The Effects of Market Accessibility on Household Food Security: Evidence from Malawi

Dorothy Tembo\textsuperscript{1} and Franklin Simtowe\textsuperscript{2}

Abstract

A reduction in transaction costs through infrastructural investments is crucial in improving access to input and output markets for farmers and hence improving access to food. While the link between market access and agricultural development appears to be common knowledge, empirical studies examining the impact of differential access to markets on household food security in the developing world are uncommon. Using data from Malawi, collected through the national Integrated Household Survey (IHS2) in 2004, we investigate the effect of market accessibility proxy indicators on household food security (daily percapita calorie consumption). Using the recommended percapita calories of 2200kcal, 80\% of the sampled households were food secure and 78\% of the urban sampled residents were food secure compared to 63\% of the rural households. A significant difference existed between households with and without access to the market in terms of percapita calorie consumption. Households without market access and rural households consumed more calories from own production and gifts as compared to purchases. Rural households are significantly affected by the market distance at 1\%, hence the need for market accessibility policies to reduce the burden of rural households.

Key words: accessibility, Market and Household Food Security

Background

There is a general consensus that the scourge of global-food insecurity is morally unacceptable and that it has to be defeated due to its negative consequences. The Food and Agriculture Organization (FAO) of the United Nations reports that for the past 5 years (2002-2007) about 850 million people around the globe have been going hungry each year. FAO further reports that South Asia and Sub-Saharan Africa have a higher share of the world's hungry, with about a third of the population in the two continents going hungry each year. Emphasizing the urgency to tackle hunger, the Millennium declaration of general assembly of the United Nations identified the eradication of extreme poverty and hunger by the year 2015 as goal number one among the eight millennium development goals. The Food and Agriculture Organization (FAO) defines food security as "a condition in which all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".

\textsuperscript{1} Dorothy Tembo is - WFP-Malawi (Pending MSc-Makerere University)
\textsuperscript{2} Franklin Simtowe (PhD)-ICRISAT-Kenya
There are two major ways through which a household may gain access to food. First the household may produce and consume food from own production. Second the household may consume food purchased from the market. The World Bank (2008) further reports that in the sub-Saharan Africa, for example, market failures for seed and fertilizer continue to be pervasive, because of high transaction costs, risks and economies of scale.

Road and Market Accessibility

Malawi has 7,717 km of roads, a third of which are paved. While 94% of paved roads are in good condition, only half of those that are unpaved are deemed to be in good condition. The poor road conditions in Malawi mean that domestic transport costs are much higher than in neighboring countries. In Malawi, they are equivalent to about $0.065-0.075 per tone/km while in South Africa and Zimbabwe they are much lower at about $0.02/km on trunk roads and $0.035/km on rural roads. This high transportation cost make inputs and food expensive making others unable to purchase the basic needs prolonging food insecurity (African Development Bank/ Organization for Economic of Co-operation and Development [AfDB/OECD], 2006).

In simple accessibility refers to “ease of use” or “openness to” to a certain facility. The presence of infrastructure often determines if a village receives higher/lower prices as transport costs are different due to distance and quality of infrastructure to the nearest market or other facilities (Minten, 1999). Baltenweck and Staal, (2007), clarified that market access has many proxy definitions one of which is travel time, distance and cost.

Problem Statement and Objectives

There are many causes or determinants of food security but a number of reports have researched on known determinants like demographic and socio-economic factors as such operational agencies lack a method for differentiating households at varying degrees of food insecurity in order to target and evaluate their interventions (Webb et al., 2006). Simmonds (2006) illustrated that one of the major causes of food insecurity in Malawi could be location isolation which relates to poor roads quality and long distance, poor and non functional markets, long distances to markets, hospital, education facilities and other basic social facilities. This study therefore quantified the effect of market accessibility on household food security in both rural and urban areas using the 2004 National Integrated Household survey (11280 households and 654 communities).

The paper used the Economic theory of consumption based on consumer problem which indicate that a standard household utility model is used to examine/assess the determinants of food security by specifying a demand function for calories.

Results and discussion

Using the recommended calorie intake (2200kcal) cutoff point, results showed that 80% of the Malawian population was food secure compared to 20% food insecure households. And comparing the rural and urban households 63% of the rural were food secure as compared to 78% of the urban households.
**Market access**

The majority of the rural household (47%) had their nearest road as Dirt road but maintained (non-tarred, small dust/hilly/stony paths roads) and majority of urban households had their nearest common road as Tar/Asphalt road this is one of the factors that contributes to poor accessibility to different welfare facilities by rural households because of their location. The illustrations clearly showed that 75% of the rural households have no access to market as compared to urban households represented by 37%. These are the rural households that are faced with 10km distance on average to reach the nearest the market hence without market access.

### 3.2 Food consumption/Food security status and market accessibility

**Table 3.1: Food security status among rural households by market access**

<table>
<thead>
<tr>
<th>Market access</th>
<th>Food security status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food insecurity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food secure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n=3,632)</td>
<td></td>
</tr>
<tr>
<td>(n=9,840)</td>
<td>2,762</td>
<td>4,602</td>
</tr>
<tr>
<td>Without market access</td>
<td>870</td>
<td>1,606</td>
</tr>
<tr>
<td>With Market access</td>
<td>870</td>
<td>1,606</td>
</tr>
</tbody>
</table>

Source: Own calculations from Integrated Household Survey data (2004)

Note- Figures in parentheses are number of households

Table above shows that most of the rural households that were food secure had no market access. Therefore we reject the null hypothesis at alpha = 0.05 level that the proportion of household in the without market access have equal food security status (Z > 2.22). Results also show that Urban households consumed statistically different mean calories as compared to rural households shown by t statistic therefore we reject the null hypothesis.

**Food sources**

Figure 3.1 showed that 49% of the total food consumption was sourced through own production in rural areas, this is on the higher side as compared to purchased food (41%) and gifts (10%), this is in line with (IFPRI, 1998) which found that about 60% of the rural food is from own production in rural areas. For urban households, a graphical representation showed that 86% of the food consumed was sourced through purchases as compared to own production (11%) and gifts (4%) this result could be contributed to economic status of households.

**Determinants of Household Food Security in Malawi**

Sex, grade, age of the household head and income had significant effect on daily per capita calorie intake for rural households. Total land under cultivation returned insignificant effect household food security for both rural and urban households. Extension services access for rural

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3 The household characteristics have been removed from the multiple regression results
households has a negative and significant effect on household food security and for credit; rural households have a positive and significant (1%) effect on household food security.

Dependent variable: Log of Daily Per capita Calories (lcal_pc)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Urban Coefficient</th>
<th>t</th>
<th>Rural Coefficient</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension access</td>
<td>-0.026</td>
<td>-2.55**</td>
<td>-0.026</td>
<td>-2.55**</td>
</tr>
<tr>
<td>Credit access</td>
<td>0.047</td>
<td>4.59***</td>
<td>0.047</td>
<td>4.59***</td>
</tr>
<tr>
<td>Distance to nearest tarred Road</td>
<td>-0.000</td>
<td>-0.48</td>
<td>-0.000</td>
<td>-0.48</td>
</tr>
<tr>
<td>Distance to nearest market</td>
<td>0.001</td>
<td>0.73</td>
<td>-0.004</td>
<td>-7.57***</td>
</tr>
<tr>
<td>Distance to nearest ADMARC deport</td>
<td>0.000</td>
<td>0.66</td>
<td>0.000</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Source: Own calculations from Integrated Household Survey data (2004)

Market accessibility is explained by distance to the nearest tarred/tar marc road, distance to the nearest market and distance to the nearest ADMARC deport. Results show that distance to the market has a positive and insignificant effect on daily per capita calories consumed for urban households and for rural households, distance to the nearest tarred road and nearest market insignificantly household food security. Bhatta (2004) in his findings suggested that households that are near to tarred roads have higher chances of obtaining positive household food security. Market liberalization in Malawi has resulted in many challenges faced by rural households. Results show insignificant/ positive results because they are dysfunctional.

Conclusion and recommendation

Rural household Food security is impinged by long distances to the market, poor market access, credit access, extension access. Results have proven that most rural households have no market access and largely depend on own production. This study proves that rural households are mostly affected with distances to input and output market. Results encourage policies related to increasing own production, open dysfunctional ADMARC deports and other policies relating to road rehabilitation and maintenance to ease access these achieves food security and feed MDG1&4 and theme two and four of the MGDS.

References


4 MDGS Theme two: Social Protection and disaster risk management

5 MDGS Theme four: Infrastructural Development