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The Determinants of Food Insecurity in Rural Malawi: Implications for Agricultural Policy

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Achieving food security is high on the agenda of the Malawi government. Notably, Malawi's Growth and Development Strategy (MGDS) recognizes that food security is a prerequisite for sustained economic growth and poverty reduction. However, a good understanding of the determinants of food insecurity is required to inform and guide the design and execution of effective and well-targeted policy interventions. A recent study by Lewin and Fisher (2010) addressed this issue by examining how socio-economic characteristics of households, local conditions, and current agricultural policies influence the likelihood that a farm household in rural Malawi is food insecure. This policy brief highlights key findings of the study.

Food Insecurity in Malawi

Malawi's food security is generally defined in terms of adequate production of and access to maize, the country's staple crop. Maize is grown by over 90 percent of farm households and accounts for 60 percent of calorie consumption. Yet, due to dependence on erratic rainfall, small farm size, limited use of modern inputs, and poor access to markets, many farmers cannot meet their subsistence requirements. In fact, 80 percent of smallholder farmers are net buyers of maize. Their purchase of maize is hindered by high import prices, largely a reflection of Malawi's landlocked geography and poor road network. One in three households fails to meet its daily per capita caloric requirement. Even despite recent bumper crops of maize, acute and chronic food insecurity are major challenges faced by the people and government of Malawi.

To estimate the determinants of food insecurity, Lewin and Fisher (2010) developed a regression model that specified the relationship between a dependent variable – in this case, food insecurity – and one or more independent variables, which were hypothesized to influence the probability of food insecurity. The independent variables included social and economic characteristics of farm households, agronomic factors, and government policies. The model was estimated with data for 8,350 rural farm households from the second Integrated Household Survey (2004/05), a nationally representative survey. Using the model, the authors ran simulations to examine how selected variables affect the probability of household food insecurity.

Factors that Would Reduce Household Food Insecurity

Increased Agricultural Land Productivity

Agricultural land is scarce in Malawi. There are 2.3 rural people per hectare (ha) of agricultural land, compared to 0.4 people per ha for all of Sub-Saharan Africa. Lewin and Fisher's model simulations predicted that an increase of 0.25 ha per capita of cultivated land would decrease the likelihood of food insecurity by 22, 24, and 27 percent in the north, central, and south regions of Malawi, respectively (Figure 1). Due to land scarcity, however, expansion is unlikely, particularly in the central and south regions. Therefore, government policies should focus on increasing productivity per unit land area through expanded use of modern farm inputs as well as improving market infrastructure.

Investments in Market Infrastructure

Farmers need reliable access to markets for selling and purchasing products. Lewin and Fisher's study concluded that food insecurity increases with increasing distance from a weekly market among households in northern Malawi, and with increasing distance from an Agricultural Development Marketing Corporation (ADMAC) depot in the central region. On the other hand, model results indicated that asphalting the main community road surfaces would reduce food insecurity

by 18 percent in the central region and 19 percent in the south region. Road density per capita in Malawi currently ranks lowest in southern Africa and poor transport infrastructure accounts for up to 55 percent of marketing cost. Investment in transport infrastructure, particularly roads linking farmers to markets, would reduce costs of crop production and transport, boost profits, and increase farmers' ability to buy inputs and sell outputs.

Irrigation Infrastructure

Most of Malawi's maize production is dependent on rainfall. Drought in 2001 and 2002 contributed to a severe food crisis, which left 30 percent of the population in need of emergency food assistance. Although adequate rain in recent years resulted in surplus maize, investment in irrigation infrastructure can reduce impacts of adverse weather. Lewin and Fisher's study found that availability of irrigation would reduce the probability of household food insecurity in south Malawi, where the Shire River could support intensive farming. Malawi has an irrigation potential of at least 162,000 ha, and yet only a small fraction of this area is currently under irrigation. The government recently initiated the Greenbelt Initiative as part of its Agriculture Sector Wide Approach (ASWAp), to establish irrigation schemes for more than 300,000 ha of land that are 10 to 20 kilometers or more from Malawi's major lakes and perennial rivers.

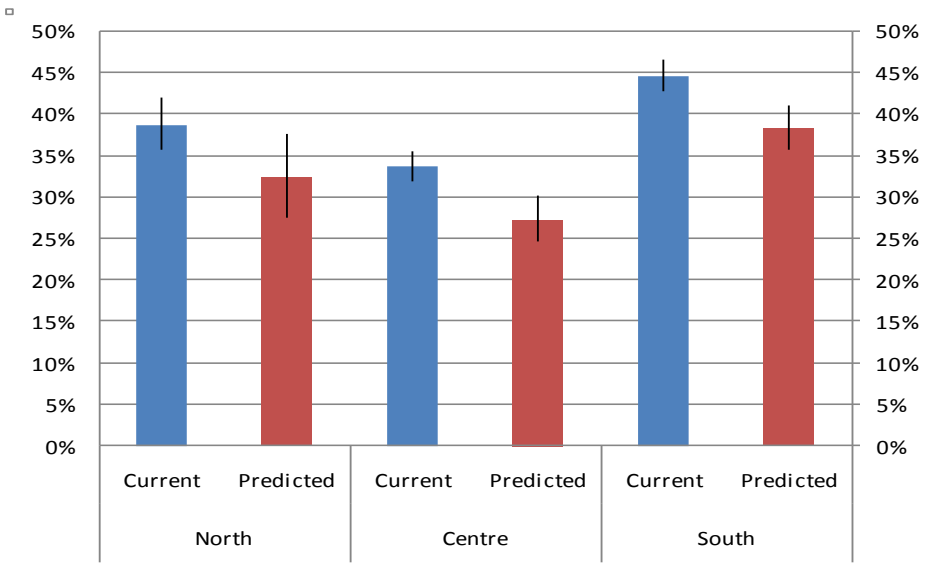
Extension Services

In addition to transport and irrigation infrastructure, government investment in agricultural extension activities has a significant impact on food security. Lewin and Fisher's study concluded that at least one visit to each household from an agricultural extension agent during each cropping season would reduce food insecurity by 7.3 percent in central Malawi and 5.2 percent in south Malawi. In its agricultural strategy, ASWAp, the Malawi government recognizes as an investment priority the development and dissemination of technology, partly through agricultural extension services.

Social Safety Net Programs

In 2009, Malawi produced 3.5 million tons of maize, 1.1 million more than the country's total annual consumption. This bumper crop has been attributed to favorable weather conditions and to the Agricultural Input Subsidy Program (AISP). However, Lewin and Fisher's study found no clear evidence that agricultural input subsidies, influenced food insecurity. For future agricultural input subsidies key objectives should be to limit expenditures to remain fiscally sustainable and target only the poorest farmers. Where land and/or labor are the main constraints, smallholder farmers should receive other forms of assistance, such as cash transfer programs. Lewin and Fisher's study did find that households in south Malawi had lower probability of food insecurity if they had access to the Malawi Social Action Fund, a social program which finances self-help community projects and transfers cash through safety-net activities.

Figure 1. Predicted effects of a 0.25 ha increase in cultivated land per capita on the probability of food insecurity

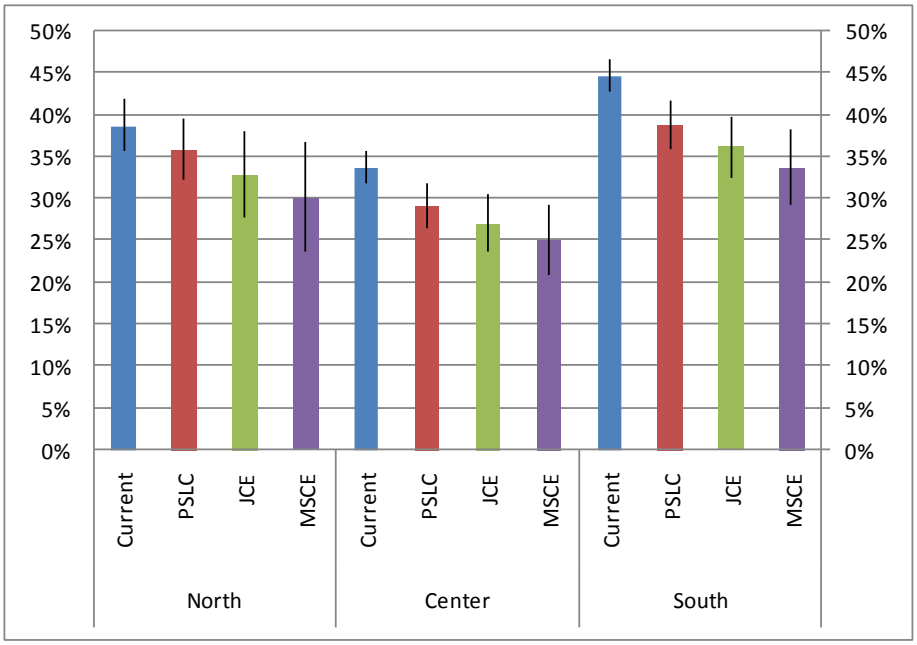


Source: Lewin and Fisher (2010)

Education of Smallholder Farmers

Lewin and Fisher's study predicted that extending the education of household heads would reduce food insecurity in all three regions of Malawi (Figure 2). Farmers currently average only 4 to 6 years of education; extending that to 12 years to include secondary education would be particularly effective. Extending education in farm communities should incorporate skill or vocational training as part of primary and secondary education.

Figure 2. Predicted effects of extended education on the probability of food insecurity

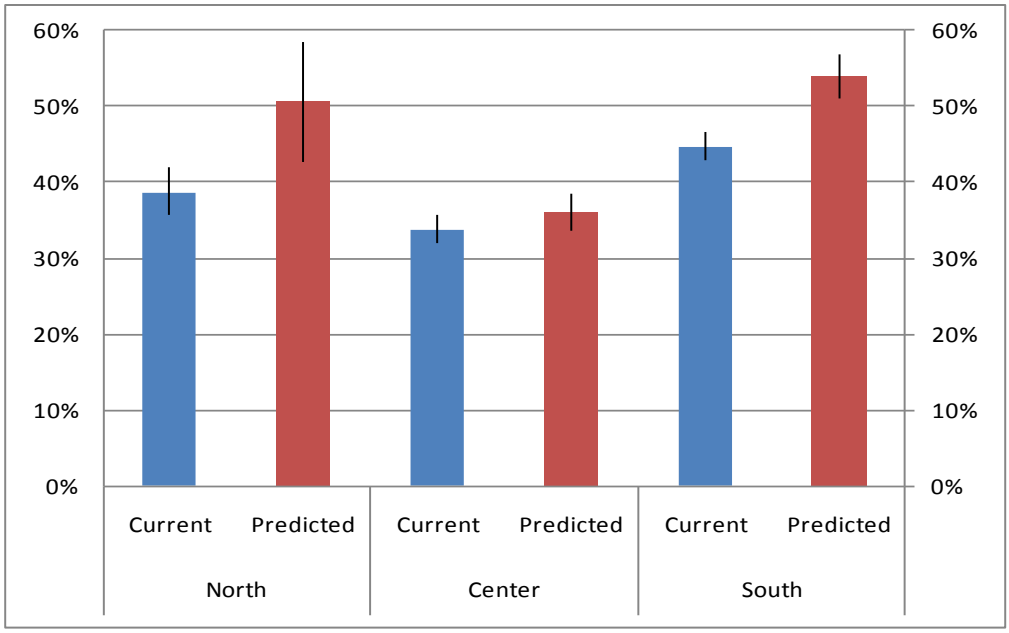


Source: Lewin and Fisher (2010)

High Food and Input Prices Exacerbate Food Insecurity

High prices of maize in 2002, 2006, and 2008 threatened to undermine Malawi's objective of achieving food security. Lewin and Fisher's study concluded that a 25 percent increase in the price of maize flour would increase the probability of food insecurity by 12, 2.3, and 9.6 percent in the north, central, and south regions, respectively (Figure 3). A 25 percent increase in the price of urea, a common fertilizer, would also increase the probability of food insecurity, by 30 and 18 percent in the central and south regions, respectively. (High intensity agriculture is less important in the north, where land is relatively abundant, which accounts for the lesser effect of urea prices in that region.) To reduce food insecurity, Malawi government interventions to reduce food and farm input costs, such as AISP and food price controls, must be cost effective and fiscally sustainable, and should not hurt private commerce.

Figure 3. Predicted effects of a 25 percent increase in the price of maize flour on the probability of food insecurity



Source: Lewin and Fisher (2010)

Conclusion

Policy interventions to tackle food insecurity should be informed by sound research. Lewin and Fisher's (2010) study used a regression model and nationally representative data to predict the impact of government policies on food insecurity among rural farm households in Malawi. The study identified key policies that can reduce food insecurity: expanding the use of modern inputs to increase agricultural land productivity; increasing investment in road infrastructure to improve market access; expanding irrigation, agricultural extension activities, and social safety net programs; and investing in skills training and education for farmers. Policies aimed at reducing costs of food and farm inputs were also shown to reduce the probability of food insecurity. It is important to ensure that these policies target the poorest farmers, are cost effective and fiscally sustainable, and avoid negative impacts on private sector participation.

This Policy Note has been prepared by Tsitsi Makombe, Paul Lewin, and Monica Fisher as an output for the Malawi Strategy Support Program. The brief draws on Lewin, P. and Fisher, M. 2010. Household, Community, and Policy Determinants of Food Insecurity in Rural Malawi (Mimeo). The note is intended to promote discussion and has not been peer reviewed. Any opinions stated herein are those of the author(s) and do not necessarily reflect the policies or opinions of IFPRI.

The Malawi Strategy Support Program of the International Food Policy Research Institute (IFPRI) works closely with the government of Malawi and other development partners to provide information relevant for the design and implementation of Malawi's agricultural and rural development strategies.

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