

Impact of farm-gate price on food security in Ludewa district of Iringa region, Tanzania

Mbise, M.¹, Ngongola, D.H.¹, Mloza, B.¹, TChale, H.¹, Maonga, B.¹ & Kilima, F.T.M.²

¹University of Malawi, Bunda College of Agriculture, P. O. Box 219, Lilongwe, Malawi

²Sokoine University of Agriculture, P. O. Box 3007, Morogoro, Tanzania

Corresponding author: mbise2002@yahoo.com

Abstract

Tanzania is not drought prone, but food insecurity in the country is both transitory and chronic in nature. Agriculture which is the backbone of the country's economy is the main sector that can solve the problem of food insecurity especially through the production of maize (*Zea mays*). In Tanzania, maize is a staple food crop, its shortage is equated to food shortage. Ludewa district which is the study area is part of the Southern Highlands of Tanzania which is a famous zone for maize production. Enhancing maize production in this zone has great potential to minimise the problem of food insecurity in Ludewa district and other areas with food deficit like coastal and Dar es Salaam regions. Apart from technical issues, this requires well functioning markets which lower transaction costs hence relatively high producer price that stimulates maize production and low consumer price that will facilitate the accessibility of food by consumers. Many studies have been undertaken to analyse the factors for food insecurity but with limited attention to producer's price (farm-gate price) as one of the factors. In this study, the logistic regression model was estimated to quantify the influence of farm-gate price on farm households' food security. The result indicated that the lower the producer price the higher the likelihood of food insecurity. Other factors that exhibited significant influence on farm households' food security are; size of family, land planted with crops and quantity of maize produced.

Key words: Maize, markets, producer price, staple food

Résumé

La Tanzanie n'est pas sujette à la sécheresse mais l'insécurité alimentaire dans le pays est à la fois transitoire et chronique en nature. L'agriculture, qui est l'épine dorsale de l'économie du pays est le principal secteur qui peut résoudre le problème de l'insécurité alimentaire, en particulier par la production du maïs (*Zea mays*). En Tanzanie, le maïs est une culture alimentaire de base, sa pénurie est assimilée à la pénurie alimentaire. Le district de Ludewa qui est la zone d'étude, fait partie de régions

montagneuses du Sud de la Tanzanie qui est une zone favorable pour la production de maïs. L'amélioration de la production du maïs dans cette zone a un grand potentiel pour réduire le problème de l'insécurité alimentaire dans le district de Ludewa et d'autres régions de déficit alimentaire, comme les régions côtières et Dar-es-Salaam. Outre les problèmes techniques, ceci nécessite le bon fonctionnement des marchés qui abaissent les coûts de transaction, par conséquent le prix des producteurs relativement élevé qui stimule la production du maïs et le bas prix à la consommation qui à son tour facilitera l'accessibilité de la nourriture par les consommateurs. De nombreuses études ont été menées pour analyser les facteurs de l'insécurité alimentaire, mais avec peu d'attention au prix du producteur (prix à la sortie de l'exploitation) comme l'un des facteurs. Dans cette étude, le modèle de régression logistique a été estimé pour quantifier l'influence du prix à la sortie de l'exploitation sur la sécurité alimentaire des ménages d'agriculteurs. Les résultats ont montré que la baisse du prix du producteur entraîne la hausse de la probabilité de l'insécurité alimentaire. Parmi les autres facteurs qui ont montré une influence significative sur la sécurité alimentaire des ménages d'agriculteurs figurent: la taille de la famille, les terres consacrées à des cultures et la quantité de maïs produite.

Mots clés: Maïs, marchés, prix du producteur

Background

The first Millennium Development Goal (MDGs) target is to eradicate extreme poverty and hunger. This is to be achieved by halving between 1990 and 2015, the proportion of people who suffer from extreme hunger and people whose income is less than one US Dollar a day (FAO, 2005 in Babatunde *et al.*, 2007). There is a direct and cyclical relationship between poverty and food insecurity. Poverty contributes to food insecurity, which contributes to poor nutrition, health, and cognitive development, which in turn contribute to poverty (Shapiro *et al.*, 2010). In Tanzania, the food insecurity is both transitory and chronic in nature and the problem of food insecurity has been more of a problem of poor rural households (URT, 2006). Tanzania through two policies 'Kilimo Kwanza –Agriculture First Strategy (2009)' and Agricultural Sector Development Strategy (ASDS) is fighting food insecurity by putting in place measures like improving extension services to ensure increase in agricultural production especially maize production.

Literature Summary

In Tanzania maize is a key crop in ensuring availability of food and promoting food security of the consumers (FAO, 2008 in Mboya *et al.*, 2011). According to Mwakalinga and Massawe (2007) maize provides 60% of dietary calories and more than 50% of utilisable protein to more than 37 million Tanzanians. Despite this, little has been done to evaluate the contribution of the market aspect in farm production. The quantification of the effect of producer price (farm-gate price) on food security has received limited attention in many studies. Therefore, this study was designed to address the gap by quantifying the effect of farm gate price on maize production. Farm gate price was used as proxy to output transaction costs as farm gate price is influenced by transaction costs.

Meaning of food security. In 2006, the World Food Summit defined food security as: “All people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. Broadly, the concept of food security is built on three pillars: i) Food availability: sufficient quantities of food are available to people on a consistent basis; ii) Food access: people have sufficient resources to obtain appropriate foods for a nutritious diet; iii) Food utilization: people have sufficient knowledge of nutrition and care practices and access to adequate water and sanitation to derive sustenance food. The current study focuses mainly on the last element of food security that is, food availability especially from household production. It tries to examine how food production is affected by the low farm gate price which is a result of high transaction costs.

Transaction costs, crop production and market participation. High production costs, high transaction costs, and high risks of output and input prices often make subsistence farming – food production for home consumption – the optimal choice. Widespread subsistence farming leads to low productivity and low growth in agriculture. (Zant, undated). In addition, and potentially more important in the longer run, the increased prices (which is a result of low transaction costs) may trigger the farmer to review his product portfolio. As such, indirectly, the reductions of inefficiencies along the marketing chain may lead to everlasting productivity gains through a reshuffle of the product portfolio of smallholder farmers that better exploits their comparative advantage (Rapsomanikis and Karfakis, 2007). Given these facts the current study will focus on analysing the impact of aspects of transaction costs on food

security with a view to generate policy recommendation for food security.

Food insecurity in Tanzania. Food insecurity in Tanzania is both transitory and chronic in nature (URT, 2006). In the country, the problem of food insecurity has been more of a problem of poor rural households (Amani, 2004). The overall strategy to reduce food insecurity must be to increase the opportunities available to low income rural households. Progress in reducing food insecurity and malnutrition in Tanzania therefore depends greatly on the performance of the agricultural sector (Amani, 2004). The most rapid increase in chronic hunger experienced in recent years occurred between 2003–05 and 2007. According to FAO's provisional estimates in 2007, 75 million more people were added to the total number of undernourished relative to 2003–05. While several factors are responsible, high food prices are driving millions of people into food insecurity, worsening conditions for many who were already food-insecure, and threatening long-term global food security.

Maize and food security. Maize is an important food crop not only because it is consumed worldwide, but also due to its nutritive value. Maize provides more carbohydrates than wheat and sorghum do, and it is a good source of phosphorus (Adeyemo, 1984; Brandes, 1992 in Mboya *et al.*, 2011) and it also contains small amounts of calcium, iron, thiamine, niacin and fat (Adeyemo, 1984 in Mboya *et al.*, 2011). Furthermore, maize tends to provide high yield per unit of land (Brandes, 1992 Mboya *et al.*, 2011), which makes maize a key crop in ensuring availability of food and promoting food security of the consumers (FAO, 2008 in Mboya *et al.*, 2011). According to Mwakalinga and Massawe (2007) maize provides 60% of dietary calories and more than 50% of utilizable protein to more than 37 million Tanzanians.

Tanzania Food Security strategies and Policy. According to (TNBC 2009: 10 in Bese *et al.*, 2009), at present, Tanzania has no cross-sector food security policy; the food security strategy is in the process of finalisation and the Food Security Act (1991) is under revision. Food security is enshrined in the recently published Kilimo Kwanza - Agriculture First Strategy (2009) and the Agricultural Sector Development Strategy (ASDS) (2001). Both strategies stress the need to ensure food security at the national and household levels. To achieve adequate food security, the country seeks to meet at least 125% of its

required food production to stock food. Kilimo Kwanza calls for the private sector to mobilise new investment to promote a modern and profitable agriculture sector in Tanzania. It also calls for a transformation of smallholder farmers into commercial farmers (SAGCOT, undated). Because agriculture is regarded as the backbone for Tanzania's economic growth, the Government's objectives are to strengthen agricultural growth, improve farm incomes, and reduce rural poverty by the year 2025 and utilizes natural resources in an overall sustainable manner and acts as an effective basis for inter-sectoral linkages". To secure and to increase production, the Government supports agricultural extension services throughout the country. The Government funds local authorities who employ the officers to carry out extension services.

Farm gate price and food security in Tanzania. In the long run, high food prices represent an opportunity for agriculture (including smallholder farmers) throughout the developing world, but they will have to be accompanied by the provision of essential public goods. Smallholder gains could fuel broader economic and rural development. Farming households can see immediate gains; other rural households may benefit in the longer run if higher prices turn into opportunities for increasing output and creating employment (Ghanem, 2008). Furthermore, high food prices not only increase the income for producers, but also increase the cost of purchasing food for consumers. At present, the influence of high global food prices and estimated low food production in Tanzania is likely to put an upward pressure on food prices in the country (Nazir, 2010). Regional variations in price behaviour exist and prices tend to be lower in surplus regions and in the less developed (in terms of infrastructure) regions. Deficit regions, regions that are more developed, and those that border a neighbouring country show higher prices and lower volatility (Kilima *et al.*, 2008 in Zorya and Mahdi, 2009). Maize prices tend to be at their lowest during these periods (Zorya and Mahdi, 2009).

Study Description

The study area is Ludewa district of Iringa region, southern highlands of Tanzania. The southern highlands of Tanzania are the famous areas in maize production in Tanzania. Cross sectional data was collected from households and key informants in Ludewa district of Iringa region.

Before estimating the logit model to quantify the effect of various factors on food security status, food security index was

constructed and used to determine the food security status of each household based on the food security line using the recommended daily calorie required approach guided by FAO (1997). Among other factors, the influence of farm-gate price on farm households' food security was analysed.

Research Application

The result indicated that the lower the producer price the higher the likelihood of food insecurity. Other factors that showed the significant influence on farm households' food security are; size of family, land planted with crops and quantity of maize produced.

The findings from this study will be presented in different workshops and conferences and also it will be published and made available in different libraries and websites for policy makers and other users to access.

Acknowledgement

I greatly acknowledge the financial assistance from Regional Universities Forum for Capacity Building in Agriculture (RUFORUM).

References

- Amani, H.K.R. 2004. Agricultural development and food security in sub-Saharan Africa. Tanzania Country Report. Economic and Social Research Foundation (ESRF) Dar es Salaam, Tanzania. Available from: <http://www.fao.org/tc/tca/work05/Tanzania.pdf> [Date accessed: 09.02.2012]
- Babatunde, R.O., Omotesho, O.A. and Sholotan, O.S. 2007. Factors influencing food security status of rural farming households in north central Nigeria. *Agricultural Journal* 2(3):351-357. Medwell Journal, 2007. <http://www.unilorin.edu.ng/publications/Babatunde/No%203%20factor%20influencing%20food%20security.pdf>. [Date accessed: 17.03.2012]
- Bese, D., Düchting, A., Gebauer, H., Gerken, A., Maeda, C., Manyong, V.M., Rupschus, C. and Starosta, S. 2009. Promoting regional trade to enhance food security: A case study on the border region of Tanzania and Zambia. SLE Publication Series – S 239. <http://edoc.hu-berlin.de/series/sle/239/PDF/239.pdf> [Date accessed: 10.05.2012]
- FAO.1997. Agriculture Food and Nutrition for Africa – A Resource book for Teachers of Agriculture. <http://www.fao.org/docrep/w0078e/w0078e00.htm> [Date accessed: 27/03/2012]
- Ghanem, H. 2008. The state of food security in the world 2008: High food prices and food security - threats and

- opportunities. Food and Agriculture Organization of the United Nations. Viale delle Terme di Caracalla, 00153 Rome, Italy. <ftp://ftp.fao.org/docrep/fao/011/i0291e/i0291e00.pdf>. [Date accessed: 17.03.2012]
- Mboya, R., Tongoona, P., Derera, J., Mudhara, M. and Langyintuo, A. 2011. The dietary importance of maize in Katumba ward, Rungwe district, Tanzania, and its contribution to household food security. *African Journal of Agricultural Research* 6(11):2617-2626.
- Mwakalinga, H.A. and Massawe, W. 2007. Output market support. Agricultural Council of Tanzania. http://www.tap.or.tz/documents/200704_OUTPUT_MARKETING_SUPPORT.pdf. [Date accessed: 16.02.2012]
- Rapsomanikis, G. and Karfakis, P. 2007. Margins across time and space: Threshold cointegration and spatial pricing applications to commodity markets in Tanzania. Paper presented in the Workshop on Staple Food Trade and Market Policy Options for Promoting Development in Eastern and Southern Africa Rome 1-2 March 2007. http://www.fao.org/es/esc/common/ecg/17/en/GEORGE_Margins_Time_Space.pdf [Date accessed: 07.12.2011]
- Shapiro, A.F., Ingram, M. and Rinehart, B. 2010. Food security in Tanzania: Seven original concept papers. http://sipa.columbia.edu/academics/workshops/documents/Food_SecurityTanzaniaAllFINALCLEAREDwithNames_optimized.pdf [Date accessed: 17.03.2012]
- United Republic of Tanzania (URT), 2006. National sample census of agriculture. Volume V_k: Regional Report: Iringa Region.
- Zant, W. (undated) What makes smallholders move out of Subsistence Farming: Is Access to Cash Crop Markets going to do the Trick? http://www.economics.handels.gu.se/digitalAssets/1373/1373642_zant.pdf [Date accessed: 03.07.2012]
- Zorya, S. and Mahdi, S. 2009. High marketing costs and inefficient policies in Tanzania's maize market: A poverty perspective: Poverty reduction and economic management, Africa Region, The World Bank.