

Activity 1.a. Patterns and Trends Affecting Food Staples Markets in Eastern and Southern Africa: Toward the Identification of Priority Investments and Strategies for Developing Markets and Promoting Smallholder Productivity Growth

Objectives	<ol style="list-style-type: none"> 1. to present food staple production and input use trends in the eastern and southern Africa region; 2. to provide a disaggregated micro-level picture of how heterogeneous smallholder households rely on staple food markets and how these patterns have changed over time; 3. to document changes in food staple consumption patterns, highlighting the apparent diversification of urban staple food consumption in the study countries; 4. to explain why real retail food prices have fallen dramatically over the past 15 years in some countries in eastern and southern Africa but not in others; 5. to examine how the apparent secular increase in international food and fertilizer prices (which are expected to remain above levels of the past several decades at least the next 5-6 years) are likely to affect food prices in the focus countries of eastern and southern Africa; 6. to identify probable consequences of the run-up in international food and fuel prices for smallholders' food production and marketing patterns over time, their access to food markets, and the viability of alternative investments and strategies to promote the development of staple food markets in the region; 7. to provide a detailed analysis of how trends in / shocks affecting staple food consumption, production and prices are affecting the evolution of the food marketing systems, smallholder farmers' access to food markets, and the future viability of smallholder agriculture; and 8. to identify and assess investment options and market-oriented strategies with the potential to promote staple food price and supply stability, to protect against both upside price risk to ensure access to food during high-price periods of food shortfalls, and to protect against downside price risk to ensure adequate incentives for smallholders to sustainably adopt productivity-enhancing inputs.
Description	<p>Two reports are envisioned from this activity. The first report, to be completed within 9 months of the start date, is intended to provide detailed descriptive information on smallholder staple food production, consumption, marketing, and storage behavior; to identify the key drivers of change in staple food markets in the region; to consider the implications of the apparent structural change in international food prices on local food prices; and to assess the likely impacts on smallholder agriculture and food security. Given the highly heterogeneous nature of smallholder agriculture, impacts will clearly differ for different types of farmers (stratified by region, wealth/landholding size, and gender). Hence</p>

	<p>the analysis will provide a differentiated micro-level perspective of smallholder production and marketing patterns and their implications for different kinds of investments and interventions.</p> <p>The first report will also draw from on-going analysis at MSU to develop projections of international wheat, maize, and oilseed prices over the 2008-2014 time frame (Ferris/AGMOD Program). AGMOD is an econometric model of US agriculture with major international components encompassing grain and oilseed sectors. In the US, major livestock enterprises are included as well as major field crops. Endogenously, the model forecasts food and general price inflation in the US. Features of AGMOD are sectors on renewable fuels, namely ethanol and biodiesel, which represent major structural changes in global agriculture. The new farm bill recently enacted by Congress will be incorporated in the forecasts. This modeling work will provide greater accuracy of predicting the likely range of future international food prices, which will be crucial for accurately estimating the impacts on local markets in eastern and southern Africa. Price transmission analysis will then be conducted to provide greater clarity about the effects of changes in world prices on local food prices in the region. The first report will cover objectives 1-6 as presented above.</p> <p>The second report will build on the first, and will contain more detailed and rigorous analysis of the impact of international price developments on local food market conditions in the region and a more comprehensive analysis of alternative market investment options. There are likely to be important interactions between international food and fuel prices, the type of policy strategies adopted by governments in the region, and the feasible set of market investments and institutions (including several types of structured trading facilities). The second report will cover objectives 1-8 as presented above, and is intended to provide a comprehensive assessment of the role of alternative marketing investments, policies, and other interventions to promote smallholder agricultural productivity and income growth in the region.</p>
Hypotheses	<ol style="list-style-type: none"> 1. Access / proximity to markets is an important determinant of smallholder farmers' ability to participate in food markets, but land and capital constraints prevent the entry of many smallholders into commercialized staple food production even when they enjoy reasonably good access to markets; 2. Constraints on access to land in particular is going to increasingly preclude most smallholder households from participating as sellers in grain markets, unless there is tremendous growth in food crop yields; 3. the marketed grain surplus in most countries is highly concentrated among a small group of relatively capitalized smallholder farms; 4. Rapid investment in medium- and small-scale staple food

	<p>processing and retailing are largely responsible for the reductions in marketing margins and retail food prices that have been documented in much of the region;</p> <p>5. The narrowing of maize marketing margins in many parts of the region (the difference between wholesale maize prices and consumer prices of maize meal) has contributed to a shift in production patterns from maize to higher-valued crops;</p> <p>6. Wheat and cassava have made major inroads into urban and rural staple food consumption patterns, while maize has declined, leading to a more diversified pattern of staple food consumption in the region;</p> <p>7. International food price surges will only partially be transmitted into inland markets in Africa</p> <p>8. The percentage increase in fertilizer prices above their historical average is likely to exceed that of domestic staple food prices.</p> <p>7. Higher international and local grain prices are likely to contribute to a further expansion of cassava production and consumption in many parts of the region;</p> <p>8. The viability of certain marketing investments (e.g., storage facilities near urban centers) and marketing institutions (e.g., warehouse receipt systems, commodity exchanges), and the effectiveness of programs to nurture their development, will depend importantly on government food marketing and trade policies. Corollary: certain types of state behavior in grain markets will preclude the development of warehouse receipt systems, commodity exchanges, and other types of market institutions.</p>
<p>Methods/analytical tools</p>	<p><i>Report #1:</i></p> <ol style="list-style-type: none"> 1. descriptive analysis of aggregate production data from World Bank and FAO sources 2. descriptive analysis of food price trends in the region over time; 3. relatively simple price transmission analysis to assess the degree to which changes in international food prices pass through to inland regional markets; <p>Using household panel data in Kenya, Zambia, Mozambique (and Malawi where data is available):</p> <ol style="list-style-type: none"> 4. descriptive bi-variate tables and figures of trends over time in cultivated area, yields, production, and marketing patterns for different food commodities, shifts between crop, animal and non-farm income, input intensification, crop productivity, and marketed sales and purchase patterns; 5. key informant surveys of food marketing actors in the region. <p><i>Report #2:</i></p> <ol style="list-style-type: none"> 1. Building on the analysis from Study #1, we will use more sophisticated methods to model the relationship between international and local market prices (e.g., parity bounds models) and simulation analysis of supply and demand responses drawn from econometric analysis of smallholder panel survey data. This analysis will provide the basis for identifying likely future

	<p>production and marketing patterns in the region.</p> <p>2. Building on the findings of Study 2a (from detailed key informant surveys) in conjunction with the aforementioned analysis of panel survey data and price trends, this report is designed to provide a synthetic approach to identifying priority options for revising and sustaining broad-based green revolutions in Africa. The methods are integrative and qualitative, building on and integrating the foregoing quantitative analyses of time-series price data and household survey data.</p>
Gender dimensions	<p>All of the descriptive tables described above using household survey data will differentiate between female and male-headed households to examine likely differences in cropping patterns, yields, and market participation. The study will explicitly take into account potential differences found between male- and female-headed households (the latter category will be further differentiated by whether there is a non-resident husband in the family remitting income or not) in the context of identifying alternative strategies to make markets more effectively serve the needs of disadvantaged groups.</p>
Countries/crops	<p>Kenya, Mozambique, Malawi, Zambia – focus on maize and cassava, although where appropriate, trends and patterns in other crops will be presented (e.g., fruits and vegetables, oilseeds, livestock products, tree crops, etc).</p>
Outputs/milestones	<p>October 2008-February 2009: analysis underway in all countries. March 2009: draft Report #1 completed and circulated for comments May 2009 (anticipated): final Report #1 completed within one month after comments received on draft report June 2009: Policy brief based on Report #1 completed.</p> <p>October 2010: analysis for Report 2 underway. March 2011: draft Report #2 completed and circulated for comments June 2011 (anticipated): final Report #2 completed within two months after comments received on draft report. June 2011: Policy brief based on Report #2 completed. June 2011 and beyond: A major milestone by August 2011 will be that the findings of this study are widely disseminated and considered by policy makers and other stakeholders the eastern and southern Africa region (i.e., at the 2011 COMESA annual meetings scheduled for May 2011, World Bank outreach events in the region in 2011, and other national policy processes), so that the study's findings are considered in governments' national maize marketing and trade policy formulation. We also envision a COMESA-convened meeting involving Permanent Secretaries of Ministries of Agriculture and Finance to deliberate on the findings of this and other studies conducted under the Project.</p>

Related activities	Based on sustained funding from USAID missions in Mozambique, Kenya and Zambia over the past 5-10 years, MSU has worked with local partner organizations to invest in the generation of smallholder household panel survey data sets. These activities provide an empirical foundation for discussion of alternative investments and policy strategies to promote smallholder welfare. Analysis of food marketing options has been a central component of the analysis undertaken by MSU and local collaborators in these countries. The recent or impending additional panel rounds in Mozambique (2006), Kenya (2007) and Zambia (2008) will provide a unique opportunity to assess trends, driving forces, and shifts in how smallholder farmers are relating to food markets, both as producers and consumers. The value and timeliness of the insights to be generated from these USAID-funded activities can be greatly expanded through the proposed support from BMGF.
MSU coordinator	Thom Jayne
Collaborators	Betty Kibaara, Research Fellow, Tegemeo Institute/Kenya; James Nyoro, Director, Tegemeo Institute/Kenya; Antony Chapoto, Food Security Research Project/Zambia; J. Ricker-Gilbert, graduate research specialist, MSU; Jordan Chamberlain, graduate research specialist, MSU; Ephraim Chirwa, University of Malawi (to be confirmed); University of Mozambique consultant to be identified (currently in discussions); Lulama Ndibongo Traub and Ferdi Meyer, Bureau for Food and Agricultural Policy, University of Pretoria Jake Ferris, Professor Emeritus, Michigan State University;

Activity 1.b. Dynamic Pathways out of Poverty for Successful Smallholder Farmers

Objectives	<ol style="list-style-type: none"> 1. Provide an empirical understanding of how initially poor smallholder farmers have risen out of poverty, and the extent to which this involves interactions between agricultural markets, improved farm technology, and non-farm earnings; 2. Examine the dynamics of commercialized smallholder agriculture, particularly the background of households selling in staple food markets, how this changes over time, and how and if net buyers graduate to become net sellers of staple foods. 															
Description	<p>We will use both quantitative and qualitative techniques to identify dynamic pathways of poor farm households in order to inform both poverty reduction and market development strategies.</p> <p>Within each group, we will use detailed farm household survey data to construct a profile of household asset holdings, demographic profile, gender, spatial location, income sources, income level, and staple food production, consumption and marketing.</p> <table border="1" data-bbox="651 831 1438 1052"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Ending Status</th> </tr> <tr> <th colspan="2"></th> <th>Poor</th> <th>Non-poor</th> </tr> </thead> <tbody> <tr> <th rowspan="2">Starting Status</th> <th>Non-poor</th> <td>Group 3. Downwardly mobile</td> <td>Group 4. Consistently well off</td> </tr> <tr> <th></th> <td>Group 1. Chronically poor</td> <td>Group 2. Upwardly mobile</td> </tr> </tbody> </table> <p>Based on these four sub-samples, we will purposively select 15 to 20 households from each group and conduct in-depth retrospective surveys of these households, inquiring about parents’ and grandparents’ family conditions and history, kinship ties, intergenerational transfers, individual, household, and community-level shocks of various types, gender-based resource allocation and inheritance, and key investment decisions made that had long-term influences on households’ current wealth and productivity conditions.</p> <p>Following this detailed retrospective information, we aim to identify long-term endogenous factors that figure prominently in pathways into successful commercially-oriented smallholder farm households, factors that tend to be regarded as exogenous in most household survey analyses. A primary aim of the study is to identify how the most commercialized smallholders became so successful selling in agricultural markets, and the role of particular input and output marketing policy and public investment decisions were in the upwardly mobile households.</p>			Ending Status				Poor	Non-poor	Starting Status	Non-poor	Group 3. Downwardly mobile	Group 4. Consistently well off		Group 1. Chronically poor	Group 2. Upwardly mobile
		Ending Status														
		Poor	Non-poor													
Starting Status	Non-poor	Group 3. Downwardly mobile	Group 4. Consistently well off													
		Group 1. Chronically poor	Group 2. Upwardly mobile													
Hypotheses	<ol style="list-style-type: none"> 1. Poor households are most likely to net buyers in staple food markets. 2. Upwardly mobile poor households depend primarily on high-value agricultural activities and on nonfarm earnings, rather than on sale of staple foods, to move out of poverty. 3. Spatial: poor households living in close proximity to good roads 															

	<p>and urban markets are most likely to specialize in production of high value agricultural products such as horticulture, rather than food staples.</p> <ol style="list-style-type: none"> 4. Gender: female-headed households are less likely to be upwardly mobile than male-headed households. 5. Access to cash (through non-farm earnings, a seasonally diversified agricultural portfolio or credit) is key to upward mobility and maintenance of high income status. 6. Most commercial smallholders did not begin as deficit households but rather entered farming with sufficient assets (land, education, nonfarm earnings) to permit them to begin as commercial sellers from the beginning.
Methods	<ol style="list-style-type: none"> i. Use panel data sets to classify rural households into welfare groupings (based on income per capita and asset holdings); ii. Conduct a simple accounting of income and wealth changes over the panel period to determine where the changes are originating iii. Identify star performers (household groups 2 and 4) and poor performers (groups 1 and 3); iv. Purposively select and re-interview a sample of these households to develop detailed life histories; v. Empirical analysis of survey data to summarize the attributes of each group and test the hypotheses formally.
Gender dimensions	<p>Of those households rising up out of poverty, to what extent are they female-headed households? What are the characteristics of female-headed households that are rising out of poverty, and descending into poverty? Does the way that female-headed households relate to food and cash crop markets differ from that of male-headed households?</p>
Countries/crops	<p>Kenya and Zambia. This study will consider all crops, livestock and nonfarm income sources available to the smallholder households.</p>
Outputs	<ol style="list-style-type: none"> 1. “Dynamic Pathways of Successful Smallholder Farmers in Kenya” (report and policy brief to be available on MSU and Tegemeo websites) August 2009); 2. “Dynamic Pathways of Successful Smallholder Farmers in Zambia” (report and policy brief to be available on MSU and Food Security Research Project websites) May 2010
Milestones	<p>Kenya: August 2008: <ul style="list-style-type: none"> • Classification of household groups and sampling for qualitative interviews November 2008: <ul style="list-style-type: none"> • Re-interview selected households; June 2009: <ul style="list-style-type: none"> • Final report Zambia: November 2008: <ul style="list-style-type: none"> • Panel survey data collection completed; May 2009: <ul style="list-style-type: none"> • Classification of household groups and sampling for qualitative interviews; November 2009:</p>

	<ul style="list-style-type: none"> • Re-interview selected households <p>May 2010:</p> <ul style="list-style-type: none"> • Final report
Related activities	This work builds on prior rounds of farm household panel surveys undertaken by MSU, Kenya's Tegemeo Institute and Zambia's Central Statistical Office and on detailed profiles of staple food marketing among smallholder farmers in these countries. No prior work, however, has examined the welfare dynamics in the way proposed here. Nor has previous work linked the dynamics of staple food marketing to household welfare profiles.
MSU coordinators	Thom Jayne (Kenya) and Steven Haggblade (Zambia).
Collaborators	<ul style="list-style-type: none"> • Tegemeo Institute (Kenya), sub-contractor • University of Zambia (Zambia), sub-contractor

Activity 2.a. Linking Smallholder Farmers to Effective Value Chain Development: Maize in Eastern and Southern Africa

Objectives	<ol style="list-style-type: none"> 1. Provide a solid evidence-based description of the structure, behavior and performance of maize markets in the eastern and southern Africa region; 2. Identify pragmatic steps for improving the functioning of local and regional maize markets and their ability to stimulate smallholder farm technology adoption, farm productivity and food security.
Description	<p>This study will use a combination of key informant interviews of private and public sector actors in the maize marketing system in five countries linked by trade, in conjunction with available household survey and price data, to build an empirical understanding of the regional maize marketing system.</p> <p>The report will identify the strengths and major weaknesses of the system, critical constraints and bottlenecks where progress is needed in order for the entire value chain to develop effectively, and priority areas for future investment and institutional support.</p> <p>The countries to be included in the maize value chain study are: Kenya, Tanzania, Malawi, Zambia, and Mozambique. Because some of the major trading and milling firms operating in these countries are headquartered in South Africa, the field work will involve some work in that country.</p> <p>The report will have two core aspects:</p> <ol style="list-style-type: none"> A. Provide a descriptive understanding of how maize markets actually operate; and B. Identify the priority actions for improving the functioning of maize markets and their ability to serve the needs of smallholder farmers and consumers in the region. <p>The actors in the value chain to be interviewed are:</p> <ul style="list-style-type: none"> • Small assemblers who buy direct from farmers; • Small and large wholesalers (both locally based and international companies operating in the region); • Small and large maize millers; • Small and large urban retailers, including supermarket firms; • Grain certification firms with knowledge about local warehouse receipt systems; • Representatives of government marketing boards and Ministries of Agriculture; • World Food Programme procurement and distribution specialist in the field offices; • Representatives of SAFEX and other commodity exchanges

	<p>being formed in the region.</p> <p>Some of the issues to be examined include:</p> <ul style="list-style-type: none"> • Is there an under-provision of commercial storage capacity, and if so, why? • What is the ownership concentration of storage facilities? • To what extent is storage space leased out to traders, and is access to storage facilities unconstrained? • Perceptions by traders and millers of the amount of grain marketed from domestic production, to be compared with estimates from nationally-representative household surveys; • Estimates of market concentration at various stages in the maize marketing systems (both nationally and regionally, since several transnational companies operate in many countries. e.g., Seaboard owns large maize mills in Kenya, Zambia, Mozambique, and possibly other countries of the region. Export Traders operates in every major maize producing country in the E/S Africa region); • What are the main barriers to entry and barriers to expansion for firms at various stages in the value chain? • How to the various marketing agents handle their financing requirements, and do these systems function adequately? • What are the various channels by which maize flows from farmers to the final consumer (a maize marketing flow diagram) and what are relatively volumes passing through each channel? • Mapping of surplus and deficit zones in the region; • Spatial location of production, marketed maize surplus, storage, milling, animal feed operations and human consumption; • Evaluate how the demand for maize for animal feed, particularly for cattle and poultry affects the maize supply-demand balance; • The impact of rapid urbanization on how maize marketing systems are likely to evolve in the near future; • We also propose to evaluate changes in future consumption trends and patterns in order to identify priority investments to promote smallholder income growth and food security.
Hypotheses	<ol style="list-style-type: none"> 1. Most maize storage throughout the season occurs on farms, not by traders or governments; 2. Trader storage is primarily fast-turnaround, due to liquidity constraints and uncertainty about government policies; 3. Transaction costs of informal trade across national borders are still substantial, and these costs impede regional market efficiency; 4. Private trader willingness to participate in warehouse receipt systems will depend on improvements in regulatory frameworks, contract enforcement capability, integrity of certification procedures, and integrity in the price discovery process, all of

	<p>which require strong government support to achieve.</p> <p>5. World Food Programme is the largest grain trader in many of the national markets under study as well as in the region.</p> <p>6. Rapid urbanization will be associated with a rise in maize prices to import parity as the growth in demand will outstrip supply.</p> <p>7. The apparent long-term rise in international food prices will promote additional investment at specific stages of the maize value chain in the region.</p>
Methods/analytical tools	<p>This study will be based on a modified structure- conduct - performance framework. Key informant interviews of private and public sector actors in the maize marketing system in five countries linked by trade in conjunction with available household survey data) will be undertaken to develop an understanding of traders’ perceptions of the main factors impeding further investment in the system and priority areas for support.</p> <p>A combination of key informant surveys and household data analysis will be used to prepare market flow diagrams and to address many of the hypotheses above, for specific “market basins.” Market basins are catchment areas – maize grown within a certain area tends to flow to a regional market where it is bulked up for onward sale to other regions depending on market conditions.</p> <p>A group of market catchment areas will be selected for detailed study. Interviews of marketing actors will be undertaken within these selected catchment areas to develop indicators of market structure, behavior, and performance.</p>
Gender dimensions	<p>One of the issues to be uncovered in the key informant surveys are the gender composition of marketing actors at the various stages of the maize value chain. Are there certain levels in the maize value chain at which women tend to participate? Are they absent from certain functions and stages in the value chain? If so, is this due to gender discrimination, and/or structural constraints, asset constraints, and legal constraints? In some countries, women are discouraged from holding a bank account or having legal title to land, which may be important impediments to generating the capital for commercial trading activities.</p>
Countries/crops	Kenya, Tanzania, Malawi, Zambia, and Mozambique
Outputs/milestones	<p>June-August 2009:</p> <ul style="list-style-type: none"> • Field work / key informant interviews in Mozambique, Tanzania, and South Africa <p>March-May 2010:</p> <ul style="list-style-type: none"> • Field work / key informant interviews in Malawi, Zambia and Kenya <p>December 2010:</p> <ul style="list-style-type: none"> • Draft report completed and circulated for comments

	<p>February 2011 (anticipated):</p> <ul style="list-style-type: none"> • Final report completed within six weeks after comments received on draft report. <p>March 2011:</p> <ul style="list-style-type: none"> • Policy brief completed. <p>April 2011 and beyond:</p> <ul style="list-style-type: none"> • A major milestone by August 2011 will be that the findings of this study are widely disseminated and considered by policy makers and other stakeholders the eastern and southern Africa region (i.e., at the 2011 COMESA annual meetings scheduled for March 2011, World Bank outreach events in the region in 2011, and other national policy processes), so that the study's findings are considered in governments' national maize marketing and trade policy formulation. We also envision a COMESA-convened meeting involving Permanent Secretaries of Ministries of Agriculture and Finance to deliberate on the findings of this and other studies conducted under the Project.
Related activities	<p>Ongoing support from USAID missions in Mozambique, Kenya and Zambia to carry out local capacity building, outreach, and policy analysis with local collaborating institutions on issues related to food security, grain and input marketing, and smallholder productivity growth.</p> <p>In August 2008, MSU will complete a one-year investigation of regional maize trade in southeastern Africa. This work has involved spatial mapping of food staple zones in Zambia, Malawi and Mozambique as well as maize trade flows within this three-country region.</p> <p>The analytical team has developed a simple multi-market staple food model for the region, anticipating how food supply shocks (such as drought) in a specific location will affect prices, consumption and trade flows throughout the regional market-shed.</p> <p>The proposed support from BMGF will provide expanded and more detailed analysis and knowledge generation of the region's maize value chain.</p>
MSU coordinator	Thom Jayne
Collaborators	<ul style="list-style-type: none"> • Betty Kibaara, Research Fellow, Tegemeo Institute/Kenya; • James Nyoro, Director, Tegemeo Institute/Kenya; • Steven Njuki, East African Grains Council and RATES • David Nyameino, Cereal Growers Association/Kenya • Ron Kopicki, Value Chain Specialist, the World Bank • Duncan Boughton (Mozambique field work) • David Tschirley (Mozambique price analysis)

	<ul style="list-style-type: none">• University of Malawi collaborator to be identified;• Lulama Ndibongo Traub and• Ferdi Meyer, Bureau for Food and Agricultural Policy, University of Pretoria.
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Activity 2.b. Linking Smallholder Farmers to Effective Value Chain Development: Cassava in Eastern and Southern Africa

Objectives	<ol style="list-style-type: none"> 1. Compare the market structure, volumes of marketed cassava, range of cassava products available and the technologies applied in cassava processing in three countries of Southern Africa (Zambia, Malawi and Mozambique); 2. Improve understanding of the interactions between cassava production and maize marketing, particularly drought-year behavioral responses, that permit farmers in Northern Mozambique to release maize episodically to Malawi and Eastern Zambia; 3. Identify key opportunities for regional cross-fertilization in product development processing technologies, and cassava marketing.
Description	<p>This work fills in key gaps in existing studies in order to produce a composite comparative picture of cassava marketing and processing in this three-country region. Given the importance of Northern Mozambique’s dual-staple zones in exporting maize to Malawi during drought years, this study aims to improve understanding of the behavioral links between cassava consumption and maize marketing that enable this intermittent supply response.</p>
Hypotheses	<ol style="list-style-type: none"> 1. Differences exist across countries and food staple zones in production levels, consumption preferences, cassava processing technology, policies and institutional support for cassava development; 2. These differences will enable regional cross-fertilization in both private sector product development and in public development of effective public policies for stimulating cassava commercialization; 3. Consumer substitution between cassava and maize in the dual staple zones of Northern Mozambique enable flexible release of maize to surrounding deficit areas in the maize belt (in Mozambique and in Malawi) during drought years
Methods	<ol style="list-style-type: none"> i. Spatial mapping of cassava production and consumption in the three country region of Zambia, Malawi and Mozambique to spatially identify different staple food production and consumption zones; ii. Farm household survey analysis to measure production volumes and marketed sales; disaggregated by farm welfare group and gender to identify where poor households do and do not participate in this market system; iii. Field interviews with key value chain participants in Mozambique plus a lighter rapid appraisal to fill in gaps in the preliminary value chain study completed for Malawi to complement the full value chain study available for Zambia; iv. Rapid appraisal of farm households and maize traders in Northern Mozambique to explore links between cassava consumption and maize marketing.
Gender	Gender disaggregation of cassava production, consumption and marketing

dimensions	data; and any other related gender overlays indicating participation of women in cassava processing and marketing
Countries/crops	Cassava in Zambia, Malawi, Mozambique
Outputs	1. Mozambique cassava value chain report\ 2. Regional summary report
Milestones	February 2009: <ul style="list-style-type: none"> • Contract with Mozambican research collaborator November 2009: <ul style="list-style-type: none"> • Mozambique value chain field work completed February 2010: <ul style="list-style-type: none"> • Malawi rapid appraisal completed August 2010: <ul style="list-style-type: none"> • Mozambique value chain report completed February 2011: <ul style="list-style-type: none"> • Comparative three-country summary report
Related activities	<ol style="list-style-type: none"> i. Cassava Transformation in Southern Africa (CATISA) spatial mapping of food staple zones, full-blown value chain study in Zambia and rapid appraisal of cassava value chain in Malawi; ii. Zambia's Acceleration of Cassava Utilization (ACU) Task Force; iii. Preliminary value chain study for Mozambique's Cassava Task Force by AgroGES Consulting and Austral Consulting; iv. SARRNET ongoing interest in cassava processing in the region; v. MSU-World Bank study of regional maize trade among these three countries; vi. Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA); vii. Hunter Nielsen M.A. thesis on the impact of cassava production on maize marketing behavior of farm households
MSU coordinators	Steve Haggblade
Collaborators	<ul style="list-style-type: none"> • Zambia: ACU Task Force; • Mozambique: to be determined, possibly AgroGES Consulting; • Malawi: Chancellor College.

Activity 2c: Structure, performance, and directions of change in the domestic and regional horticultural systems of East and southern Africa, and priorities for investment

Objectives	<ol style="list-style-type: none"> 1. To develop a detailed comparative understanding of the structure, performance, and direction of change in domestic and regional horticultural production and marketing systems in four countries of East and Southern Africa, and 2. To identify potential high payoff investments and institutional arrangements that will more efficiently link farmers to markets and provide poor and middle income consumers with a more stable, lower cost, and higher quality supply of fresh produce.
Description	<p>This study will use quantitative analysis of existing farm- and urban household data sets, complemented by supply chain studies, focus group interviews, and visits to selected public-private collaborative supply chain investments on the continent to provide a detailed comparative understanding of the current status and direction of change in domestic and regional horticultural value chains. The study will then use this understanding to assess current innovative initiatives in these sectors and develop a concrete vision for investment priorities over the next 10 to 15 years.</p> <p>Farm household panel data sets exist in Kenya, Mozambique, and Zambia; MSU was intimately involved in the design, execution, and utilization of all these surveys. These data will be used to explore the relationship between cultivation and sale of food crops and fresh produce, the types of farmers engaging in fresh produce marketing at a scale that can reasonably be called commercial, and the specific determinants of ability to enter into the market in this way.</p> <p>Urban consumer data sets that MSU was also involved in collecting exist in Kenya (2003) and Zambia (2007/08). A second urban survey is likely to be collected in Kenya in early 2009 under separate funding. These data sets will allow MSU to estimate the overall consumer budget share of fresh produce relative to food staples, the budget shares of individual fresh produce items, the income elasticity of demand for these items, and the marketing channels that different types of consumers use in obtaining their fresh produce.</p> <p>Finally, MSU will update previous supply chain work that it has done in Zambia and Kenya, and will launch new supply chain studies in Malawi and Mozambique, collaborating in each case with local researchers. In Zambia and Kenya (and Malawi if the data are available; we know that they are not available in Mozambique), MSU will complement these supply chain studies with analysis of detailed price data bases at retail and wholesale level. These studies will provide a comparative assessment across countries of marketing cost structures and scales of operation, regional import share of fresh produce, typical returns to operators, price variability</p>

	<p>across countries and commodities, and the differential impact of that price variability on price risk faced by different size farmers.</p>
<p>Hypotheses</p>	<ol style="list-style-type: none"> 1. The market share of modern retail outlets in African fresh produce sectors is growing but remains very low (below 10% in all countries) and is likely to grow more slowly than was expected in the early part of this decade. Expectations of a rapid takeover of market share by supermarkets in Africa were fairly common up to the mid-2000s. Since that time, expectations have cooled considerably (Tschirley, 2007). Our hypothesis is that the cooling of these expectations is consistent with reality on the ground. This in turn means that traditional outlets, such as small grocers, large urban market places, and a range of street vendors will continue to be the primary outlets for smallholder farmers to market their produce. 2. Spatial and farm level specialization in horticultural production has proceeded further in Kenya than in the other three countries, due to the greater population density and better functioning food markets in Kenya. 3. Horticultural markets offer higher-value but much riskier income earning opportunities for smallholder farmers than do staple food markets. The higher value of horticultural production stems from the higher unit sales value for these crops compared to staples, and to the possibility of vastly higher yields per unit area. For example, a relatively market oriented smallholder in Zambia might sell 1 to 2 metric tons of maize at a price ranging from US\$0.12 to US\$0.25, depending on the year and sales channel. Total gross revenue thus might range from US\$120 to US\$500. The average smallholder producing tomato for the Lusaka market, on the other hand, may produce 10-15 metric tons and sell all of it at an average price of US\$30-0.35/kg, for a total gross value of US\$3,000 to US\$5,250. The higher risk of horticultural production comes from extreme variability in prices (both seasonally and day-to-day), the much higher susceptibility of these crops to disease, and the very high input costs that are therefore required to achieve a reasonable yield; a farmer who suffers heavy losses on their field due to an inability to buy sufficient inputs to control a disease outbreak, or due to insufficient technical knowledge, will suffer much higher losses than on a staple crop. 4. Key barriers to diversification into high-value horticultural production include credit/cash constraints, lack of technical knowledge, distance from urban markets, and ability to manage risk. Related hypothesis: the ability of fresh produce farmers to manage price risk is a positive function of their scale of operation. <ul style="list-style-type: none"> • Typical smallholder farmers producing vegetables for the market in Zambia may use 5 to 10 different crop protection chemicals and 4 to 6 different types of fertilizer on a field.

	<p>Total costs for these chemicals and fertilizers on typical cropped areas can exceed US\$1,000. Additional costs include piecework labor, transport, fuel for running pumps, and amortization of pumps, irrigation pipes, animal traction equipment, and other needed equipment. These costs constitute a major barrier for many smallholder farmers.</p> <ul style="list-style-type: none"> • The number of different chemicals and fertilizers used highlights the complexity of the production process and the need for solid technical knowledge. Meanwhile, the great majority of African governments provide almost no extension assistance for such crops, meaning that farmers have to piece together what knowledge they can from neighbors and input dealers. Finally, the perishability of widely consumed fresh produce items such as tomato and leafy vegetables (the most widely consumed vegetables in East and Southern Africa) and the lack of any cold chain mean that farmers must typically reside within 80 km, at most, of an important urban market to have an opportunity to enter into commercial production of these items. • Scale of operation affects farmers' ability to manage horticultural price risk because it directly influences their ability to spread sales a) over a longer period of time and b) densely within those periods. Doing both of these will substantially reduce the variance of their expected price. <p>5. Consumer budget shares for fresh produce rival or exceed those for maize in all countries.</p>
Methods/analytical tools	<ol style="list-style-type: none"> 1. Update knowledge and expectations regarding the supermarket phenomenon in African fresh produce markets, using data from urban household consumption surveys in Zambia and Kenya: <ul style="list-style-type: none"> • current market share (2008 for Zambia, 2009 for Kenya) of supermarkets and all other retail market channels, by income/expenditure level of consumer; • determinants of consumer propensity to purchase fresh produce in a supermarket, through probit econometric analysis; • share of smallholder farmers in fresh produce supply to supermarkets (will require interviews of supermarket produce managers or wholesale subsidiary managers), and • expectations regarding growth in market share over the next 15 years, 2. Develop a comparable set of indicators of the current and evolving structure of smallholder marketing of fresh produce, using existing rural household panel surveys from Kenya, Zambia, and Mozambique; Malawi will also be included if data quality permits. Likely indicators are: <ul style="list-style-type: none"> • Size distribution (based on value of sales; will show concentration of sales among size groups) • Spatial concentration

- Degree of specialization in fresh produce at farm level
 - Comparative assessment of these indicators to similar indicators for cereal crops and other relevant cash crops
3. Develop demographic and livelihood profiles (including the relationship between horticultural crops and food staples) for each size group of horticultural seller (including those not selling any), and use two-step econometric techniques to investigate the factors associated with smallholders entering the horticultural market at a meaningfully commercial scale.
 4. Use detailed farm level production and marketing data in Zambia, and MIS price time series from Zambia and Kenya, to determine the effect of scale of production and marketing on a farmer's ability to manage price risk in horticultural products.
 5. Apply rapid appraisal techniques (combined in Kenya and Zambia with information from urban consumer surveys) to characterize the marketing structure serving the main urban center in each of the four countries:
 - Estimate consumer budget shares for fresh produce and total volume and value of fresh produce (including breakdown for top fresh produce items) flowing through existing channels;
 - Classify main wholesale and retail markets on physical location in relation to the city (Central Business District, outlying area, residential neighborhood), the income level of the neighborhood if relevant, product mix, and management structure (especially the mix of public and private authority and responsibilities)
 - Estimate market share of each classified retail and wholesale market
 - Estimate the size distribution (based on gross sales) and gender mix of retailers, and then estimate the market share of female retail traders
 - Establish the gender mix of wholesalers
 6. Develop a comparable set of indicators of performance of traditional fresh produce marketing chains for at least three key items (anticipated to be tomato, the primary green leafy vegetable, and onion, with others included as data permit). Compare these indicators to similar indicators for maize (not all indicators will be developed for all countries).
 - Mean, variance, and typical seasonality of retail prices
 - Typical number of transactions from farmer to consumer (is the fresh produce marketing chain especially long when compared to staple food commodities?)
 - Cost structure from farm to retail and typical farmer share of final retail price
 7. Develop an inventory of 6 to 8 existing programs/projects/ investments that are believed to hold promise to substantially improve the performance of the fresh produce marketing system, and assess their likely long-term impact. Ideally, the 6

	<p>to 8 chosen activities would include a mix of hard and soft market infrastructure investment linked to traditional market places, innovative programs working outside of these traditional market places, and technical and marketing support to farmers and also to traders.</p>
Gender dimensions	<p>Horticultural marketing is a major employer of women in urban areas of Africa, especially at retail level. It is also believed that women are major players in horticultural production in many countries, especially for green leafy vegetables. This study will provide a more detailed understanding of women's role in the horticultural sector by:</p> <ul style="list-style-type: none"> • Estimating the market and share and mean earnings of female vs. male traders at retail, and • (only in Zambia) Estimating the market share of female vs male "first sellers" (either farmers or traders) in wholesale markets of Lusaka.
Countries/crops	<p>Overall, four countries will be included in the study: Kenya, Zambia, Malawi, and Mozambique. Farm household analysis will be conducted in all four countries with the possible exception of Malawi, where data quality must first be established before deciding whether it can be included. This farm household analysis will include all horticultural crops captured in those surveys. Supply chain studies will be conducted in all four countries, focusing on tomato, the primary green leafy vegetable, and onion. Urban survey data will be used from Zambia and Kenya and will encompass all fresh produce items captured in those surveys.</p>
Outputs/milestones	<p>May 2010:</p> <ul style="list-style-type: none"> • Draft cross-country comparative report on the evolving structure and performance of domestic and regional horticultural production and marketing systems across the four countries; <p>July 2010:</p> <ul style="list-style-type: none"> • Final report and policy synthesis completed <p>September 2010:</p> <ul style="list-style-type: none"> • Draft report synthesizing the key challenges faced by these systems, assessing 6 to 8 ongoing initiatives in the sectors, and laying out a concrete vision for investment priorities over the next 10 to 15 years. <p>November 2010:</p> <ul style="list-style-type: none"> • Final report and policy synthesis completed <p>December 2010 and beyond:</p> <ul style="list-style-type: none"> • Integrate the findings of this study into outreach activities by COMESA and other national and regional partners, including Ministries of Trade and City Councils in study countries.
Related activities	<p>Ongoing work in Zambia and Kenya in collaboration with local</p>

	partners.
MSU coordinator	Dave Tschirley
Collaborators	<ul style="list-style-type: none"> • Hamish Gow (MSU) • Val Kelly (MSU) • Julius Mangisoni (Bunda College, Malawi) • Milton Ayieko (MSU graduate student from Tegemeo Institute) • James Nyoro (Tegemeo Institute, Kenya); • Munguzwe Hichaambwa in Zambia; • TBD in Mozambique

Activity 2d. On the Ability of Cotton to Drive Food Crop Productivity Growth in Africa: Unraveling the Mediating Role of Market and Institutional Structure

Objectives	<ol style="list-style-type: none"> 1. To highlight the effect of the structure of the internal market for seed cotton, the related institutional structure governing the cotton sector, and the resulting predictable strengths and weaknesses of the cotton sector on the ability of cotton to drive food crop intensification. 2. To draw implications for public policy and public-private collaboration in efforts to develop Africa’s cotton and food crop value chains.
Description	<p>This work will contain two main elements.</p> <ul style="list-style-type: none"> • First, it will review previous empirical research on the impact of cash crops on food crop productivity and intensification. • Second, it will draw on recent conceptual and empirical research on cotton sectors in Africa to clarify the market- and institutional structure factors that are likely to mediate the mechanisms through which cotton might have an effect on food crop productivity, and the likely magnitude of any effect. <p>In past research, Dione (1986) showed how cotton in Mali, under a state ginning and marketing monopoly, led to farm level capitalization and regional infrastructural investment that fueled growth in food crop production, along with cotton. Goetz (1993) showed how household adaptations to market failures, combined with a state monopoly for peanut marketing in Senegal, lead to positive synergies between cash and food crops. Govereh et al. (1999) discussed some of the institutional factors that would facilitate inter-locked transactions for cotton, identified pathways through which a cash crop like cotton could affect food crop productivity, and examined these effects in a <i>de facto</i> private monopoly situation in Zimbabwe.</p> <p>Work anticipated under this proposal on very recent cotton-food crop interactions in Mali will examine what happens at the household level when a cash crop that fueled food crop productivity growth begins to decline. Other recent work (Tschirley et al 2008) casts a much wider geographical and institutional net, examining cotton sector performance across the highly diverse institutional (and market structure) settings of nine countries of West and Central Africa and East and Southern Africa. By drawing on the wider institutional base of Tschirley et al and by examining the more recent experience in Mali, the work proposed here will expand the institutional reach – generalize the institutional insights -- of the previous research on cash crop-food crop interactions. By doing so it will attempt to identify key challenges and policy approaches to maximize positive food crop-cash crop interactions in a range of specific institutional and market structure settings.</p>

Hypotheses	<ol style="list-style-type: none"> 1. Cotton sectors with many buyers and no institutional mechanisms to limit competition among them will promote food crop productivity only to the extent that increased incomes from cotton relax farmers' cash constraints and allow them to purchase food crop inputs; and for most farmers in such systems, cotton will make only a small contribution to relaxing this cash constraint. 2. Cotton sectors with a single buyer – typically a state monopoly – will be able to drive sustained food crop productivity growth as long as the cotton value chain as a whole remains profitable. However, these systems may limit the emergence of more sustainable input marketing systems that could sustain food crop productivity in the event of cotton's decline. 3. In cotton sectors that have few buyers, the effect of cotton on food crops will depend crucially on the regulatory structure in place for the cotton sector, and on the profitability of fertilizer in cotton cultivation. 4. Recent increases in the price of fertilizer, driven by the oil price surge, will make fertilizer use on cotton unprofitable for most African farmers and thereby will appreciably reduce the ability of cotton to drive food crop productivity gains.
Methods/analytical tools	There will be no new data analysis in this work. Methods will involve synthetic literature review and institutional economics analytical concepts to draw analytically sound conclusions consistent with past empirical evidence.
Gender dimensions	There is a long literature on the gendered aspects of cash cropping in Africa, especially on the effect of female-headedness on access to cash cropping opportunities, and the effect of cash cropping income on the intra-household division of resources and decision making (and thus on female empowerment). The literature review portion of this work, while focusing primarily on the interactions between cotton and food crops, will touch on the how gender affects this interaction.
Countries/crops	Country experience will be drawn on from Senegal, Mali, Benin, Burkina Faso, Ivory Coast, Uganda, Tanzania, Zimbabwe, Zambia, and Mozambique.
Outputs/milestones	<p>March 2011:</p> <ul style="list-style-type: none"> • Draft research report <p>May 2011:</p> <ul style="list-style-type: none"> • Final research report and policy synthesis <p>May-August 2011:</p> <ul style="list-style-type: none"> • Outreach
Related activities	Integrated coarse grain-cotton research in Mali under this proposal; future work with World Bank on cotton sector regulation.
MSU coordinator	Dave Tschirley
Collaborators	Duncan Boughton (MSU), Isaac Minde (ICRISAT)

Activity 2.e. The contribution of cotton and coarse grain value chains to productivity and poverty reduction: Insights from Mali

Dynamics of Staple Food Markets: Mali	
Objectives	<ol style="list-style-type: none"> 1. Provide a panoramic view of food staple <u>production</u> trends and drivers in Mali at the national and regional level. Due to data limitations Mali will NOT provide a detailed disaggregated micro-level picture of how different kinds of smallholder households rely on staple food markets throughout the country; but we will draw on prior studies in specific zones to provide illustrations of different types of market participation. 2. What are the trends in staple food demand in Mali, <ol style="list-style-type: none"> a. By product (rice, maize, millet, sorghum, and selected emerging basic food staples such as cowpeas, fonio, potatoes), b. By source of demand (urban and rural consumption, processors, livestock feed, etc.), 3. What are the trends in sources of supply (domestic production by region and type of producer, imports, food aid)? 4. What are the implications of these trends for future development of coarse grain markets in Mali and the West African region? 5. Document broad trends in staple food use for direct human consumption and for use in animal feed. 6. Describe trends in real producer and retail prices of cereals and identify potential contributing factors. 7. Review and synthesize available evidence on strengths and weaknesses of investment options and market-oriented strategies that have been used in Mali to protect farmers against staple crop price variability (group marketing, warehouse receipts, contract farming).
Description	<p>The research will:</p> <ul style="list-style-type: none"> • Describe aggregate and per capita national and regional staple food production trends over time using annual crop production survey data; identify key drivers of changes in production (objective 1). • Using results from prior studies in selected regions of Mali, describe the relationship of farmers to staple food markets (e.g., types and numbers of households that are net sellers, net buyers, or autarkic) in different zones and at different points in time. Identify factors explaining the different relationship and the types of policies and investments that contribute to these differences (objective 1). • Describe changes in food consumption patterns that can be

	<p>illustrated through the use of food balance sheets and describe changes over time in both urban and rural staple food consumption based on comparisons of the 1989, 1994, and 2001 national budget/consumption surveys. These analyses will be supplemented with insights drawn from the literature and prior case studies in selected zones (objective 2).</p> <ul style="list-style-type: none"> • Using market information system (MIS) price data and appropriate deflators, describe trends in real retail prices of cereals. • Examine factors having influenced these price changes in the past and likely future trends (e.g., changes in production per capita, marketing margins, changes in regional trade patterns, government policies and interventions in the market, and increased demand from agro-processing industries, including demand for animal feed) (objective 3). • Synthesize lessons from literature and evaluations of selected projects, programs, and policy reforms to improve price and supply stability, to protect against both upside price risk to ensure poor consumers' (including rural consumers') access to food during high-price periods of food shortfalls, and to protect against downside price risk to ensure adequate incentives for smallholders to adopt productivity-enhancing inputs (objective 4).
Hypotheses	<ol style="list-style-type: none"> 1. Key drivers of production trends for millet/sorghum are exogenous climate and pest factors and increased area. Drivers for both rice and maize include use of improved inputs (including improved varieties) and government policies. 2. The two most important drivers of Malian maize prices in recent years are regional demand and supply and increased intermediate demand for maize by animal feed producers supplying the poultry industry; these trends are likely to continue. 3. The majority of farm households have been and will continue to be net food purchasers; being in the net seller category is not necessarily an indication of an adequate food security situation for the household. <p>Farmers participating in group marketing activities are able to market more and at higher prices than those not participating in group marketing activities.</p>
Methods/analytical tools	<p>Analyses will include:</p> <ol style="list-style-type: none"> a. Use of household data from two different cross-sectional surveys (2000/01 and 2006/07) to classify households into meaningful groups that help describe different patterns of staple food market

	<p>participation</p> <ul style="list-style-type: none"> b. Comparisons over 3 points in time of consumption patterns to assess changing demand patterns for staples c. Estimates of the influence of increased poultry and egg production on demand for coarse grains, d. Graphing and regression analysis of production and price trends and determinants, and e. Calculation of marketing margins. The table inserted at the end of this activity description provides a matrix of data sources (existing and project-generated) that will be used to address each of the objectives and a summary description of the anticipated types of analyses.
Gender dimensions	<p>Most rural surveys in Mali have a very low percent of female-headed households (<5%), making it unrealistic to do gender analysis simply by looking at female-headed households vs. male-headed households. Rather, one needs to look at intra-household data. Data available from the CMDT panel surveys will permit us to describe women's participation in the production of staple food crops (area cultivated and production) and changes over time. The RuralStruct (2006/07) and the LICNAG (2000/01) surveys permit us to look at women's participation in staple food production and marketing for a single cropping year. Precise quantification of amounts sold may not be possible, but we should be able to develop some index of the relative importance of market participation for staples versus other products for women compared to men. Rapid appraisal of the peanut value chain, where women dominate (particularly in producing and marketing processed products, like peanut butter), will also identify constraints to women increasing incomes through expanded artisanal value added activities in this important value chain. We also plan on conducting focus group discussions with women in the cotton zone that will enable us to describe production and marketing strategies and constraints for individual women and women's groups; this should provide insights on mechanisms likely to improve women's access to productive assets and markets.</p>
Countries/crops	<p>Principal crops covered for Mali will be cereals (rice, maize, sorghum, millet, peanuts). Parts of the analysis will also look at emerging staple food crops (fonio, cowpeas, cassava).</p>
Outputs/milestones	<p>The Mali team will prepare a country-level report in English and French on this activity. The French version will be jointly issued by MSU and local collaborators. Results will be presented at a workshop of policy analysts, market participants, and development partners (e.g., NGOs, government services, donors) in Bamako.</p> <p>Implementation calendar and milestones (in italics) will include:</p>

	<p>December 2008</p> <ul style="list-style-type: none"> • Signing contracts with collaborators and obtaining access to required data base • Assembling data from various sources into consolidated files and conducting preliminary analyses on existing data bases <p>March – August 2009</p> <ul style="list-style-type: none"> • Design and implementation of new household and value-chain data collection activities, drawing on results of preliminary analyses and identified gaps; done in conjunction with work on Activity 2.a and 2.d • Data entry/analysis of new data collected <p>December 2009</p> <ul style="list-style-type: none"> • Review and synthesis of relevant literature and prior case studies <p>May - July 2010</p> <ul style="list-style-type: none"> • Preparation of draft report in English • Review/revisions of English draft and preparation of final English report and Policy Synthesis • Translation of English report into French and review by francophone colleagues <p>December 2010</p> <ul style="list-style-type: none"> • Editing/finalizing French report and Policy Synthesis <p>February 2011</p> <ul style="list-style-type: none"> • Conduct of local workshop/outreach <p>August 2011</p> <ul style="list-style-type: none"> • Results of study/workshop are reported by news media and cited in government, donor, or private sector documents or public statements concerning the staple food sector at least 5 times
<p>Related activities</p>	<p>Since August 2007, MSU has been implementing the Hewlett Foundation-supported West Africa Market Information Project (WAMIP). The project, funded through July 2009, aims to expand regional trade in agricultural products in West Africa by facilitating the flows of market and commercial information among countries of the subregion and by strengthening the capacity of stakeholders, particularly agricultural traders and farmer organizations, to act on that information. Among its objectives, the project will:</p> <ul style="list-style-type: none"> • Identify critical commercial and information needed by the private and public sectors to expand regional agricultural trade in West Africa and develop strategies to produce such

	<p>information.</p> <ul style="list-style-type: none"> • Develop improved methods for collecting and diffusing market information, including testing new ICT-based tools, such as cell phones and wireless Internet connectivity. • Work with trader organizations to increase their capacity to respond to new opportunities for regional trade created by a better flow of commercial and market information. <p>Information gathered through this project and possible future Hewlett-funded work on market information and regional trade will contribute to the understanding of the broader value chain organization for cereals.</p> <p>MSU, CIRAD and IER are partnering in implementing a World Bank funded study that looks at the impacts of the liberalization of agricultural markets on the dynamics of structural changes in major coarse grain value chains (the RuralStruc study). Using a single-interview survey covering the 2006/07 cropping season, the study collects current and retrospective information to look at the dynamics of farmers' assets, incomes, sources of incomes, participation in agricultural markets over time.</p> <p>Some of the household-level data collection and analysis for this project will also contribute to the activities described above.</p>
MSU coordinator	Valerie Kelly
Collaborators	<ul style="list-style-type: none"> • MSU: Staatz, Dembélé, Boughton, Traoré • <i>Companie Malienne pour le Développement des Textiles (CMDT)</i> for data collection and analysis support. • <i>Observatoire des Marchés Agricole (OMA)</i> Salif Diarra and others for value chain data collection and price analyses. • <i>Institut d'Economie Rurale (IER)</i> and CIRAD, both involved in RuralStruct survey data that will be used. • CILSS/ECOWAS for assistance with outreach.

	Coarse Grain and Cotton Sector Studies: Mali
Objectives	<ol style="list-style-type: none"> 1. Document how participation in the cotton value chain affects coarse grain productivity and food security at the household level and how the relationships differ across household types and across time (1996 to present). 2. Describe how farmers have responded to changes over time in the structure and performance of the cotton and the coarse grain value chains and the impact that these changes have had on farm-level returns to cotton and coarse grain production. 3. Identify crop, policy, and technology options likely to improve farmer welfare by increasing productivity and market participation in both cash crop and coarse grain value chains, describing how results will differ for different types of farm households.
Description	<p>The Mali study provides an opportunity to examine the historical performance of and interaction between:</p> <ol style="list-style-type: none"> a. Single-channel, tightly managed cash-crop sector characterized by substantial government intervention and b. A coarse-grain sector characterized by open markets, albeit still subject to some intermittent government intervention when national food security is threatened. Because policies and investments affecting either of these value chains are likely to affect the other, in Mali, we will conduct a joint analysis of these two sectors, describing their interactions as well as their individual performances <p>The study will focus on the cotton-zone for farm level survey work and analyses but extend the data collection and analysis of the upstream and downstream parts of the coarse-grain value chain to national and, where appropriate, West African regional markets outside the cotton zone.</p> <p>The Malian cotton sector and others in West Africa are currently at a cross-road. Having resisted World Bank pressure to privatize for a number of years, the Government of Mali (GOM) and the cotton company (CMDT) have not made adequate investments in the institutions and capacity needed for privatization of the sector. Compounding the problem are:</p> <ol style="list-style-type: none"> (a) The unusually low world prices of cotton and rising prices of inputs, which make cotton production less attractive to producers than it has been in the past, and (b) The deficits that have been accumulated during the past several years by the CMDT—due to inefficiencies, low world prices, reduced farm-level production, and financial mismanagement.

	<p>An important shift in the relationship between cotton and cereal production/market access is occurring that could have a significant impact on the role of cotton in empowering cereal production. In the past (with pauses due to low cotton prices) cotton has enabled both capital accumulation and fertilizer acquisition to the benefit of cereal. This dynamic is about to go sharply into reverse with the combination of decreasing real cotton prices and increasing real fertilizer prices.</p> <p>Understanding how farmers are likely to respond to these changes, which are likely to play out as deterioration in the capacity of the cotton value chain to meet farmers' needs and increased reliance on the coarse grain and emerging alternative cash crop value chains, is a particularly timely and pertinent research endeavor. What this will mean for future contributions of cotton to coarse grain value chains and poverty reduction is a critical question for Mali. The results will also be relevant for other West African cotton producing countries. Specific questions that will be addressed in the two value-chain studies include:</p> <ol style="list-style-type: none"> i. What have been the trends in coarse grain production and sales (maize, sorghum, millet) and their relationship to cotton production and sales by different types of farm households (e.g., cotton producers and non-producers; households with different levels of productive assets, etc.)? ii. What is the contribution of participation in the cotton value chain to coarse-grain productivity and food security and has this changed over time? iii. What are the factors limiting the production and sale of both cotton and coarse grains, with a focus on poor households and the impacts that changes in the structure, conduct, and performance of the value chains have on the ability of poor households to participate effectively in them? iv. What are the likely impacts on farmer production decisions and incomes of changes in crops, technologies, policies, and cotton value chain performance? v. What are the opportunities, impediments, priority investments, and institutional reforms required to promote greater efficiencies in the regional trade of coarse grains? vi. What does past experience tell us about different mechanisms for reducing price volatility in coarse grain markets as a means of encouraging more production (e.g., warehouse receipt systems, farmer managed cereal
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	<p>banks, input credit)? Note that a key factor drawing farmers to the cotton sector is the guaranteed price announced at the beginning of the cropping season. This is essentially the same objective/sub-activity as 1a (iv) and will not be discussed further here.</p>
<p>Hypotheses</p>	<ol style="list-style-type: none"> 1. There are no feasible strategies for poor farmers in the cotton zone to get out of poverty by relying solely on participation in the coarse grain market. 2. Small/poor farmers living in or near market villages are likely to have a crop mix with less reliance on cotton production than farmers far from market villages, due to the different crop pricing systems (cotton has pan-territorial prices, other crops do not). 3. Households producing cotton obtain better coarse grain results (yields and more cereal production per capita) than non-cotton producers; 4. Cotton farmers are likely to produce more cereals per capita than non-cotton farmers. 5. Poor farmers not producing cotton have been excluded due to poor credit repayment in the past or do not have an adequate labor supply. 6. Non-poor farmers not producing cotton have produced it in the past but moved on to more profitable activities or have always relied on non-cropping income sources (livestock, commerce).
<p>Methods/analytical tools</p>	<p>Analysis of farm household data will be combined with key informant interviews at different levels of each value chain, including asking farmers how they view their diversification options given the current uncertainty in the cotton sector, and a review of the literature on the evolution in structure and performance of the two sub-sectors.</p> <p>The question concerning prospects for improving the market participation and incomes of poor farmers will be addressed through simulations using comparative whole-farm budgets (and possibly mathematical programming models) to examine potential impacts of different technologies, adoption of different cash crops as alternatives to cotton, access to credit, and opportunities for improved price transmission through policy reform and regional trade.</p> <p>The table at the end of this activity description identifies the existing data bases that will be used, describes plans for supplementing that data through household and subsector surveys, and indicates the general types of analyses planned to address objectives (i to vi) listed above.</p>

	<p>The value chain work would focus on documenting the degree of concentration and market integration in national and regional maize trade and processing and identify perceptions of critical constraints and priority investments, institutions, and policy actions needed to promote improved functioning of the system; points of consensus and divergence.</p> <p>Respondents will comprise large processors, small/medium-small processors, assemblers, wholesalers, transporters, storage operators, and retailers. To the extent possible we will also be looking at similar issues with input suppliers operating in these two sectors.</p>
Gender dimensions	<p>Gender dimensions described for Activity 1a will also be relevant to the cotton/maize value chain studies. In addition, the whole-farm budgeting exercise will analyze women’s fields as separate enterprises, taking into account constraints on women’s time and access to other resources, rather than assuming that all resources are perfectly mobile and substitutable within the household. If appropriate, we may also include budgets/simulations for women’s group- farming activities.</p> <p>Thus, the models will show disaggregated outcomes for both men and women. . For the coarse grain sector we will document the role of women relative to men (differences in activities, size of operations, and profitability of the activities) through the value chain interviews. In cases where we find that women are under-represented in the more profitable activities we will ask questions such as:</p> <ol style="list-style-type: none"> a. What factors limit women’s movement into some of the more profitable segments and b. Are there emerging areas (e.g., processing) where women might be able to carve out more profitable opportunities for themselves than they currently have.
Countries/crops	<p>The Mali study will feed into the multi-country cotton value-chain study that also covers Zambia, Mozambique, Malawi. The coarse grain study in Mali will also describe regional trade with neighboring countries and the characteristics of these regional markets; countries likely to be covered to some extent include Cote d’Ivoire, Senegal, Mauritania, Burkina Faso, and Guinea.</p>
Outputs/milestones	<p>The Mali team will prepare a country-level report in English and French on these activities. The French version will be jointly issued by MSU and local collaborators. Results will be presented at a small workshop of policy analysts, subsector participants (traders, ginners, processors), and development partners (e.g., NGOs, government services, donors) in Bamako.</p>

	<p>Implementation calendar and milestones (in italics) will include:</p> <p>December 2008:</p> <ul style="list-style-type: none"> • Signing contracts with collaborators and obtaining access to required data bases • Preliminary analysis of the CMDT panel data (4th quarter 2008) <p>March – June 2009</p> <ul style="list-style-type: none"> • Design and conduct of new HH data collection activities, drawing on results of preliminary analyses and identified gaps; <p>June – December 2009</p> <ul style="list-style-type: none"> • Data entry/analysis of new HH data collected <p>June – August 2009</p> <ul style="list-style-type: none"> • Conduct of the value chain surveys <p>August – December 2009</p> <ul style="list-style-type: none"> • Data entry and analysis of the value chain surveys <p>April 2010</p> <ul style="list-style-type: none"> • Submission of draft report in English <p>June 2010</p> <ul style="list-style-type: none"> • Review/revisions/final submission of report in English and Policy Synthesis <p>June – August 2010</p> <ul style="list-style-type: none"> • Translation of report into French and review by Francophone colleagues <p>January – February 2010</p> <ul style="list-style-type: none"> • Editing/finalizing French report and Policy Synthesis • Conduct of local workshop/outreach <p>February 2011 – August 2011</p> <ul style="list-style-type: none"> • Results of study/workshop are reported by news media and cited in government, donor, or private sector documents or public statements concerning the cotton and/or coarse grain sectors at least 5 times
Related activities	<p>In addition to the Hewlett Foundation and the RuralStruct activities described earlier in the Mali section, MSU is also a participant in the USAID-funded West African Cotton Improvement Program and in this role is involved in cotton sector policy analysis and capacity building in Mali, Burkina Faso, Benin, and Chad. Contacts with</p>

	<p>cotton sector actors and current work on policy issues will contribute to development of the policy simulations used in the mathematical modeling.</p> <p>At the completion of the work, WACIP collaborators in Mali and elsewhere will be able to provide assistance with outreach to cotton sector stakeholders.</p>
MSU coordinator	Valerie Kelly
Collaborators	<ul style="list-style-type: none"> • MSU: Staatz, Dembélé, Boughton • <i>Compagnie Malienne pour le Développement des Textiles</i> (CMDT) for data collection and analysis support. • <i>Observatoire des Marchés Agricole</i> (OMA) Salif Diarra and others for value chain data collection and price analyses. • <i>Institut d'Economie Rurale</i> (IER) and CIRAD, both involved in RuralStruct survey data that will be used. • CILSS/ECOWAS for assistance with outreach.

Activity 3.a. Assessing the Impacts of Road Improvement on Smallholder Input Adoption, Crop Production and Marketing Patterns

Objectives	<ol style="list-style-type: none"> 1. Understand how smallholder behavior and welfare is affected by investments in physical infrastructure that affect access to markets 2. Estimate how the payoffs from/impacts of other marketing investments and farm technology adoption is affected by investment in road infrastructure
Description	<p>While several rate of return studies have been undertaken to examine the impact of road investment on economic development, few if any studies have estimated the impacts of road investment on smallholder farm behavior, technology adoption, and welfare in Africa. This study will use longitudinal household survey data in Kenya and Zambia to assess the impacts of two kinds of road investment:</p> <ol style="list-style-type: none"> a. New tarmac road construction; and b. Improvement or upgrading of existing roads. <p>Both types of road investment have been made in Kenya and Zambia over the periods in which panel survey data has been collected.</p> <p>The study will have an initial descriptive component that presents basic information on how smallholder behavior has changed after new road investment, in terms of cropping patterns, input use, investment in productive farm assets, degree of farm commercialization, crop income, non-farm income, etc. Because various types of road improvement has been made (feeder roads vs. main trunk road), we aim to test for differences in impacts according to the type of road improvement made.</p> <p>The second component of the study will use econometric fixed-effects models and/or randomized evaluation techniques to estimate the impacts of road investment on smallholder behavior and welfare, controlling for other time-varying household, community, and national effects.</p> <p>A third component of the study will be to investigate the feasibility</p>

1 E.g., Radelet, S. and J. Sachs (1998). Shipping Costs, Manufactured Exports and Economic Growth,” <http://www.earthinstitute.columbia.edu/about/director/pubs/shipcost.pdf> ; Mwase, N. 2003. The Liberalization, De-Regulation and Privatization of the Transport Sector in Sub-Saharan Africa: Experiences, Challenges, and Opportunities, Journal of African Economies, 12 (AERC supplement 2): 691-751.

	<p>of doing a benefit/cost analysis of the road improvements, without significant new data collection. Information required, other than the results of the econometric analysis, would include road improvement costs and historical plus projected traffic along the roads by different categories of road users. A benefit/cost analysis would allow comparison of the payoffs to road investment vs. other investments to facilitate market development and smallholder welfare.</p>
Hypotheses	<ol style="list-style-type: none"> 1. Road investment results in detectable changes in crop cultivation patterns from low-value to higher-value commodities; 2. Road investment results in more intensive cultivation of staple food crops; 3. Road investment results in greater private sector investment in rural input retailing and thereby reduces distance between farm households and input suppliers, which translates into greater use of purchased inputs such as fertilizer; 4. Road investment results in greater commercialization of crop activities (i.e., a greater proportion of total production is marketed) 5. Road investment result in an increase in the proportion of smallholder households purchasing grain from markets, because of shifts in cropping patterns toward higher-value commodities 6. The impacts of road investment on smallholder farm production, sales, and incomes may differ between initially non-poor vs. poor households, as well as between male-headed and female-headed households.
Methods/analytical tools	<p>Using household panel data in both Kenya and Zambia:</p> <ol style="list-style-type: none"> i. Descriptive bivariate tables and figures of before/after changes in cropped area among different crops, shifts between crop, animal and non-farm income, input intensification, crop productivity, and marketed sales and purchase patterns. ii. Key informant interviews of marketing agents (primarily assemblers and wholesalers) operating in areas where recent road investment has been made. iii. Econometric analysis of household survey data. Our current thinking is to use fixed effects and/or propensity score methods. iv. Benefit/cost analysis to assess the returns to road investment
Gender dimensions	<p>Investments that improve households' access to markets may have differential impacts on male-headed and female-headed households. Female-headed households may face greater difficulties in participating in interlinked input-credit-output marketing schemes</p>

	and farmer organizations, which may affect their ability to access credit and inputs. If this turns out to be the case, such results would underscore the need for greater attention to the challenges of linking female-headed households into markets in ways that go beyond traditional public goods investments.
Countries/crops	Kenya and Zambia – no particular crop focus, since a major aim is to understand how changes in physical market access affect shifts in cropping patterns between crops and crop commercialization. This is likely to vary by region, so measuring changes in specific crops will be important.
Outputs/milestones	<p>February 2009:</p> <ul style="list-style-type: none"> Acquire information on road improvement and new construction in both Zambia and Kenya <p>February 2010:</p> <ul style="list-style-type: none"> Draft report synthesizing the studies from both Kenya and Zambia. <p>April 2010:</p> <ul style="list-style-type: none"> Final report completed <p>May 2010:</p> <ul style="list-style-type: none"> Policy brief completed <p>June 2010 and beyond:</p> <ul style="list-style-type: none"> Integrate the findings of this study into outreach activities by COMESA and other national and regional partners. <p>February 2011:</p> <ul style="list-style-type: none"> A major milestone by 2011 will be that the findings of this study are widely disseminated and considered by policy makers and other stakeholders the eastern and southern Africa region (i.e., at the 2011 COMESA annual meetings, World Bank outreach events in the region in 2011, CAADP, and other national policy processes, and submissions to IRIN and other on-line news services), so that the study's findings are considered in governments' national maize marketing and trade policy formulation. COMESA's outreach role as a sub-grantee will be important in this regard.
Related activities	None on-going
MSU coordinator	Eric Crawford
Collaborators	<ul style="list-style-type: none"> Thom Jayne; Tegemeo Institute (Kenya) research fellow to be identified Food Security Research Project/Zambia (Antony Chapoto) MSU/Kenyan graduate research specialist to be identified

Activity 3.b. Impact Assessment of State Marketing Board Operations on Smallholder Crop Production and Marketing Patterns

Objectives	<ol style="list-style-type: none"> 1. Provide an evidence-based understanding of how smallholder behavior and welfare is affected by state marketing board maize purchases and sales operations 2. Provide policy-relevant information that will guide regional- and national policy discussions on staple food marketing and trade policy.
Description	<p>The implementation of food market policy reforms in the early 1990s in eastern and southern Africa has been associated with a partial withdrawal of the state from operations in food markets. However, in recent years, the marketing boards in Zambia and Kenya have re-emerged as central players in the maize markets.</p> <p>In Zambia, the Food Reserve Agency has more than quadrupled its annual maize purchases to over 380,000 tons in the 2006/07 and 2007/08 seasons, buying at a price substantially above wholesale market prices. These quantities are believed to be at least 75% of the maize marketed by smallholder farmers during these years. In Kenya, the National Cereals Produce Board has also increased its maize purchase operations in recent years, particularly in the North Rift maize breadbasket zone.</p> <p>In both countries, the objectives of marketing board operations have been to raise maize production incentives, increase smallholders' update of fertilizer and other inputs, and stabilize the maize markets. These natural experiments provide an opportunity to measure the impact that increased marketing board activities have had on smallholder behavior and welfare.</p> <p>While there are a range of views about the impacts of marketing board activities, we are unaware of any empirical studies in the region that have used micro-level data to measure the impact of state marketing board price and marketing policies on the behavior of different kinds of farmer groups. The investment that MSU and Tegemeo Institute have made over the past decade in household panel survey data sets now provides an opportunity to evaluate these impacts with more precision.</p> <p>This study will use longitudinal household survey data in Kenya and Zambia to assess the impacts of state marketing policies, and their associated price effects, on:</p> <ul style="list-style-type: none"> • Smallholder cropping patterns • Input use on maize and other crops • Maize and total farm production and sales, and

	<ul style="list-style-type: none"> • Changes in farm and non-farm income <p>The study will have an initial descriptive component that presents basic information on how smallholder behavior has changed, from the late 1990s and early 2000s before the major increase in state operations in the maize market, and then after. Effects are likely to differ for various types of smallholder households, thus we will report results for particular groups distinguished by farm size/ asset levels, agro-ecological zone, and gender of the household head.</p> <p>The second component of the study will use econometric approaches to estimate the impacts of state marketing and trade operations on smallholder behavior and welfare, controlling for other time-varying household, community, and national effects.</p> <p>Obtaining information on the treasury costs of marketing board operations would be very important for moving toward a benefit-cost analysis, and we will attempt to obtain this information although it is difficult to acquire.</p> <p>The findings of the study should be of great importance to a variety of national, regional and international stakeholders. Many governments in the region are grappling with the appropriate role of the state in food markets, and are considering (or have implemented) state buffer stock programs, price stabilization policies, and controls on regional trade.</p> <p>To a large extent, the wide-ranging views on the role of the state in food markets stems from a paucity of empirical evidence about the impacts of marketing board activities on smallholder welfare. Another major concern is that the introduction of productive new seed technologies and fertilizer promotion programs may generate a major supply response (which is critically needed) but that local markets may not have the capacity to absorb such surpluses; hence some form of guard against downside price risk may be necessary.</p> <p>Finally, the analysis will evaluate the impact of price stabilization undertaken in these countries on farmers' ability to continue using fertilizer and improved maize seed.</p>
Hypotheses	<ol style="list-style-type: none"> 1. State marketing board marketing and trade policies have a stabilizing effect on maize market prices; 2. State marketing board marketing and trade policies result in an overall increase in smallholder farmers' cultivated area; 3. State marketing board support price policies result in a reallocation of crop cultivation patterns from other crops to maize, with the increase to maize production outweighing

	<p>the decline in area to other crops;</p> <ol style="list-style-type: none"> 4. State marketing board support price policies raise smallholders' use of fertilizer and improved seed on maize; 5. State marketing board marketing and trade policies result in an overall increase in smallholder farmers' overall crop income as well as total household income.
Methods/analytical tools	<p>There are two main challenges involved in this analysis: The first is to identify the effects of state marketing and trade policies on prices received by farmers. These are the marketing board purchase prices for farmers selling directly to the boards, or wholesale maize market prices for farmers selling to private traders. Jayne, Myers, and Nyoro (2008) used VAR techniques to identify the impact of prior NCPB purchase, sale, and pricing policies, as well as maize import tariff rate changes, on wholesale maize market prices.²</p> <p>The second methodological challenge is to measure the impact of changes in expected maize price level and volatility on smallholders' cropping patterns, input use, and output levels, after controlling for other exogenous factors affecting farm behavior. Using household panel data in both Kenya and Zambia, we will use market participation models to determine the impact of expected maize price level/variance effects from marketing board activities, as estimated from VAR models, on changes in cropped area among different crops, shifts between crops, total farm and non-farm income, input use, crop productivity, and marketed sales and purchase patterns.</p> <p>Because these effects are likely to differ between different types of smallholder farmers, we will run separate models for different groups (stratified by assets/landholding size, gender of household head, region) and run Chow-type tests to determine whether the findings are different between these groups.</p>
Gender dimensions	<p>Investments that change the stability and level of staple food prices may have differential impacts on male-headed and female-headed households. Previous research has documented the fact that female-headed households (without a non-resident husband) tend to have smaller farm sizes than most male-headed households.</p> <p>Area expansion in response to price incentives may be more difficult for such households. Credit/financial constraints may also limit female-headed households' ability to expand their use of cash inputs on food crops without other types of programs designed to address these constraints. State marketing and trade policies may therefore affect these households in different ways. If this turns out</p>

² Methodological details of this approach are in Jayne, T., R. Myers, and J. Nyoro. 2008. The effects of NCPB marketing policies on maize market prices in Kenya. *Agricultural Economics*, 38 (2008) 313–325.

	to be the case, such results would underscore the need for greater attention to the challenges of linking female-headed households into markets in ways that go beyond traditional public goods investments.
Countries/crops	Kenya and Zambia , with the focus being on maize marketing policies. Since these impacts may affect household resource allocation across many activities; we will assess effects of maize policies not only on maize output but on farm output and non-farm income more broadly. Results are likely to vary by region, so taking a regionally-disaggregated approach will also be important.
Outputs/milestones	<p>April 2009:</p> <ul style="list-style-type: none"> • Collection of data on quantities of marketing board maize purchased by depot/district in Zambia and Kenya <p>May 2009:</p> <ul style="list-style-type: none"> • Analysis of data underway <p>January 2010:</p> <ul style="list-style-type: none"> • Draft report synthesizing the studies from both Kenya and Zambia. <p>March 2010:</p> <ul style="list-style-type: none"> • Final report completed <p>March 2010:</p> <ul style="list-style-type: none"> • Policy brief completed <p>May 2010 and beyond:</p> <ul style="list-style-type: none"> • Integrate the findings of this study into outreach activities by COMESA and other national and regional partners. <p>February 2011:</p> <ul style="list-style-type: none"> • A major milestone by early 2011 will be that the findings of this study are widely disseminated and considered by policy makers and other stakeholders the eastern and southern Africa region (i.e., at the 2011 COMESA annual meetings, World Bank outreach events in the region in 2011, CAADP, and other national policy processes), so that the study's findings are considered in governments' national maize marketing and trade policy formulation. COMESA's outreach role as a sub-grantee will be crucial in this regard.
Related activities	This activity will be supported and leveraged by on-going field work and policy dialogue with national stakeholders by FSRP/Zambia and by Tegemeo Institute/Kenya. Both of these on-going initiatives are being supported by USAID. The analysis will also build on prior and current analysis in Kenya

	and Malawi involving T. Jayne and Robert Myers, funded by the World Bank.
MSU coordinator	Thom Jayne
Collaborators	<ul style="list-style-type: none"> • Tegemeo Institute/Kenya (one research fellow); • Food Security Research Project/Zambia (Antony Chapoto); • one MSU/Kenyan graduate research specialist to be identified; • Robert Myers/MSU • COMESA (for outreach and regional policy discussion)

Activity 3.c. Impact of Market Information Systems on Smallholder Farmers

Objectives	<ol style="list-style-type: none"> 1. Assess how market information systems can best serve the staple food marketing needs of smallholder farmers and other value-chain participants, including small traders (often predominantly women); 2. Analyze factors that affect smallholders' capacity to use market information; 3. Analyze the factors that influence the returns to investments in market information systems; and 4. Assess what complementary investments or institutions are needed to enable smallholders to use market information more effectively.
Description	<p>MSU has worked over the past 20 years with government agencies and private sector to introduce and develop market information systems (MIS) in Mali and Mozambique. In both countries, MIS aim to improve information on market prices and other market conditions for both the public sector (in order to help design and implement more market-friendly policies) and the private sector, including farmers.</p> <p>The MIS seek to help farmers to target markets and sales times most beneficial to them, increase their ability to compete, reduce marketing margins and improve farmer and consumer welfare. They also aim making information broadly available to a large number of traders (including smaller-scale traders), thereby enhancing market competition overall and thus the prices offered to farmers.</p> <p>Few studies, however, have rigorously evaluated how successful these MIS were in meeting small farmers' and traders' information needs under different food staple market organization and trade opportunities. Moreover, there are no existing studies that evaluate the impact of MIS on smallholders' income from agricultural marketing in sub-Saharan Africa.</p> <p>Mozambique and Mali have very different forms of food staple market organization, which will allow a comparative institutional analysis of MIS performance with respect to these issues. In Mali (as in much of West Africa), there is a regular pattern of weekly rural markets, whereas in Mozambique farmers are generally dependent on seasonal roadside traders and central markets in key towns and cities. Mali is embedded in a region where food staple trade has historically been much more open than the region to which Mozambique belongs.</p>

	<p>This study will use market and farm-level survey data to identify the gap between small farmers' and traders' information needs and what the MIS currently supply. In addition an attempt will be made to conceptually and empirically trace the impact of MIS on staples food prices, marketing margins, and smallholders' incomes in different market organization contexts.</p> <p>New communication technologies, particularly cell phones, may improve access to information for a range of market participants, and the current potential to reach smallholders can be assessed in Mozambique based on patterns of cell phone ownership and access. Given that market information is by its nature highly complementary with other investments and institutions (e.g., roads, farmer association membership, and access to extension services), the interaction between these various factors in determining the payoff to investment in MIS will also be investigated.</p>
Hypotheses	<ol style="list-style-type: none"> 1. Other factors held equal, access to market information increases smallholder farmer participation in markets and their agricultural incomes. 2. Market information needs vary by farmers' and traders' scale of operation, gender, policy/market environment, and commodity mix. 3. A number of factors affect the ability of farmers to benefit from market information. Alternative income sources, access to transport services, and gender influence benefits based on the different types of information needed and the diffusion methods and timing of the information. 4. Women use market information more if they are involved in retailing or processing than if they are involved in farm-level production of coarse grains. 5. Demand for different types of market information evolves with the evolution of the market structure; thus, MIS are more effective if they co-evolve with the market structure 6. Mix of actors providing market information provision shifts as a function of the evolution of information and communication technology. <p>Hypotheses 5 and 6 have strong implications for the payoffs over time to investments in providing market information as well as the roles that different actors (public sector, private sector, and civil society) can play in information provision.</p>
Methods/analytical tools	<p>The study will develop both a conceptual framework and empirical analysis of the factors affecting the impacts of investments in MIS, including how different MIS designs and different market settings, individually and interactively, affect these impacts.</p>

The research will thus include the following elements:

- i. **Development of a concept paper** with conceptual framework that will describe pathways through which improved market information affects smallholders' and other value-chain participants' welfare. The paper will address: (a) the factors affecting the impacts of improved market information on farmer and trader welfare, (b) empirical techniques for measuring these impacts, (c) the evolution of market information needs as a function of market structure and (d) implications of these factors, in combination with the evolution of information communication technology for MIS design. This conceptual paper will use information on MIS design in Mali and Mozambique to illustrate key points, but will also draw from the broader literature on information economics and MIS experience elsewhere.
- ii. **Empirical analysis of the impact of access to market information** on smallholder participation in staple-crop markets and on income levels will take advantage of the different market and institutional settings in Mozambique and Mali (in essence, a natural experiment) to evaluate how access to market information systems (a) affects farmers' participation and agricultural incomes (in Mozambique) and what factors affect the usefulness and use of market information by smallholders and other value chain actors (such as women traders) when they have access to such information. In Mozambique, econometric analysis will be conducted on household panel data from TIA (the national agricultural survey) on factors affecting household participation in staple-food markets and their agricultural incomes, incorporating spatial considerations and access to market information. Panel data will be used with fixed effects modeling and propensity weighting methods where appropriate. Since the MIS information is not broadcast nationally, and the local funding for broadcasts has changed in time, this variability will be used to identify the impacts on access to price information. In Mali, analysis of historical data will demonstrate on the contemporaneous fall in retail marketing margins that accompanied the introduction of MIS broadcasts in the late 1980s.
- iii. **Measuring the usefulness and use** of market information to different classes of market participants will involve descriptive statistics, analysis of co-variance, and econometric analysis of data from the following sources:

	<ul style="list-style-type: none"> a. In Mozambique, a rapid appraisal of market traders' information needs and uses will be conducted in association with the annual Windshield Survey of SIMA/Mozambique. Using purposive sampling, the descriptive results will be indicative for a broad group of Mozambican informal and formal traders, as well as smallholder farmers currently involved in marketing crops. b. in Mali, analysis will be based upon supplemental questions added to farm-level surveys in the cotton zone under the Mali coarse-grain/cotton studies component of this broader study and through focus-group discussions (disaggregated by gender) with farmers in the Office du Niger rice growing areas. Research with the Hewlett Foundation detailed below will complement this effort.
Gender dimensions	<ul style="list-style-type: none"> • In Mali, women's involvement varies significantly by function within the staple-food chains, with women being more active in farm-level production, retailing, and small-scale processing; as well as being more active in certain commodities (e.g., peanuts) than others. The new Malian household surveys (for the cotton/coarse-grain value chain work, which will also include supplemental questions on access to and use of market information) will be gender disaggregated to help document and analyze these issues. Specifically, this disaggregation will allow analysis of: <ul style="list-style-type: none"> 1. The different information needs of men and women at different levels of the value chains 2. Whether the desired information diffusion methods and timing differ significantly between women and men (e.g. radio broadcasts in the morning vs. at noon; radio vs. printed media); and 3. Whether the ability to act on market information to act on market information differs significantly by gender and if so, why. • In Mozambique, existing panel data surveys will be used, differentiating results for male- and female-headed households. New trader surveys in Mozambique will gather data on gender-differentiated market-information needs and uses, since the participation of men and women in crop marketing varies by region and commodity. Much of the inter-regional trade within the country is conducted by women in the informal sector, who travel from the South to the Central production areas to buy produce directly from

	<p>smallholders. Understanding the information needs of different traders by gender of the trader will assist in identifying opportunities to enhance the trading options for women in these markets.</p>
Countries/crops	<p>Mozambique: maize AND Mali: maize, millet, sorghum, rice, peanuts</p>
Outputs/milestones	<p>December 2009 Conceptual paper on how market information affects incomes and market participation, including review of empirical ways of measuring MIS impact</p> <p>August 2010</p> <ul style="list-style-type: none"> • Two country reports. <p>Note that reports will be prepared in both in English and French (Mali) or Portuguese (Mozambique)</p> <p>December 2010</p> <ul style="list-style-type: none"> • Two Policy briefs (English and French/Portuguese) <p>December 2010 – April 2011</p> <ul style="list-style-type: none"> • Outreach (national and regional forums)
Related activities	<p>In Mozambique, MSU is providing technical assistance to the market information system on systems design through Rockefeller Foundation and USAID funding. Ongoing reports from that activity will provide background, and a means of carrying out field surveys and outreach.</p> <p>In Mali, the Hewlett Foundation is supporting work by MSU on traders' information needs, which will be drawn upon here, as well as work on how information system design needs evolve as markets evolve. The concept paper will be jointly developed with the Hewlett-Foundation project, and the graduate research assistant will be jointly funded by the two projects.</p> <p>We also anticipate joint outreach from the two projects on some of the MIS issues in the two countries.</p>
MSU coordinator	Cynthia Donovan
Collaborators	Dembélé, Staatz