following objectives:

- evaluate the impact of the implementation of these two insurance initiatives: partial portfolio insurance and insurance against El Niño,
- determine the importance of agricultural risk in the operation of the rural financial market,
- analyze the responses of financial intermediaries to the option of insuring a portion of their loan portfolio (the USAID option) and the changes that occur in their agricultural portfolios,
- define a baseline for measuring the impact of the loan portfolio insurance program on clients in the agriculture sector and on intermediaries,
- identify who obtains the insurance against the El Niño phenomenon offered in the market and analyze and document the effects.

CHRONIC POVERTY RESEARCH REPORT

Principal Investigators

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PROFILE

There is little empirical evidence on the relationship between economic growth and the chronically poor or the poorest, either with respect to how they participate in growth or how they are affected by economic growth. The absence of growth in many low-income countries, especially in Africa, has been a major factor behind persistent poverty, so stimulating growth is clearly important. Yet not all growth is equally effective in including the poorest, and sometimes its effects can be adverse for specific groups and classes.

This work will focus on identifying the policies required to support growth for the chronically poor. We will consider the factors that enable, or prevent, the chronically poor from participating in growth, or protecting themselves from increased vulnerability. Lack of assets or an inability to earn an adequate return on these assets is an important aspect. Processes such as social exclusion, discrimination or lack of rights typically underlie insecure and/or low productivity livelihoods. Understanding how government can protect assets and enhance returns through growth and related policies is essential.

The focus will be on *markets* and *institutions*. The main questions we will seek to answer are:

- Where there is sustained economic growth, how can governments ensure that markets operate in ways that include the chronically poor on beneficial terms?
- Where there is low or no growth, how can economy and market institutions be successfully stimulated and how can this be done to enable rather than inhibit the participation of chronically poor people at good rates of return?
- What can governments do to prevent economic stagnation and state fragility from occurring in the first place?

It is not well understood how markets can work for the poorest and chronically poor. This work will examine what can be done within four key markets to stimulate growth and growth patterns that also reduce inequality and chronic poverty:

Market failure or bias is underlined by institutional biases or failures (often political and/or socio-culturally driven). We will examine the formal institutions around markets and also the informal institutions and relationships that support (or hinder) chronically poor people's livelihoods. Policies that facilitate rather than obstruct private transfers, remittances, church activities and family assistance, for example, are likely to be important to more equitable growth.

The work will concentrate on Bangladesh, Ghana, India, Malawi, Nicaragua, Rwanda, South Africa, Sudan, Uganda, and Zimbabwe.