An assessment of the likely impact on Ugandan households of rising global food prices

A secondary data analysis

A report to the Uganda offices of the World Food Programme, UNICEF, and the Food and Agriculture Organization

FINAL

by

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Executive summary

The Uganda offices of WFP, UNICEF, and FAO commissioned the Kampala office of the International Food Policy Research Institute (IFPRI) to assess the likely impact of rising world food prices on the welfare and food security of Ugandan households. This study was done in May 2008 and was based primarily upon secondary information from the Uganda Bureau of Statistics, the Uganda Revenue Authority, and the FoodNet market price information project. The study team also mounted a rapid, qualitative survey of established wholesale food traders in seven markets.

Uganda is a significant producer of food within central and east Africa. Traditionally, Uganda has been the most important food exporter in the region, particularly of maize to Kenya. Wheat and rice are the main food imports, coming from global markets. However, the main sources of calories for the population come from crops that are not extensively traded – matooke (cooking banana), cassava, and sweet potato. Almost three-quarters of the consumption of these foods is from the own production of consuming households. As such, at national level, Uganda is food secure. However, over the past 20 years there has been significant localized food insecurity arising from continued political turmoil in northern Uganda linked to the Lord's Resistance Army (LRA), as well as poor harvests and general insecurity in the Karamoja region in the northeast, primarily. These populations are the most vulnerable to food insecurity in the country.

However since January 2008, there has been a sharp upturn in prices, most notably for bean and maize, with both commodities experiencing a rise in wholesale prices of about 50 percent over the period from the first week in January to the last week in May. For maize, most of the rise in price occurred in April and May. Rice, millet, and cassava have experienced more moderate, but still significant, rises in prices of about 35 percent since January 2008. Groundnut prices have risen by 17 percent, while matooke prices show the lowest increase of 10 percent since the start of the year. January 2008 appears to be when a change in direction for prices of bean and rice occurred, whereas March or April is when prices started rising for maize, millet, matooke, cassava, and groundnut from the general level of prices seen throughout 2007. Regional factors are the principal cause of these rising food prices. Most notably, increased demand for maize from Kenya in the aftermath of the post-election turmoil in early 2008 appears to have depleted most remaining stocks of maize in Uganda over the past three months.

Nonetheless, Ugandan households are not directly exposed to rising global food prices. Uganda is relatively isolated from global markets principally because of the high transfer costs traders face in shipping commodities to and from landlocked Uganda. Moreover, it is self-sufficient in food production nationally. However, some adverse impacts are seen and can be expected to continue due to the secondary effects of higher global food prices. As global prices rise, Uganda's neighbors have increasingly turned to the country to acquire the food they need. Increased regional demand has driven up local food prices, particularly for maize. Moreover, prices for many typically non-traded staples, from which Ugandans derive the largest portion of their calories, also are rising as households that have been reliant on maize increasingly turn to these cheaper foods.

The principal effect of rising food prices has been seen in the maize market. However, as noted, this price increase is only secondarily related to global price movements. As such, those most affected by recent food price rises are households dependent on maize. These households include:

- Those dependent on WFP food distribution in LRA-affected areas and Karamoja.

- Institutional populations. Maize is the principal staple consumed in institutions in Uganda – boarding schools and universities, prisons, military facilities, hospitals, and the like.

- Urban poor – Household survey analysis shows that the urban poor are more likely than most other population groups in Uganda to be reliant on maize for an important portion of the calories they consume. In 2006, the urban poor were estimated to number just over 90,000 households nationally.

The Ugandan government has not actively responded to rising food prices. With some justification, the perceptions of leaders in government are that Uganda is not at risk from rising global food prices. Most Ugandan households, including the urban poor, have a wide range of options for staple food consumption. Indeed political leaders view higher food prices as a significant opportunity for agricultural sector growth. Our analysis shows that a relatively small segment of Ugandan households is likely to benefit directly – the net sellers of food crops. Consequently, government should consider what incentives it might provide those who stand to benefit from higher food prices to invest those proceeds for increased employment and broad economic growth.

In considering how the situation is likely to evolve in the coming months, the harvest from the current cropping season will begin reaching the market in the next month. An easing in food prices should be expected. However, it is unclear what will happen with maize prices. Kenya recently announced that it would be importing 270,000 mt of maize from the global market. This will reduce demand from Kenya for Ugandan maize somewhat. While we do not have a clear indication of this season's maize production levels in Uganda, no observers have indicated any problems. As such, maize prices later in 2008 should only deviate from normal seasonal expectations to the degree that demand from Kenya remains high. If maize prices remain high, secondary upward pressure on the prices of other staples will occur as maize consumers substitute these staples for their maize, increasing demand for those foods.

Recommendations for interventions:

- An alert, informed wait-and-see attitude is recommended in the short-term. We found no evidence to support a strong call to action to enhance the access to food for Ugandan households outside of current areas of concern in Karamoja and with the IDP populations in northern Uganda.

- The Ugandan government should not impose any restriction on trade in food. Ugandan producers can realize benefits by supplying regional markets. Many of these benefits may extend through rural communities through the effects of the increased income from the higher prices on wages and on demand for non-farm goods and services. Moreover, the food security of Uganda's neighbors is dependent to some extent on trade in food from Uganda, while Uganda's provision of part of its neighbors' food requirements is unlikely to affect significantly the food security of Ugandan households.

- We cannot exclude the chance of substantial adverse effects on Ugandan households arising through increased regional demand for Uganda's food crops as an outgrowth of increases in global food prices. Monitoring of vulnerable households must continue and be expanded to include surveillance of households who are particularly dependent on the market for their access to food, such as poor households in urban areas.

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1) Introduction

Recent upward trends in global food prices have led to widespread concern that hunger and poverty will increase sharply across the world as poor and food insecure households are forced to reduce their consumption levels. In addition to reduced food consumption, increased household expenditure to meet immediate food needs may be at the expense of sufficiently addressing other longer-term household needs, such as education and health. The quality of diets may suffer as families shift the income that they have been spending on nutrient-dense fruits, vegetables, pulses, and animal-source foods to purchases of energy-dense cereals or tubers. The most affected households are likely to be those most dependent on the market for their food. Although many national governments are taking strong measures to control the price of food, including export bans, evidence-based impact analyses at country-level of rising food prices on the poor and hungry have yet to be done in many countries, including Uganda.

It is within this broader context that the Uganda offices of several agencies of the United Nations – the World Food Programme, UNICEF, and the Food and Agriculture Organization – commissioned the Kampala office of the International Food Policy Research Institute to assess the likely impact of rising world food prices on the welfare and food security of Ugandan households. The agencies asked for a rapid assessment based, insofar as possible, upon existing data on food consumption and marketing in Uganda. This Uganda assessment is to be done at the same time as similar research is conducted in several other countries in which these agencies work to guide the more general operations of these agencies in the face of rising food prices globally.

Aim of the assessment

This assessment has three objectives

- Analyze current food prices in Uganda and the future outlook;

- Assess the current and foreseen impact of high market prices on food security and welfare at the household level; and

- Consider immediate, mid-term, and long-term response options to any negative impacts of rising global food prices on household welfare and food security.

The assessment was designed so that it should be completed within one month and primarily relies on existing information and datasets.

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In this report, while considerable attention is given to food price trends over the past eight years in Ugandan and international markets and to Uganda's exports and imports of food commodities, the principal analytical focus is at the household level. This is done in order to better understand the likely impact of higher global food prices on the welfare and food security of Ugandan households. The examinations here of food price trends and food commodity movements are undertaken principally to develop additional insights into the degree to which Ugandan households are exposed to current global and national food price prices and the likely future patterns in prices and regional food trade.

The consideration of response options to any adverse effects of global food price rises is derived from more general conceptual considerations of appropriate responses that governments and their partners might take. To date, no specific actions have been taken by the Ugandan government or its partners to address the impact on vulnerable households of rising food prices. Consequently, the potential responses assessed here are derived from general prescriptions to assist countries like Uganda deal with rising food prices that have been offered in recent months by various international agencies and policy research bodies. However, we are able to provide a more informed assessment of these prescriptions in light of the understanding developed by the market and household analyses. Uganda is not among those countries most at risk from global food price rises. Consequently, a more considered and selective response is warranted in Uganda.

Outline of report

After considering some of the reasons for why Ugandans have seen rises in food prices in recent months in section two, this report then describes the results of a series of analyses. First, analyses of import and export data from the Uganda Revenue Authority (URA), the Uganda Bureau of Statistics (UBOS), and the Regional Agricultural Trade Intelligence Network (RATIN) is presented to provide an understanding of which foods are imported to and exported from Uganda, in what quantities, and from and to where. Thereafter, several sources of data are used to describe food price trends in Uganda since 2000 and, where data exists, to compare those trends to those observed on the international market. Some indications are provided on the degree to which international food prices are transmitted to Ugandan markets. A brief presentation is also made on the results of the rapid qualitative survey of wholesale food traders in seven markets of Uganda in mid-May. Finally, key policies of the Ugandan government regulating food trade are summarized.

Section five focuses on the results of the household survey analysis. Data from the over 7,000 households surveyed over a twelve month period for the nationally-representative 2005/06 Uganda National Household Survey (UNHS) are analyzed to understand what proportion of the population of Uganda are net buyers or net sellers of food and to determine what proportion of the calories Ugandan households consume come from outside the home and from home production, respectively. The results of an investigation into the relationship between diet quality and income also are presented to suggest how the nutritional quality of diets might suffer as rising food prices result in real income reductions for Ugandan households. The final element of the household survey investigations is to look more closely at the characteristics of Ugandan households who rely on maize as their principal staple food. The final sections of this report review the state of alert in Uganda to rising food prices and provide some guidance for how the government of Uganda and its partners might act immediately and in the medium to long term to manage the risks to the welfare and food security of Ugandan households posed by increased food prices nationally and globally.

There are two important limitations arising from gaps in the range of data available for our study.

- We are unable to examine production levels in Uganda for the key foods examined. No detailed crop production data was available for analysis of food stocks available and potential national production of food, which, if sufficient, may fully dissipate pressures on Ugandan food prices coming from outside the country. This data gap is an important constraint on both food security and general agricultural policy analyses in Uganda.

- We are unable to examine how households that rely on the market for access to the food and, in particular, the staples they consume are coping with rising food prices. The household-level data used here comes from the UNHS dates from 2006-06. The WFP conducted a Food Security Monitoring Survey (FSMS) in those areas of Uganda where it distributes food in May 2008 at the same time as this analysis was underway. Included in the FSMS questionnaire were sets of questions on coping strategies and on recent changes in how the household relies on the market as a source of food. However, the data from this survey was not yet available when this report was finalized, so could not be brought into the analysis.

2) Rising food prices

Since late 2007, the international media has spread alarms concerning rising global food prices, detailing a wide range of contributing factors. Most of these are related to increased global demand for food commodities, but supply-side issues feature as well and may become more significant in time (Evans, 2008). The factors most commonly mentioned include increased production, processing, and marketing costs linked to sharply higher oil prices, the use of food crops for biofuel production in the United States and Europe, growing meat consumption in the emerging economies of China and India increasing demand for animal feed, poor harvests in certain major agricultural regions, and consistent underinvestment in agriculture over past decades resulting in agricultural production not keeping pace with population growth or broader economic growth. Several other factors can also be considered including global trade policy, climate change, and speculative behavior by both governments and commercial agents. (See FAO, 2008; ODI, 2008; von Braun et al., 2008.)

Evidence of recent food price rise in Uganda

With a strong general perception that food prices are moving upwards, increasingly in recent months concerns have been raised about rising food prices in Uganda. The main newspapers almost daily discuss the burden of rising food prices on traders and urban consumers. However, UBOS consumer price indices do not give clear evidence of sustained significant price rises, but rather show only a relatively recent increase in prices for food commodities. The UBOS *annual* food crops inflation rate for April 2008 was only 1.3 percent. However, the *monthly* inflation rate for food crops registered a 6.4 percent rise over March prices.

As shown in Figure 1, the weekly price series for staple food crops through late-May 2008, indexed to January 2007, demonstrate patterns reflective of these inflation rates. In keeping with the low annual inflation rate reported by UBOS, there is general price stability throughout 2007, except for a significant seasonal price cycles for bean. However since January 2008, there has been a sharp upturn in prices, most notably for bean and maize, with both commodities experiencing a rise in wholesale prices of about 50 percent over the period from the first week in January to the last week in May. For maize, most of the rise in price occurred in April and May. Three of the other five commodities considered, rice, millet, and cassava, since January 2008 have experienced more moderate, but still significant, rises in prices of about 35 percent. Groundnut prices have risen by 17 percent, while matooke prices show the lowest increase of 10 percent since the start of the year. January 2008 appears to be

Figure 1: Staple food prices (Jan 2007=100), weekly, Jan 2007 to May 2008, average of seven markets.
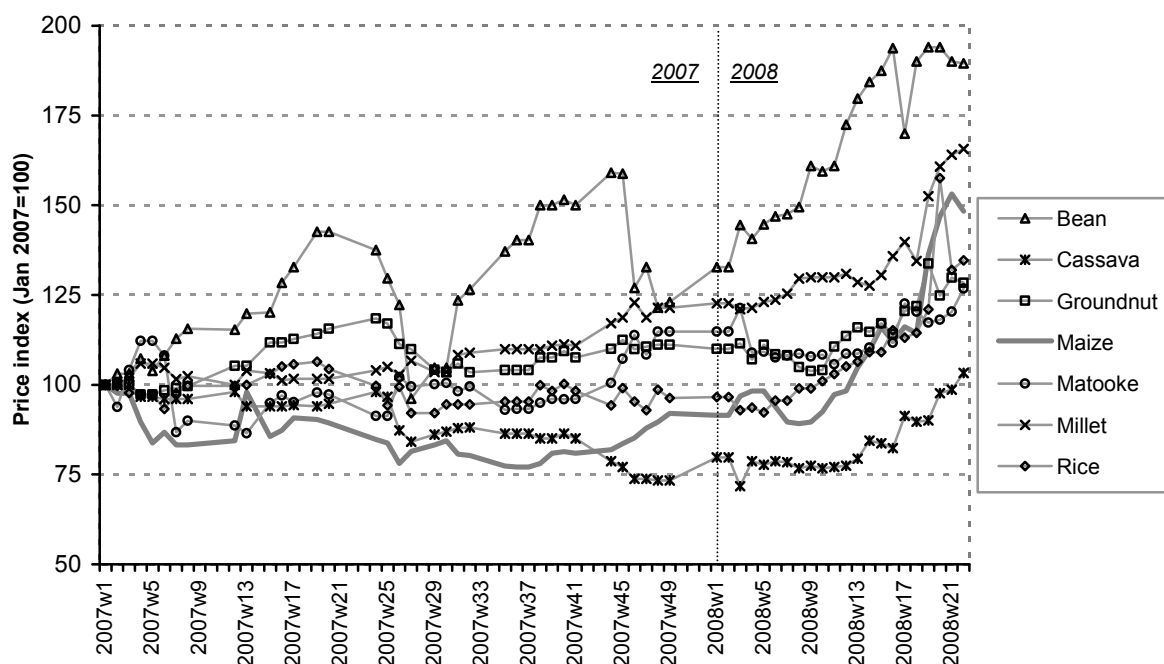
when a change in direction for prices of bean and rice occurred, whereas March or April is when prices started rising for maize, millet, matooke, cassava, and groundnut from the general level of prices seen throughout 2007.[1] The sharply higher monthly inflation rate reflects these more recent price increases.

Possible causes of food prices rises in Uganda

Returning to the inventory of causes that have been advanced for the recent rise in food prices globally noted above, most of the causes listed are unlikely to apply strongly to Uganda. As will be shown in the next section, the transmission of prices for food commodities from the international market to Ugandan markets can only be seen for a few items – rice, wheat, and processed foods, in particular. Rather, except for rising fuel prices, food traders and market analysts suggest regional and local factors as accounting in a *direct* fashion for whatever price rises are now seen in Uganda and may be experienced in the near future.

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[1] Trends in the price for maize the World Food Programme has purchased on tender in Uganda over the past 15 months generally reflect these maize price movements. Tenders awarded show stable prices at around $200/mt from January 2007 through January 2008. However, since February 2008 prices have risen sharply – two maize tenders from early May were awarded at about $315/mt and one in late May at $394.

- The rise globally in oil prices is contributing to a rise in food prices in Uganda at all but the most local markets. Where commercial inputs are used in production, higher fuel costs increase production and transport costs for those inputs, resulting in higher local farmer production costs. In output markets, transport and processing costs all can be expected to have increased over the past year because of the higher cost of fuel. The Kenya political crisis at the beginning of the year disrupted oil supplies to Uganda, resulting in increased volatility in fuel prices and, consequently, greater price risks for market traders involved in commodity transshipment. Moreover, continuing inadequate supplies of hydropower in the country and rising prices for electrical power further increase the costs of locally milled and processed foods.

- The post-election turmoil in Kenya at the beginning of 2008 has increased demand for food from Uganda. As will be shown, Kenya has long been the principal importer of staple foods from Uganda. The internal displacement of over 600,000 people and general insecurity over the first quarter of 2008 resulted in a significant portion of the 2007 long-rains crop not being harvested and brought to market and poor agronomic management of the 2007 short-rains crop that was in the field in many areas of Kenya. These production problems are expected to continue – the April 2008 Kenya Food Security Outlook reports that only about 50 percent of the land that is normally put to maize in the long rains had been prepared for the current season (Kenya Food Security Network, 2008). Uganda will remain an important source of maize and other staple foods for Kenyan consumers for some time to come.

- Markets in DR Congo and, especially, southern Sudan are also increasingly highlighted as new sources of demand for Uganda's food commodities. These trade flows are not yet clearly seen in official import and export statistics – of the approximately 200,000 metric tons of formal food exports recorded by the URA since January 2007, only about seven percent went to DRC and 2.5 percent to Sudan. However, if peace can be strengthened in eastern DRC and maintained and reinforced in southern Sudan and the significant inflows of development assistance and public investment to southern Sudan enhanced and extended to eastern DRC, the effective demand from these areas for the food produced by Ugandan farmers should only be expected to increase in the medium-term as their

economies emerge from subsistence levels. This increased demand will result in upward pressure on local Ugandan food prices.

- Local production problems over the past year have affected prices for certain commodities and in certain areas. The flooding in the Teso region between July and October 2007 affected supplies of groundnut, bean, and maize to Eastern Region markets. Poor rains and below average harvests in late 2007 in Karamoja are now resulting in rising food prices in markets in the region. Moreover, Karamoja sheep and goat herds continue to be afflicted with an epidemic disease, peste des petite ruminants (PPR), which since 2007 has caused heavy losses (FEWSNet, 2008).

  However, it should also be noted that these local production problems, which one will find every year in certain parts of Uganda or on certain crops, generally do not put the entire food system of Uganda at risk. The agro-ecologies and food production systems of Uganda are sufficiently diverse to provide considerable resilience overall to such local or crop-specific shocks. This is not something that can be said of several of Uganda's neighbors, however. Poor cropping seasons in Kenya and Tanzania, in particular, will place the food security of many households in those countries at considerable risk. In this regard, Uganda food producers are a significant element in the response mechanisms of both Kenya and Tanzania, particularly in the areas of those countries bordering Uganda.

We do not see rising global food prices in themselves and, beyond oil price increases, the factors that are generally accepted as causing the rise in global food prices as being important *direct* causes of rising general food prices in Uganda. Certainly higher global prices for wheat and rice do result in higher prices for those foods in Ugandan markets, since a significant portion of Uganda's consumption of these foods comes from the international market. However, Uganda is generally insulated from many of the other factors causing the rise in global food prices because high transaction costs (particularly transport) make its participation in the global markets problematic. Equally important, Uganda's food security is based upon many staples that are not actively traded globally.

However, rising global prices can be expected to have a *secondary* effect on Ugandan food markets that may be significant, particularly when coupled with the uncharacteristically high demand from Kenya for food resulting from the recent political turmoil affecting food

production there. The important regional trading partners of Uganda rely on Uganda as a source of food supply only when the food that Uganda can supply them is priced competitively relative to their other sources. With rising global food prices, commercial firms operating in the international market are no longer quite as attractive as suppliers of foods to Ugandan's neighbors as in the past. In consequence, food-importing countries in the region will consider other sources of supply, including Uganda. Where Uganda food prices enable food traders from neighboring countries to profitably import food from Uganda (or Ugandan traders to profitably export), local markets will see an increase in demand and the prices Ugandan consumers face will rise. As will be shown in the next section, the main food export of Uganda is maize. However, this increased regional demand also will put upward pressure on the prices of staples and major foods that are generally not extensively traded – matooke, sweet potato, and cassava. This will be due to a substitution effect as Ugandan consumers who in the past relied on maize, in particular, substitute alternative, currently cheaper staples, increasing demand for and, hence, the prices of those staples in local and district markets. Indeed, such an explanation has to be considered in accounting for the rise in prices over the past several months for all of the food commodities considered in Figure 1.

The exact mechanisms by which food demand in Uganda's neighbors results in higher prices in Uganda are likely considerably more complex than what is sketched here. However, the result is that Ugandan farmers can participate in an expanding market that is increasingly demanding their produce, potentially receiving higher prices for their production; while Ugandan consumers must compete with consumers elsewhere in the region for the food they obtain from the market, paying generally higher prices in doing so.

3) Uganda's import and export of food commodities

In this and the following two sections, different perspectives on Uganda's food markets and the interaction of Ugandan households with those markets are presented through analyses of secondary data sources. In this section, we examine food imports and exports.

Three datasets are used to examine Uganda's food imports and exports.[2] First, we use the extensive database on all imports and exports reported to the URA. The items reported imported or exported are coded according to the Harmonized Commodity Description and Coding System. An extract of this database for items that were coded as vegetables, fruits

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[2] This and the following analyses are based on the best available data that could be acquired. However, we can make no claims as to their comprehensiveness or that we have recognized all important limitations in these data.

and nuts, cereals, milling products, and oil seeds and were imported or exported since January 2000 was obtained from the URA. (Animal source and commercially prepared foods were not considered.) It should be noted that these records represent formal trade, however defined. Much local and more small-scale border trade into and out of Uganda is excluded. To examine some of this informal trade, UBOS has provided two years of data from 2005 and 2006 on informal imports and exports of food items. Finally, we also examine the information on monthly flows of food commodities collected by RATIN at selected Ugandan border posts. These data cover both formal and informal trade.

Food imports

URA's data on food imports is likely partial, as it records virtually no imports from Uganda's neighbors, other than Kenya and Tanzania. Nevertheless, for the food items considered URA reports that the average quantity imported annually between 2003 and 2007 is about 475,000 metric tons. The source of 94 percent is from outside the region.[3] Looking at this information on a commodity basis, 61 percent of the quantity of the food imported from all sources consisted of wheat and other small grains or flours milled from these grains. Rice and maize make up most of the remaining quantity of foods imported with 12 and 13 percent of the total food imports, respectively. Given that the data on these food imports was gathered by the URA for revenue purposes, the information likely is not a wholly accurate representation of the source and make-up of all food imported to Uganda. Moreover, the finding that maize is among the more important food imports to Uganda is not consistent with expectations. Nevertheless, these data do allow us to identify those major food commodities consumed in Uganda whose local prices are likely to be influenced by global price trends – wheat, rice, and, possibly, maize.

The UBOS data on informal imports of food items from Uganda's neighbors, shown in Figure 2, provides quite a different perspective on food imports from that observed in the URA data. The DR Congo is noted in the UBOS data as a significant source of cassava, banana, and bean. Kenya provides some rice, but imports of food from neighboring countries are low in general. The average annual quantity of imports from the region reported in the UBOS data set was 32,800 metric tons. These imports amount to just over one kilogram of food imported from Uganda's neighbors per Ugandan per year. The RATIN data similarly

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[3] Imports of food for relief purposes and food that was reexported are excluded from this analysis.

Figure 2: Informal food imports from Uganda's neighbors, 2005-06, annual average, by commodity and source, mt.
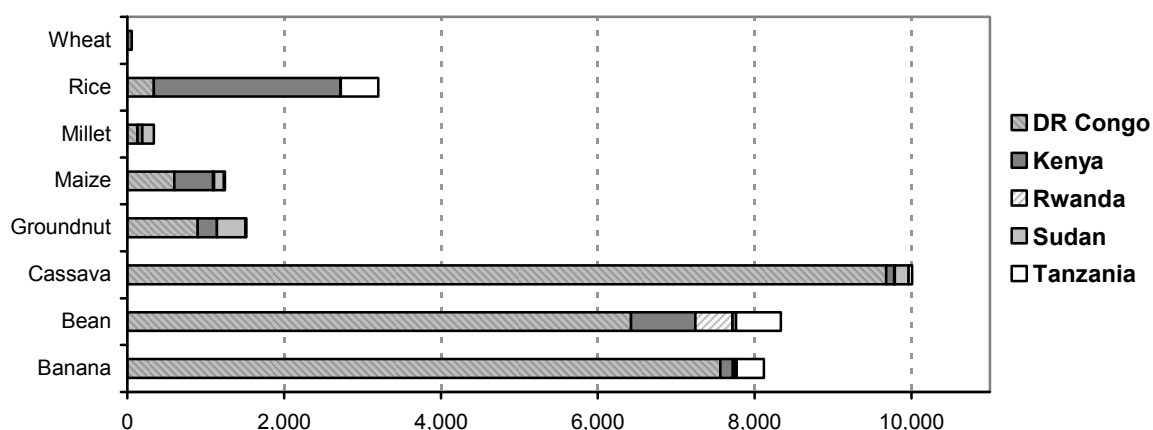
show only small imports of beans, maize, or rice. Uganda is not reliant on its neighbors for the staple and other basic foods it consumes.

Food exports

We look at these same data sets to understand the food export patterns of Uganda. Quite a different pattern emerges. Average annual exports over the past five years of the items considered in the URA dataset total about 120,000 metric tons. Table 1 presents a summary of the URA export information. Maize is the principal food that Uganda exports. The average annual quantity of maize Uganda exports to its neighbors alone is more than double the quantity of all foods imported annually from those neighbors. Pulses and oilseeds are also important exports to regional markets.

The informal trade data of UBOS shown in Figure 3 reveals over double the quantity of the

Table 1: Food commodities exported by Uganda, quantity of formal exports, 2003-2007.

Food commodity	Average annual food exports, mt	Percentage of food exports	Most important market	2nd most important market
Vegetables	5,840	4.9	International (62%)	Tanzania (18%)
Pulses	14,672	12.4	Kenya (69%)	Burundi (11%)
Tubers	6,379	5.4	Burundi (69%)	Rwanda (28%)
Fruits, nuts	4,190	3.5	Kenya (76%)	International (22%)
Banana	1,605	1.4	Kenya (71%)	International (29%)
Maize	63,322	53.6	Kenya (36%)	Tanzania (22%)
Sorghum	4,888	4.1	International (58%)	Kenya (38%)
Oilseed	17,215	14.6	International (58%)	Kenya (39%)
TOTAL	118,110	100.0	Kenya (38%)	International (21%)

Figure 3: Informal food exports to Uganda's neighbors, 2005-06, annual average, by commodity and destination, mt.

	Kenya	Tanzania	Rwanda	Sudan	DR Congo
⊠ Millet	11,640	10	10	40	40
⊠ Maize	153,750	17,930	4,650	440	180
⊡ Groundnut	5,010	90	170	20	20
⊠ Cassava	1,560	550	-	110	210
☐ Bean	50,500	1,090	1,880	300	290
◼ Banana	10,910	160	5,350	170	60
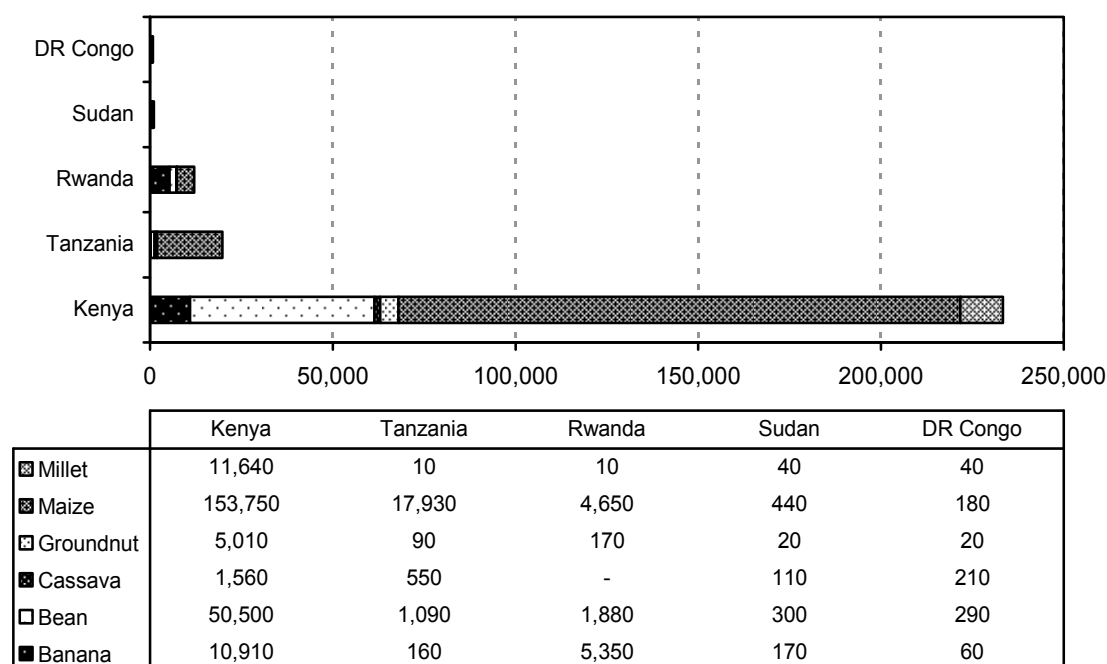
Source: UBOS informal trade statistics

formal exports recorded by URA. However, the broad patterns are relatively similar. Kenya is the principal importer of Ugandan food in the region. By quantity, maize makes up well over half of all informal food exports, with Kenya dominating the maize export market. Kenya's annual maize requirement is estimated at 3.25 million metric tons. The UBOS data show that, even before the current crisis in Kenya, Uganda was supplying almost 5 percent of Kenya's requirements. Bean also is an important export. The low volumes sent to DR Congo and Sudan would suggest that the demand from these countries is unlikely to affect Uganda food prices significantly. However, these data date from 2005 and 2006. Particularly for southern Sudan, significant changes in the volume of trade flows have occurred in the interim period. That said, it likely will be many years before these countries absorb a significant portion of Uganda's total food exports.

Finally RATIN monitors agricultural commodity flows at selected border crossings – Katuna (Rwanda border), Busia (Kenya), and Mutukula (Tanzania). Their statistics for the period 2005 to 2007 show average annual exports from Uganda through these border crossing points of 88,000 mt of beans and 167,000 mt of maize. In most years, transits at Busia to Kenya make up almost all of the recorded flows of these commodities. In using the RATIN figures to triangulate the URA and UBOS figures on food exports, the RATIN figures are more in line with the higher figures provided by UBOS.

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To summarize this examination of available data on food imports and exports for Uganda:

- The principal commodities that are imported from global markets and for which we should expect to see some effect of rising global food prices on Ugandan market prices are wheat and rice.

- Uganda acquires relatively small amounts of food from her neighbors. For most staples and other basic foods, excepting rice and wheat, Uganda is self-sufficient.

- Uganda and the food exports it can provide its neighbors are important for the food security of countries in the region. This is most evident for Kenya.

4) Food price trends for Uganda's staple crops

In this section, we consider general price trends over the past eight years for key staples and other basic foods widely consumed in Uganda. This is done by examining average monthly price series from several wholesale markets across the country. Thereafter, for those commodities that are traded internationally, a comparison is made between Ugandan and international price trends in order to provide a basic assessment on the degree to which price transmission from the global to the Uganda market occurs for these commodities. We then turn to a qualitative assessment of recent food price movements in Uganda in presenting a synthesis of the information gathered in a rapid survey of wholesale market traders in seven markets across Uganda. Finally, in order to place Ugandan food markets within a policy context, we conclude with a brief review of the current policies that the government uses to regulate trade in food, both domestically and internationally.

Ugandan food price trends

Our price analysis focused on the prices of seven food commodities – maize, bean, groundnut, millet, cassava, matooke, and rice – in seven markets of Uganda – Kampala (Owino), Arua, Kabale, Kasese, Mbarara, Rakai, and Tororo. We used weekly wholesale prices that have been collected by the FoodNet project of the International Institute of Tropical Agriculture (IITA) over the period January 2000 through April 2008.[4] The nominal

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[4] We also examined monthly retail prices from UBOS for many of the same commodities over the same period. There is close correlation between the average monthly prices of UBOS and FoodNet (correlation coefficients ranging from 0.855 for maize to 0.983 for bean). However, given the weekly detail, the greater number of markets, and the better alignment of the data with our markets of interest, we use the FoodNet data here.

Neither UBOS nor FoodNet collect prices on wheat, wheat flour, or bread. In consequence, in spite of the significance of imports of wheat and wheat flour for Uganda, we cannot assess price trends or the degree to which international prices for wheat are transmitted to Ugandan consumers.

average wholesale prices and price indices for these commodities across the seven markets are presented in Figure 4. (Figure 1 is an indexed extract of weekly prices from the last 17 months of these series.)

Figure 4: Average monthly wholesale prices for food staples – Jan 2000 – May 2008, <u>nominal</u> prices, price levels (UShs. per kg) and price indices (Jan 2000 = 100).
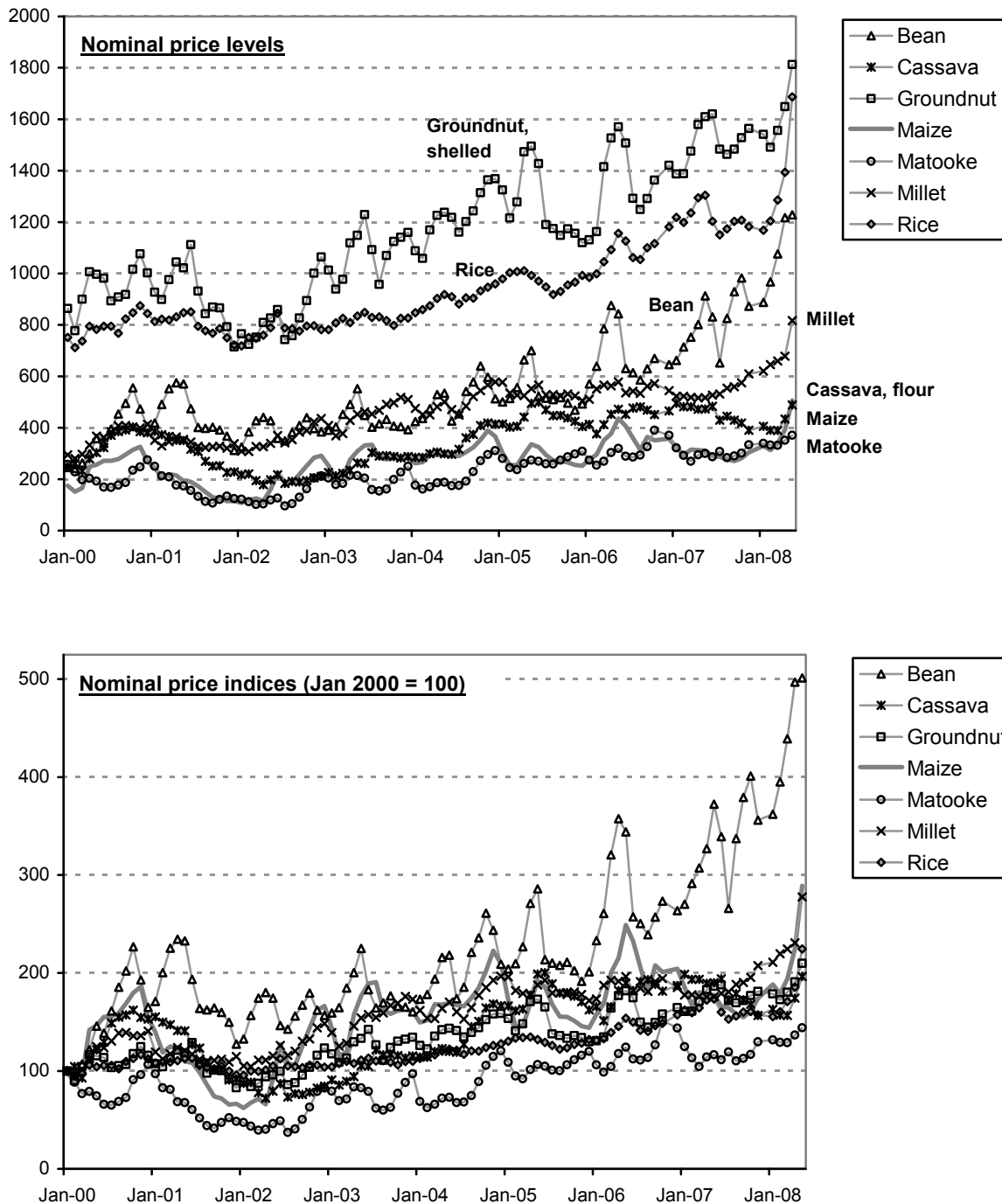
Source: FoodNet wholesale market price series

The FoodNet price series is relatively complete for the markets and period of interest. The only large data gaps occur for Kampala (Owino) and Rakia markets over the first and last 20 months of the price series, respectively.

What is most apparent in these price graphs is the seasonality effect on prices. There is a relatively regular cycle across the years of price rises and falls corresponding to harvest patterns in the country. These patterns, as expected, are most muted in the cassava and rice price series – cassava because its harvest is not strongly seasonal, and rice because of the importance of rice imports. However, more seasonality in rice prices is seen in recent years than expected, possibly reflecting increasing local and regional harvests.

A generally rising price trend is apparent in Figure 4. However, when these price series are deflated by the UBOS all price index to account for general changes to purchasing power for Ugandan households, as shown in Figure 5, bean is the only crop that shows an upward trend in prices over the last year or two that lies above ranges of real prices seen earlier.[5] Evidence of a generalized real food price rise over recent years up until very recently for the major foods consumed in Uganda is not seen in these data.

It is useful to highlight a staple food substitution pattern apparent in these price trend figures. Household who, due to price considerations, are forced to change their staple foods can move from higher priced rice (and, one would assume, bread) to millet and then on to cassava, maize, and matooke. Of course, the options for substitution are more limited if one is already consuming cassava, maize, or matooke exclusively. Moreover, cultural preferences may exclude some of the alternative, lower-priced staples as options for some households. Nevertheless, the diversity of staples upon which Ugandan households can rely does increase their resilience to price shocks that are commodity-specific rather than general. Recent rising prices are seen in all of the key foods consumed by Ugandans. However, as noted in the discussion of Figure 1, there is variability in the level of price rises seen and substitution strategies should allow consumers to meet their staple food requirements. However, if sustained, increased demand for substitute staples, such as cassava, will also increase prices for those foods, making it difficult for households to find in the market relatively cheaper substitutes for their normal staple foods.

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[5] Note that real prices for May 2008 cannot be presented in Figure 5, as the appropriate index was not available at the time of writing.

Figure 5: Average monthly wholesale prices for food staples – Jan 2000 – Apr 2008, <u>real</u> prices deflated by UBOS monthly all price index (Jan 2002 base), price levels (UShs. per kg) and price indices (Jan 2000 = 100).
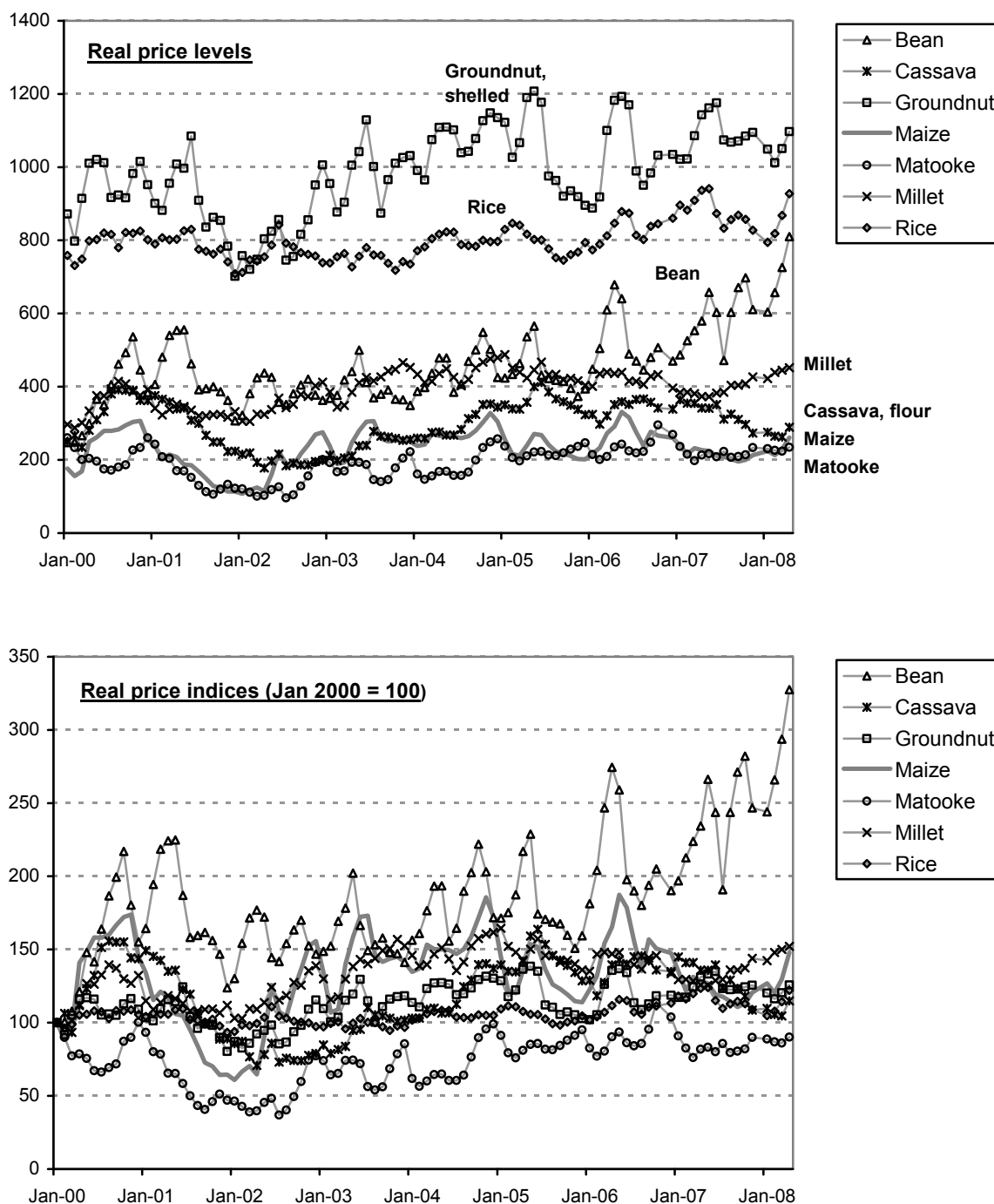
Source: FoodNet wholesale market price series

Comparison of Ugandan and global food prices

To assess the degree to which Ugandan markets are linked to global markets, for selected food commodities we compare global prices to Ugandan prices. Unfortunately, only three of the commodities that we examine here are traded actively on international markets for food

15

Figure 6: Ugandan and global food price/indices comparisons, Jan 2000 – Apr 2008
        (Jan 2000 = 100).
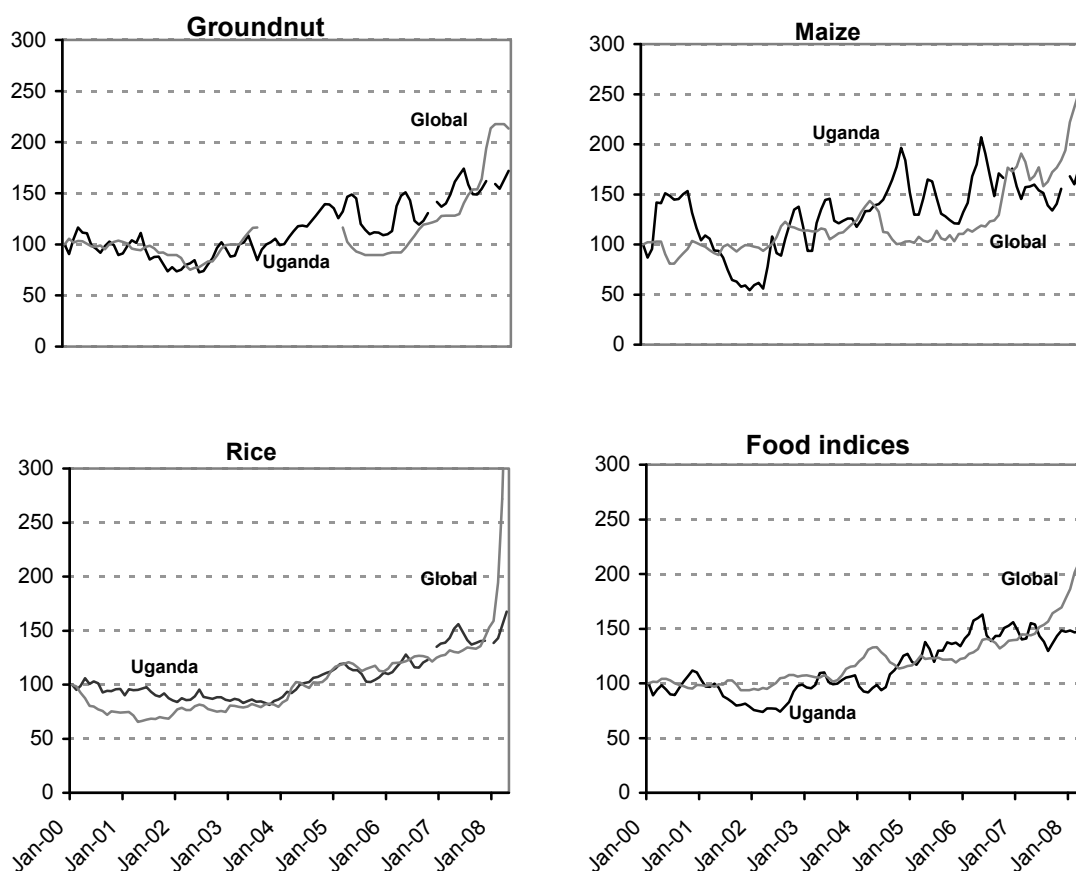
consumption – maize, rice, and groundnut. The fact that we cannot make these comparisons for all of the commodities examined here is itself indicative of the relative isolation of the Ugandan market from global markets for the basic foods Ugandans consume. In addition, we also compare the UBOS food crop price index to an international food price index.[6]

Indexing these series to a common January 2000 base, Figure 6 provides graphs of the price comparisons. Graphical analysis shows relatively high correlation in price trends for rice, at least until the recent global price spike. Groundnut and the food commodity indices show more erratic trends than rice, with Ugandan values exhibiting considerably more short-term

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[6] The global price series are taken from the monthly commodity price dataset of the International Monetary Fund (http://www.imf.org/external/data.htm):

- Maize, US No. 2 Yellow, fob Gulf of Mexico, US$ per metric ton.
- Groundnuts, 40/50 count per ounce, cif Argentina, US$ per metric ton. (No prices for period September 2003 to March 2005.)
- Rice, 5 percent broken milled white rice, Thailand nominal price quote, US$ per metric ton.
- Global Commodity Food Price Index, based on price indices for cereals, vegetable oils, meat, seafood, sugar, bananas, and oranges.

Table 2: Correlation of global and Ugandan price and food index series, Jan 2000 – Apr 2008.

	No lag	One-month lag	Three-month lag	Six-month lag
Groundnut	0.7095	0.6088	0.6027	0.5803
Maize	0.4481	0.3556	0.325	0.3119
Rice	0.7802	0.671	0.5453	0.5561
Food commodity index	0.7559	0.7380	0.7261	0.6831

The lag columns show the correlation between Ugandan values with international values for one, three, or six months prior.
Sources: International Monetary Fund monthly commodity price dataset; FoodNet wholesale market price series.

variability, except in recent months. The maize price series shows the least correlation. As shown in Table 2, these graphical assessments are confirmed by statistical analysis, except for a closer correlation for the food commodity indices than might be expected from examining the graphs.

Table 2 also provides information on time lags in the relationship between international and Uganda prices. No consistent lag in price transmission is evident. Highest correlations are seen in comparisons of contemporaneous prices. However, a more refined analysis would be required to state conclusively that any price transmission that occurs from global to Ugandan food markets takes place within days or weeks rather than months.

Finally, among the factors that insulate markets from price movements in broader markets are high commodity transfer costs – poor infrastructure, expensive transport, and communication barriers that increase the costs of delivery of the commodity (Rapsomanikis et al., 2004). This factor is particularly pertinent to the discussion here, given that Uganda is a landlocked country with poor links to the seaports through which global suppliers deliver their commodities to the Uganda market. The Logistics Unit of the Uganda office of the World Food Programme reports that the current cost for shipping bulk grain from US seaports to Mombasa is $153 per metric ton. Mombasa port charges, including repacking, average $30. Overland transport from Mombasa to Kampala by rail is $87 per metric ton (by road it is $123). Adding and subtracting these current charges to the international maize price (ex US Gulf ports) allows us to develop basic import parity and export parity prices for Uganda, respectively. These monthly parity prices for maize sold in Kampala are shown in Figure 7 together with the average Uganda domestic maize price.

While a more sophisticated analysis could be done that considers changing transfer costs, the results demonstrate that Uganda is unlikely to import maize from global markets – the import

Figure 7: Kampala maize import and export parity price trends, Jan 2000 – Apr 2008, US$/mt.

parity price for maize in Kampala historically has been well over double the local price. Uganda could from time to time export to the global market – including now while the local price is lower than the export parity price. However, it is unlikely that it could compete with producers with lower transfer costs to international markets, since domestic maize prices generally hover just around the export parity price. Uganda's main export market for maize is likely to remain what it is now – western and central Kenya, as well as its other neighbors depending on seasonal production conditions in those countries. So long as the transfer costs that Ugandan traders must bear to get their food commodities to the international market remain high, Uganda is likely to be a major exporter of food only within the region. However, the broader lesson is that geography explains much of what keeps Uganda from being well integrated into global food markets.

Perceptions of Ugandan wholesale food traders on current market dynamics

During the first three weeks of May 2008, a two market information specialists together conducted a qualitative survey of established wholesale traders in food commodities in seven markets in Uganda – Kampala, Busia, Arua, Kasese, Kabale, Mbarara, and Kyotera (Rakai). A set of questions were asked concerning each commodity that they traded. These questions primarily concerned changes over the past 12 months in volumes traded, sources of supply,

sources of demand, transaction costs, and levels of competition. About 50 traders were interviewed in total. Here we report on some of the findings from interviews with the 39 maize traders in this sample. There generally were four or five wholesale maize traders in each market, with greater numbers in Busia and Kampala reflecting their larger markets.

Traders report that they are facing higher prices in acquiring their maize stocks. Traders in Busia and Arua highlighted increased demand from Kenya and southern Sudan, respectively. Kenya wholesalers are coming to Busia to buy up as much maize, beans, and millet as they can. Ugandan traders are doing their best to supply their requirements, going throughout Eastern Region and beyond for these commodities. High prices in Juba for maize and several other commodities, possibly reflecting large inflows of development assistance to the city's economy, offer the prospects of high returns to many Ugandan traders, both those in West Nile and those farther away from the border who can supply the commodities demanded. This increased regional demand was the principal story emerging from the maize traders.

However, most traders reported that they were not benefiting from the higher demand and higher prices that they could receive for maize – only four of the 39 traders interviewed reported that they have traded larger volumes this year than a year ago. The higher demand has increased competition. In Busia, the claim was made that a large number of part-time traders, typically retired civil servants, had jumped into the market as demand increased from Kenya. There are few barriers to entry into maize trading. In consequence, many of the traditional areas of supply of maize for the Busia market had little to provide the established traders, since any available stocks had been taken by this new competition. Equally important, capital and credit constraints that established traders face have been exacerbated due to the higher prices they report having to pay to acquire stocks, increased transport costs due to rising fuel prices, and the longer distances they have to go to acquire the stocks required. The result has been an overall reduction in the quantities that most traders have handled this year.

Government of Uganda policies to regulate food trade

In addition to high commodity transfer costs, another set of factors that may serve to insulate markets from price movements in broader markets are a broad set of policy instruments that governments use to regulate trade or to attain other policy objectives. These can include any of a range of tariffs and taxes, import or export quotas, price support mechanisms or subsidies, foreign exchange controls, or restrictions on market entry, among others. All of

Table 3: Uganda import tariff rates for selected food commodities, percent of value.

Food item	East African Community	COMESA countries	Other countries
Wheat	nil	nil	nil
Wheat flour	4	60	60
Rice	4	75	75
Maize	nil	6	25
Maize flour	nil	50	50
Millet	nil	6	25
Groundnut	nil	6	10
Beans	nil	6	25
Banana	nil	6	25
Cassava	nil	6	25

Source: Uganda Revenue Authority.

these mechanisms are likely to impede or alter the transmission of price signals from global markets to national markets (Rapsomanikis et al., 2004). As such, they can serve to insulate local markets from price shocks in global markets, but this insulation is achieved at the expense of many of the benefits of freer trade. Consequently, the imposition of these trade regulation mechanisms is fraught with trade-offs for national economies and for individual households as both producers and consumers of traded goods and services, including food.

The principal orientations of Uganda's trade policy are the elimination of barriers to trade and the provision of an enabling environment in which the private sector will thrive and build capacity to produce quality goods and services competitively, reliably, and on a sustainable basis. The country maintains an open and liberal economy. Trade liberalization reforms have been undertaken over the last couple of years, especially through reduction in tariffs, rationalization of tariff bands, substantial reduction in non-tariff barriers, and pursuit of regionalism and multilateralism. Export diversification and promotion is a key component of the trade policy reform. There is no export duty on agricultural products.

Tariffs constitute the main trade policy instrument. Since July 2000, Uganda has been applying the customs valuation method based on transaction value – the price actually paid for the imported goods. The agricultural tariff structure has also been simplified, although there are different rates for processed and non-processed food items. Different rates apply for imports from East African Community countries, countries of the Common Market for Eastern and Southern Africa (COMESA), and all other countries. Current tariff rates for several food commodities are shown in Table 3. Rice is the only unprocessed major food commodity that attracts substantial tariffs – some observers suggest that this protectionist

tariff on rice has contributed to increased rice production in Uganda in recent years (Zachary, 2008).

In addition to tariffs, all importers are subject to a 6 percent withholding tax on the value of their imports as advance payment on corporate or personal income taxes. An additional charge for importers is the road user fee. The current charges on transporters are $0.10 per kilometer for trucks with three axles or more and $0.06 for lighter two-axle trucks. Finally, a value-added tax (VAT) of 18 percent levied on consumers applies to processed food products, whether imported or domestic. VAT is not charged on unprocessed food.

Currently there are no bans, quotas, or other restrictions on trade in food commodities. However, regulations exist to enforce quality standards for maize, pulses, wheat, millet and groundnut. These are set by the Uganda National Bureau of Standards (UNBS). Upon importation, traders must provide phytosanitary certificates and make the shipment available for examination by inspectors of the Plant Health Inspection Services and UNBS before clearance. Clearance also must be obtained from the Custom and Excise Department of the Uganda Revenue Authority. For exports, traders must similarly acquire quality analysis, phytosanitary, and fumigation certificates for their shipments, as well as a certificate of origin from the Uganda Export Promotion Board.

In general, the regulatory restrictions of the government of Uganda on trade in foods are in line with efforts to facilitate trade while protecting consumers and Uganda's standing in broader markets. As such, policy instruments are not among the most significant factors serving to insulate Ugandan markets from price movements in broader markets. High transfer costs related to transport are a much more significant factor in this regard.

In summary, this examination of prices of food commodities in Ugandan and global markets, the perceptions of market traders, and the policies that the government of Uganda uses to regulate food trade has demonstrated the following:

- Uganda's food commodity markets are relatively isolated from global markets. Several of the principal major foods consumed in Uganda are not traded globally. Rice and wheat, in particular, are the major foods through which Ugandan consumers can be expected to be directly affected by rising global prices. For the other major foods, the effects of global price rises will only occur in a secondary manner as rising prices lead to changes in patterns of demand for the food crops Uganda produces, both locally and regionally. Maize, as will be discussed, is the

most significant food commodity that is affected in this regard. If higher food prices are sustained globally, there is little question that general food prices in Uganda will increase through these secondary mechanisms. However, relative to other countries in Africa, Uganda should be among those that are most shielded from the adverse impacts of global food price movements.

- The principal factors isolating Ugandan markets are related to the high transfer costs that traders face in accessing or exporting from the Uganda market, primarily transport costs. As a result, the principal external food markets that Uganda can competitively supply are those in neighboring countries, and not the global market. Uganda will be a significant supplier of staple foods to global food markets only once significant additional investments are made to reduce the costs Ugandan exporters face in supplying those markets, particularly through improving transportation links to seaports through neighboring countries.

- Generally, Uganda's policy instruments for regulating trade in food are not restrictive.

5) Household analysis

The principal objective of this assessment is to determine the likely impact of rising global food prices on Ugandan households. The previous sections provided evidence of the degree to which Ugandans in general are likely to be affected by higher food prices globally. Here we use data from the nationally representative 2005/06 Uganda National Household Survey to examine what proportion of Ugandan households might be adversely affected by rising food prices and what are the characteristics of such households.

Although we argue that the odds of Uganda experiencing a sustained, significant rise in general food prices and the general impact of such a rise are less than for many other countries in Africa, that significant increases in food prices, whether from global or local factors, will adversely affect many Ugandan households is not called into question in this analysis. A recent multi-country study of the first-order effects (and some second-order effects through wage rates in labor markets) of rising food prices on household welfare and poverty levels in the developing world indicate that a majority of households will be affected adversely by significant rises in food prices (Ivanic & Martin, 2008). As discussed below, most households are net purchasers of food. Higher prices reduce the real purchasing power of households, resulting in some decline in general consumption levels, and a rise in

aggregate poverty measures. The structure of Uganda's economy and the level of integration of Ugandan households into the cash economy are similar to many of the countries examined in the Ivanic and Martin study, so a comparable pattern in the effect of significant food price rises on household welfare and aggregate poverty levels should be expected here. On the other hand, many rural households, including in Uganda, will gain from higher food prices both directly and through the effects on wages and local demand for non-farm goods arising from the increased income of net-seller households (Aksoy & Isik-Dikmelik, 2008). These benefits will extend to the food security of these households. Exactly whether the aggregate benefits of increased food prices will outweigh the costs in Uganda is an empirical question. In the limited analyses here, we cannot model the effects of food price changes on the consumption and income of Ugandan households. Rather, we focus on better understanding which types of Ugandan households are most at risk.

Proportion of household income going to food

A key consideration in assessing the likely impact of rising global food prices is the proportion of their income that households spend on food. If households already are spending a large proportion of their cash income on food, with higher food prices households

Table 4: Percentage of total household income expended on food, by population group.

	Broad definition	Narrow, cash-based definition
All	65.4 (0.42)	54.8 (0.50)
Rural	66.7 (0.46)	54.2 (0.56)
Urban	59.7 (1.03)	57.8 (1.05)
Central region	60.4 (0.81)	52.0 (0.88)
Eastern region	68.4 (0.87)	56.6 (0.98)
Northern region	65.8 (0.92)	58.5 (1.05)
Western region	68.8 (0.76)	53.7 (1.10)
IDP camp residents	51.9 (1.96)	48.5 (2.09)
Karamoja	84.9 (2.12)	81.4 (2.69)
Poor	67.5 (0.70)	54.7 (0.91)
Urban poor	66.3 (2.80)	62.2 (2.96)
Non-poor	64.7 (0.50)	54.8 (0.56)

Source: 2005/06 UNHS, analysis by authors.
Sample design corrected standard errors in parentheses.

will face significant trade-offs between using their income for consumption of food or for other basic needs. The results of the analysis of the UNHS on this issue are presented in Table 4. Two definitions of income and food consumption are used. The first broader definition includes the value of own-produced food that is consumed by the household in both the cost (value) of food consumed and in the total income of the household. A more narrow definition is presented in the second column of the table where the value of the own-produced food consumed by the household is excluded from both food consumption and income. While the second definition focuses more tightly on *cash* income and food expenditures, it may provide a false impression of increased vulnerability for those households who are more subsistence oriented, since much of their income is in-kind rather than cash. In any case, that 55 to 70 percent of household income is spent on food is in the same range as findings from household surveys conducted in other predominantly rural African countries.

Those households that are well-integrated into the cash economy of Uganda and who rely on the market for the food they consume will be particularly sensitive to food price rises. If we use the figures presented in the narrow definition in Table 4 as characteristic of such market-integrated households, a general 10 percent rise in food prices will reduce their purchasing power by 5.5 percent. While this static, back-of-the-envelope assessment does not consider second order effects that may mitigate some of these effects, food price shocks of such a magnitude on household consumption should be expected to motivate significant economic adjustment both in wage labor markets and in the broader economy of Uganda.

Net-buyers and net-sellers of food

Conceptually, it is the net buyers of food – those who over a given period spend more to purchase food than they receive in sales of food they produce – who should be the most adversely affected by food price rises. For these households, higher food prices reduce their access to available food. In contrast, net sellers of food stand to benefit from food price rises. The majority of rural farming households in Africa are net buyers, rather than net sellers (Minten & Barrett, 2008; Poulton et al., 2006; Jayne & Chisvo, 1991). Such households rely on non-farm economic activities to supplement their food production, using the wages or other returns from those activities to purchase the major part of their food consumption. As such, it is not the case that rising food prices only will adversely affect urban populations in Africa.

Here we use the 2005/06 UNHS to assess what proportion of households in Uganda are net buyers or net sellers of food. While conceptually the idea of net sellers and net buyers is relatively clear, defining who is a net seller or a net buyer can be more problematic. We use three definitions to categorize each survey household:

- The reported value of sales of <u>all</u> foods produced by the household and the reported value of <u>all</u> foods purchased for consumption at or outside the home. This is a broad definition.

- The reported value of sales of <u>all</u> foods produced by the household and the reported value of all purchased foods consumed that <u>could potentially have been produced on-farm</u> (even if the household is not a farming household). This definition excludes those foods for which most Ugandan households necessarily must rely on the market, such as dried or smoked fish, oil and fats, sugar, coffee, soda, beer, and other alcoholic drinks, and food purchased for eating outside of the household (street snacks, restaurant meals).

- Staples only. The reported value of sales of key <u>staples</u> produced by the household and the reported value of these <u>staples</u> purchased for consumption. The staples are wheat, rice, maize, millet, sorghum, bean, groundnut, Irish potato, sweet potato, cassava, and matooke.

Conceptually, the population will fall into three groups in such an analysis – net buyers, net sellers, and a small number of autarkic households who do not participate in food markets. However, in our presentation of results in Table 5 we have expanded these categories to six. This is done based on two criteria.

- First, we examined the ratio of the value of reported sales to reported purchases of food. If the ratio of sales to purchases was between 0.5 and 1.5, we considered this an insignificant difference between the level of household food sales and purchases.

- Secondly, for households shown to be significant net buyers of food, we calculated what proportion of the value of their total reported food consumption was from the market. If this value was above 25 percent, those households were considered 'non-subsistence' households. For these households the market is a significant source of the food they consume. In contrast, "subsistence significant net buyer" households are those that purchase a significantly greater value of food

Table 5: Net-buyers and net-sellers of food, six categories of households for three definitions, percent of households.

	Basic broad definition			Potentially produced foods only			Staple foods only		
	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban
Significant net seller	12.2 (0.5)	14.1 (0.6)	2.7 (0.6)	19.0 (0.6)	22.1 (0.7)	4.5 (0.9)	26.7 (0.8)	31.0 (1.0)	4.9 (0.9)
Non-subsistence significant net buyer	66.0 (0.8)	60.5 (0.9)	91.9 (1.0)	55.6 (0.9)	48.6 (1.0)	88.8 (1.3)	46.5 (1.0)	38.6 (1.1)	87.0 (1.4)
Subsistence significant net buyer	11.5 (0.6)	13.5 (0.7)	2.1 (0.5)	12.7 (0.5)	14.8 (0.6)	3.1 (0.6)	12.8 (0.5)	14.4 (0.6)	4.5 (0.7)
Insignificant net seller	4.0 (0.3)	4.6 (0.3)	1.4 (0.3)	4.7 (0.3)	5.5 (0.3)	1.1 (0.2)	3.2 (0.2)	3.6 (0.3)	1.3 (0.4)
Insignificant net buyer	5.4 (0.3)	6.3 (0.4)	1.0 (0.2)	5.4 (0.3)	6.2 (0.3)	1.3 (0.2)	3.2 (0.2)	3.6 (0.3)	0.8 (0.2)
Autarkic, no sales, purchases reported	0.9 (0.1)	1.0 (0.1)	0.9 (0.3)	2.5 (0.2)	2.8 (0.3)	1.1 (0.3)	7.6 (0.5)	8.8 (0.5)	1.5 (0.4)

Source: 2005/06 UNHS, analysis by authors.
Sample design corrected standard errors in parentheses.

than they sell, but who actually rely on their own production for most of their food consumption. As such, the impact of rising food prices on their overall food consumption will not be as severe as for the "non-subsistence significant net buyer" households.

For our purposes here, the most important rows to examine in Table 5 are those of "significant net seller" and "non-subsistence significant net buyer". Considering the broad definition of net buyers and net sellers, the results presented for these categories likely go against the expectations of most observers. Nationally only 12 percent of Ugandan households are significant net sellers. This value only rises to 14 percent when rural households are considered alone. In contrast, 66 percent of Ugandan households are found to be significant net buyers of food who rely on the market for more than 25 percent of the value of the food they consume. In rural areas, over 60 percent of households purchase more food than they sell, by value. Most Ugandan households are quite exposed to the potential adverse effects of rising food prices.

The proportion of households that are categorized as net buyers declines with more restrictive definitions of net buyer and net seller, while the proportion of net sellers increases. However, nationally the general balance is not reversed. Even when only staple foods are considered, almost twice as many Ugandan households are found to be in the "non-subsistence significant net buyer" category than in that of "significant net seller". However, this pattern is not so

evident for rural households. Significant net sellers of staple foods are only a slightly smaller proportion of the rural population than non-subsistence significant net buyers.

While we are confident that the general pattern in the proportions of net buyers and net sellers shown in Table 5 are broadly correct, cautious use should be made of these numbers. Several factors should be borne in mind.

- The UNHS records the value of food consumed on a one-week recall basis. Agricultural sales are reported on a monthly, quarterly, or annual recall basis, depending on the commodity. The one-week recall on food consumption will provide information that is more accurate and comprehensive than would be expected with the longer recall periods used for agricultural sales. This difference in data quality will result in systematic reporting biases towards higher levels of food consumption and lower levels of food sales, with, in consequence, greater numbers of net food buyers and fewer numbers of net food sellers than may actually be the case.

- The unit we use for determining whether a household is a net buyer or seller is the monetary value of the food sold to or purchased from the market. Other standardized units of food could be used that may provide a different understanding of the significance of the market for household food security and welfare – in the next section we examine household food consumption on a calorie basis.

- The prices by which the sales of food are valued are the producer prices, while purchased foods are valued at the much higher consumer price. If consumer prices in the hungry season just before the next harvest are double or triple the producer prices received just after the harvest, a household could sell and then buy back the same amount of the same food and find themselves in the significant net buyer category of households.

- Finally, to some degree this concept of net buyers and net sellers to assess the impact of food price rises is centered on the notion that *specialized* agricultural production is the livelihood strategy pursued by most Ugandan households. This notion goes against more recent understanding of the diversity of livelihood strategies that most households pursue, most notably in rural communities (Ellis, 2000; Haggblade et al., 2007). That so many households are net buyers of food

does not necessarily imply failure in the agricultural pursuits of these households. Rather, it may reflect a range of successful non-farm activities making up the overall portfolio of livelihood strategies Ugandan households pursue.

Again, while we do not believe that consideration of these factors causes us to alter our broad perception that the general patterns of net buyers and net sellers in Uganda shown in Table 5 is correct, it also is certain that this analysis of the data does not tell the whole story.

As a group, households that fall in categories other than "non-subsistence significant net buyer" and "significant net seller" are unlikely to be strongly affected by price movements, although individual households may be significantly affected, depending on which crops they produce or foods they consume. Consequently, in developing a profile of the characteristics of net buyer and net seller households, we will use four groups, collapsing the autarkic and insignificant net seller and net buyer groups into a single group titled "Similar sales, purchases". In addition, we will only examine the broadest and most restrictive definitions of net-buyer and net-seller.

Profile of net buyers and net sellers

In order to better identify what sorts of households are net buyers and what sorts are net sellers, simple cross-tabulations are made on key household characteristics collected in the 2005/06 UNHS. These are presented in Table 6.

Table 6: Profile of net-buyers and net-sellers of food, four categories of households for two definitions, percent of households, by population group.

Net buyer/net seller definition:	Basic broad definition				Staple foods only			
Household net buyer and net seller categories :	Sig. net seller	Non-subsist-ence sig. net buyer	Subsist-ence sig. net buyer	Similar sales, purcha-ses	Sig. net seller	Non-subsist-ence sig. net buyer	Subsist-ence sig. net buyer	Similar sales, purcha-ses
All households	12.2 (0.5)	66.0 (0.8)	11.5 (0.6)	10.4 (0.4)	26.7 (0.8)	46.6 (1.0)	12.8 (0.5)	13.9 (0.6)
Poverty (based on UNHS poverty analysis)								
Poor	11.4 (0.8)	58.6 (1.4)	19.0 (1.2)	11.0 (0.8)	25.6 (1.3)	40.6 (1.5)	14.7 (0.9)	19.1 (1.2)
Urban poor	0.4 (0.4)	87.8 (2.3)	7.2 (2.3)	4.5 (1.4)	4.0 (1.3)	78.4 (3.6)	10.2 (2.0)	7.4 (2.3)
Non-poor	12.4 (0.6)	68.6 (0.9)	8.8 (0.6)	10.1 (0.5)	27.1 (0.9)	48.8 (1.2)	12.1 (0.5)	12.0 (0.7)
Per capita annual household income								
Low (< UShs 250,000/=)	10.6 (0.7)	65.6 (1.0)	13.8 (0.8)	10.0 (0.6)	26.5 (1.1)	45.8 (1.2)	13.5 (0.7)	14.1 (0.9)
Moderate	13.8 (0.8)	63.8 (1.3)	11.3 (1.0)	11.1 (0.6)	27.4 (1.1)	44.7 (1.4)	13.5 (0.8)	14.3 (0.8)
High (> UShs 750,000/=	12.2 (1.0)	71.5 (1.4)	6.9 (0.8)	9.4 (0.8)	25.6 (1.5)	51.7 (2.0)	10.0 (0.8)	12.7 (1.2)
Principal source of income								

Net buyer/net seller definition:	Basic broad definition				Staple foods only			
Household net buyer and net seller categories :	Sig. net seller	Non-subsist-ence sig. net buyer	Subsist-ence sig. net buyer	Similar sales, purcha-ses	Sig. net seller	Non-subsist-ence sig. net buyer	Subsist-ence sig. net buyer	Similar sales, purcha-ses
Subsistence farming	16.7 (0.8)	57.0 (1.0)	13.4 (0.7)	12.9 (0.6)	27.9 (1.1)	43.6 (1.4)	13.8 (0.7)	14.7 (0.9)
Commercial farming	28.7 (4.1)	50.7 (4.3)	6.6 (1.9)	14.0 (2.7)	27.5 (3.8)	44.1 (4.4)	12.9 (2.8)	15.5 (4.2)
Wage employment	7.1 (0.7)	77.5 (1.3)	8.5 (0.9)	6.9 (0.7)	25.4 (1.4)	49.4 (1.7)	11.1 (1.0)	14.1 (1.0)
Non-agricultural enterprise	6.7 (0.8)	79.1 (1.5)	6.6 (1.1)	7.6 (0.8)	26.4 (1.6)	48.6 (1.9)	12.5 (1.0)	12.5 (1.1)
Transfers	8.2 (1.6)	66.4 (3.1)	14.7 (2.4)	10.8 (1.8)	24.0 (2.5)	53.5 (3.0)	11.2 (1.8)	11.3 (1.8)
Other	4.2 (1.3)	61.4 (4.4)	27.2 (4.2)	7.2 (1.6)	24.8 (3.5)	48.7 (4.4)	13.3 (2.4)	13.2 (2.6)
Rural or urban								
Rural	14.1 (0.6)	60.5 (0.9)	13.5 (0.7)	11.9 (0.5)	31.0 (1.0)	38.6 (1.1)	14.4 (0.6)	16.0 (0.7)
Urban	2.7 (0.6)	91.9 (1.0)	2.1 (0.5)	3.2 (0.5)	4.9 (0.9)	87.0 (1.4)	4.5 (0.7)	3.5 (0.6)
Regional stratum								
Central rural	13.7 (1.2)	65.1 (2.3)	11.3 (2.1)	10.0 (0.9)	25.2 (1.9)	48.3 (3.1)	13.3 (1.1)	13.3 (1.9)
Central urban	2.2 (0.8)	94.3 (1.4)	1.4 (0.6)	2.1 (0.7)	2.8 (1.2)	93.3 (1.9)	3.0 (0.9)	0.9 (0.6)
Eastern rural	13.8 (1.1)	58.0 (1.5)	13.9 (1.0)	14.3 (1.0)	38.2 (1.8)	31.7 (1.7)	13.6 (1.1)	16.5 (1.0)
Eastern urban	2.1 (0.7)	91.5 (1.5)	1.5 (0.6)	5.0 (1.0)	6.4 (1.7)	83.4 (3.1)	5.3 (1.5)	4.9 (1.1)
Northern rural (not IDP)	10.0 (1.2)	69.0 (1.8)	9.9 (1.0)	11.2 (1.3)	29.3 (2.9)	46.3 (2.9)	11.6 (1.3)	12.7 (1.2)
Northern urban (not IDP)	2.8 (1.0)	91.7 (1.8)	2.4 (1.2)	3.1 (1.4)	7.4 (2.0)	80.4 (3.0)	5.6 (2.0)	6.6 (1.6)
Western rural	19.8 (1.5)	54.1 (1.7)	12.9 (1.0)	13.1 (1.0)	35.8 (2.0)	33.7 (1.8)	16.9 (1.1)	13.7 (1.0)
Western urban	5.8 (1.3)	83.6 (2.2)	3.7 (1.0)	6.9 (1.4)	9.5 (2.3)	73.4 (3.0)	8.7 (1.8)	8.4 (1.4)
Internally Displaced Person (IDP) camp residents	2.3 (0.9)	60.7 (3.5)	31.3 (3.3)	5.7 (1.2)	9.1 (2.0)	32.6 (3.5)	18.1 (2.0)	40.3 (4.4)
Karamoja	5.7 (2.3)	75.2 (4.9)	8.7 (4.4)	10.4 (3.1)	7.9 (3.6)	76.4 (6.1)	5.0 (2.4)	10.6 (4.4)
Household size								
Less than 4 members	10.6 (0.8)	71.5 (1.2)	9.3 (0.8)	8.5 (0.6)	26.1 (1.3)	47.1 (1.6)	12.7 (0.8)	14.1 (1.5)
4 to 7 members	12.3 (0.6)	64.6 (1.0)	11.8 (0.7)	11.3 (0.6)	26.9 (1.1)	46.9 (1.2)	12.3 (0.6)	13.8 (0.7)
8 members or more	13.8 (0.9)	62.1 (1.5)	13.6 (1.3)	10.6 (0.8)	27.0 (1.3)	45.1 (1.6)	14.0 (1.0)	13.9 (1.0)
"Dependency ratio" (ratio of non-workers (<15 yrs of >64 yrs) to household size)								
Low (< 0.4)	10.9 (0.8)	70.8 (1.2)	9.2 (0.7)	9.1 (0.7)	25.8 (1.2)	47.8 (1.5)	12.2 (0.8)	14.2 (1.1)
Moderate (0.4 - 0.6)	13.2 (0.8)	65.9 (1.2)	9.2 (0.7)	11.8 (0.8)	26.4 (1.3)	47.5 (1.5)	13.3 (0.9)	12.8 (0.9)
High (> 0.6)	12.4 (0.7)	62.3 (1.3)	15.0 (1.2)	10.3 (0.6)	27.7 (1.1)	44.8 (1.3)	13.0 (0.8)	14.5 (0.8)
Sex of household head								
Male	13.1 (0.6)	65.5 (0.9)	10.9 (0.6)	10.5 (0.5)	27.1 (0.9)	46.0 (1.1)	12.9 (0.6)	13.9 (0.6)

Net buyer/net seller definition:	Basic broad definition				Staple foods only			
Household net buyer and net seller categories :	Sig. net seller	Non-subsistence sig. net buyer	Subsistence sig. net buyer	Similar sales, purchases	Sig. net seller	Non-subsistence sig. net buyer	Subsistence sig. net buyer	Similar sales, purchases
Female	9.5 (0.7)	67.2 (1.3)	13.3 (1.0)	10.0 (0.7)	25.7 (1.3)	47.9 (1.5)	12.5 (0.8)	13.9 (1.1)
Age of household head								
Less than 25 years	9.8 (1.4)	72.8 (2.0)	8.5 (1.2)	8.9 (1.2)	26.2 (2.0)	48.7 (2.4)	11.7 (1.4)	13.3 (1.5)
25 to 45 years	11.9 (0.6)	68.4 (1.0)	9.9 (0.6)	9.9 (0.6)	27.3 (1.0)	46.7 (1.2)	11.8 (0.6)	14.1 (0.8)
46 to 64 years	12.5 (0.9)	63.1 (1.3)	13.2 (1.0)	11.2 (0.8)	25.4 (1.3)	44.7 (1.5)	15.3 (1.0)	14.6 (0.9)
65 years and above	14.5 (1.3)	55.9 (2.2)	17.7 (2.2)	11.8 (1.2)	27.2 (1.7)	48.3 (2.0)	12.6 (1.2)	11.9 (1.2)
Marital status of household head								
Monogamous married	13.1 (0.7)	65.9 (1.0)	10.6 (0.5)	10.5 (0.5)	26.5 (1.0)	46.6 (1.2)	13.1 (0.7)	13.9 (0.7)
Polygamous married	12.5 (1.1)	62.4 (1.6)	12.9 (1.5)	12.2 (1.0)	28.3 (1.5)	43.9 (1.7)	12.6 (1.0)	15.3 (1.3)
Widowed	10.2 (1.3)	70.3 (2.1)	10.7 (1.5)	8.8 (1.2)	24.9 (2.1)	48.5 (2.3)	15.4 (1.6)	11.2 (1.4)
Divorced	11.4 (1.2)	61.4 (1.8)	16.3 (1.4)	10.9 (1.0)	27.1 (1.7)	45.6 (1.9)	12.7 (1.2)	14.6 (1.4)
Never married	6.8 (1.3)	81.4 (2.1)	6.8 (1.3)	5.0 (1.1)	25.8 (2.5)	53.3 (3.0)	8.0 (1.3)	12.8 (1.9)
Max. educational attainment of HH head								
No formal education	12.5 (1.1)	63.6 (1.8)	14.1 (1.3)	9.8 (0.9)	26.3 (1.5)	46.9 (1.7)	12.9 (1.0)	14.0 (1.1)
Primary school	13.1 (0.6)	63.9 (0.9)	12.3 (0.7)	10.7 (0.5)	27.3 (1.0)	45.4 (1.2)	13.4 (0.6)	14.0 (0.8)
Secondary school	10.1 (0.9)	71.6 (1.6)	7.8 (0.8)	10.5 (0.9)	26.0 (1.6)	48.2 (1.8)	12.1 (1.0)	13.8 (1.1)
Post-secondary	7.0 (1.6)	80.0 (2.3)	5.3 (1.2)	7.7 (1.6)	24.0 (2.7)	52.9 (3.5)	9.1 (2.1)	14.0 (1.9)

Source: 2005/06 UNHS, analysis by authors.
Sample design corrected standard errors in parentheses.

Among the insights provided in the table are:

- For households whose principal income source is subsistence farming, the largest proportion is categorized as non-subsistence significant net buyers of food. Using the broad definition, an absolute majority of subsistence farming households are found in this category. While in keeping with similar research findings elsewhere in Africa, this characteristic of Ugandan farming households is not broadly recognized by political leaders and the general population.

- The non-poor are more likely than the poor to be non-subsistence net buyers, while the poor are more likely to be subsistence net buyers who rely on the market for only a limited portion of their food basket, producing much of the rest themselves.

- The principal income source category with the greatest proportion of net sellers is commercial farming.

- Smaller households and households with low dependency ratios are more likely to be net buyers.

- The proportion of non-subsistence net buyers in groups identified by the maximum education attainment of household heads rises with higher educational attainment.

These are only a selection of patterns seen in the table. Closer examination of the table may reveal other possibly valuable insights into the characteristics of net buyer and net seller households in Uganda.

Logistic models of net buyer and net seller household

In order to determine which household characteristics might be particularly significant for identifying "non-subsistence significant net buyer" and "significant net seller" households, the results of the net buyer/net seller assessment were used in a quantitative modeling exercise only for those survey households that reported any agricultural activities – about 75 percent of all households. (Non-agricultural households fall into the "non-subsistence significant net buyer" category by definition). Four models were developed: Two models for each of the two definitions of net buyer/net seller used in Table 6 – one to identify household characteristics that are significantly associated with "non-subsistence significant net buyer" households and one to identify characteristics of "significant net seller" households.

Since the dependent variables we use are binary categorical variables (0/1), we used a logistic maximum likelihood estimation method. We present the results as odds-ratios, rather than as coefficients. The odds-ratio is the chance of the dependent variable changing from 0 to 1 as a result of a one-unit positive change in the independent variable. In contrast to regression-based models where a statistically insignificant coefficient is zero, a statistically insignificant odds-ratio is one – that is, a one-to-one or even chance. Odds-ratios that are less than one represent a negative relationship between the independent and dependent variable, while odds-ratios greater than one represent a positive relationship. That is to say, if an independent variable in one of our models has a significant odds-ratio that is less than one, the household characteristic measured by that variable is a significant negative determinant of whether a household is a "non-subsistence significant net buyer" or "significant net seller"

Table 7: Logistic modeling of characteristic of net-buyers and net-sellers of food for households that reported any agricultural activities.

Variables		Mean		Basic broad definition		Staple foods only	
				Model results			
				Non-subs sig net buyer	Sig net seller	Non-subs sig net buyer	Sig net seller
Dependent variables							
nsubnbbr	Non-subsistence significant net buyer - broad (0/1)	0.615		▼			
nslbr	Significant net seller - broad (0/1)	0.121			▼		
nsubnbst	Non-subsistence significant net buyer - staples only (0/1)	0.474				▼	
nslst	Significant net seller - staples only (0/1)	0.135					▼
Independent variables				**Odds-ratios**			
lodpdnd	Dependents : HH size ratio <=0.4 (0/1)	0.258		0.997	0.812*	0.873*	1.191
hidpdnd	Dependents : HH size ratio >0.6 (0/1)	0.442		0.961	0.806**	0.977	1.105
ynghhh	HH head age <=25 years (0/1)	0.102		1.057	0.796	1.210*	0.880
oldhhh	HH head age >45 years (0/1)	0.381		0.981	0.901	1.051	0.886
hsize	Household size	5.665		0.962***	0.989	0.995	1.003
sexhead	Male household head (0/1)	0.730		0.938	0.943	0.943	0.935
primary	HH head some primary education (0/1)	0.796		0.945	1.302*	0.838**	1.119
secondry	HH head some secondary education (0/1)	0.196		1.157	1.213*	0.977	1.120
commag	Commercial agriculture (0/1)	0.026		0.789	0.907	1.227	0.847
wageemp	Wage employment (0/1)	0.165		1.628***	0.701***	0.985	1.143
nonagent	Non-agricultural enterprise (0/1)	0.160		1.913***	0.811	1.094	0.876
lopcinc	Low pc income group (<250,000/=) (0/1)	0.469		1.298***	0.842*	1.161**	0.746***
hipcinc	High pc income group (>750,000/=) (0/1)	0.137		0.745***	1.108	0.953	1.006
idp	IDP camp resident (0/1)	0.033		0.691**	0.616	1.627*	0.533*
urban	Urban residence (0/1)	0.122		2.581***	0.592***	1.024	0.910
eastern	Eastern region (0/1)	0.293		1.001	1.310**	0.821	1.288**
northern	Northern region (0/1)	0.236		1.546***	0.980	0.924	1.716***
western	Western region (0/1)	0.220		0.762**	1.240	0.741**	1.086
Constant				1.478***	0.157***	1.185	0.130***
Observations				*5488*	*5488*	*5488*	*5488*
Pseudo-R^2				*0.038*	*0.015*	*0.009*	*0.011*

*** p<0.01, ** p<0.05, * p<0.1
Source: 2005/06 UNHS, analysis by authors.

household, depending on the model. For odds-ratios greater than one, the opposite relationship applies.[7]

The results of the modeling exercise are presented in Table 7. Note first that the pseudo-R^{2}s are extremely low, indicating that the independent (explanatory) variables actually explain very little of the full variation in the categorization of these households as net buyers or net

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[7] In using binary categorical variables (0/1) as the independent variables to describe households, in order to avoid model overspecification not all categories of a descriptive variable can be used. The base case households for our model are those that are characterized by the missing categorical variables in our sets of independent variables – moderate dependency ratio, middle-aged household head, female-headed household, household head with no education, subsistence agriculture as main income source, and a rural, Central region residence. The odds-ratio for the constant in each model corresponds to this group of households.

sellers. Nevertheless, there are some significant independent variables. Secondly, the definition one uses of net buyer and net seller matters: Different patterns of significant explanatory variables for net sellers and net buyers are seen depending on whether one utilizes a definition of net buyer/net seller that considers all foods or staples only.

Briefly considering each set of explanatory variables in the model:

- Generally, demographic variables are poor predictors of a household's net seller or net buyer status. Larger agricultural households are less likely to be net buyers when all foods are considered, while this relationship is not significant for only staples.

- Educational attainment is not a strong predictor, although there is a weakly significant association between primary and secondary school attainment and being a net seller.

- As expected, those who rely on wage employment or engage in non-agricultural enterprises are very likely to be net buyers, although this association is strongest when all foods are considered, and is not so evident for staple foods alone.

- Low-income households are very likely to be net buyers of food and very likely not to be net sellers. This applies to both definitions. High-income households, when considering all foods, are much less likely to be net buyers of food than are the reference category of middle-income households.

- Urban agricultural households follow expectations of being net buyers and are unlikely to be net sellers. However, this relationship is only significant when all foods are considered. For staple foods, no significant associations between net buyer or net seller are seen for agricultural households living in urban areas.

- Finally, the regional patterns show that households in Western region are less likely to be net buyers under both definitions and Eastern region households are more likely to be net sellers compared to the base case of Central region households. Northern region households show a peculiar pattern of being significantly more likely to be net buyers of food when all foods are considered, but are significantly more likely to be net sellers of staple foods, when only those foods are considered. This could reflect higher costs of non-staples foods in the Northern region and the comparative advantage agricultural households there have for producing staples.

These logistic models offer a useful complementary analysis to the cross-tabulations presented in Table 6. The two sets of information, taken together, do provide some guidance on which households are likely to be adversely affected and which might potentially benefit from rising food prices in Uganda. However, closer analyses would be needed to identify household targeting criteria for the implementation of any efforts that aim to mitigate the effects of significant price rises for those households that are adversely affected.

Sources of calories – home production or market

The examination of net buyers and net sellers focused on the interactions of Ugandan households with the market and used as a standard measure the value of the food that was sold to or acquired from the market. An additional perspective is to look more broadly at the total food consumption reported by a household and consider what proportion of the calories consumed came from the own production of the household and what came from the market or other sources outside of the household.

The UNHS collected food consumption data from survey households on a seven-day recall basis. Households were asked about the value, quantity, and source of each food item that they reported consuming. Four sources were considered – home consumption from purchases; out of home consumption from purchases (street snacks, restaurant meals); consumption of food received in-kind, and consumption out of home production. Here the sum of calories consumed from the first three sources is compared to calories consumed from foods that were produced by household members.[8]

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[8] To convert the quantities of food reported consumed into calories, all quantities reported had to be converted into grams. As over 90 different quantity units – most of them non-standard – were used by survey households in the over 95,000 food item consumption records in the UNHS dataset, this conversion process was relatively crude and tedious, using both rough standard conversion rates and price/value information to develop gram quantities for each non-standard unit used for each food. However, upon assessment of the results, the errors in calorie consumption introduced by this quantity-to-calorie conversion process were shown to be relatively evenly distributed across the survey households. While one should be cautious in using the results for examining calorie consumption *levels*, the *proportions* of calories obtained from different sources and from different foods can be usefully assessed. This is what we do here.

Information on the calorie content and utilizable portion of the foods consumed was drawn from standard food tables – principally the United States Department of Agriculture (USDA) National Nutrient Database for Standard Reference (USDA, 2007).

Table 8: Source of calories consumed, percent of total calories reported consumed, by population group.

Household grouping	Home production	Purchased, consumed at home	Purchased, consumed elsewhere	Received In-kind, free
National	**49.2**	**43.4**	**1.4**	**6.0**
Residence				
Rural	56.1	37.0	0.8	6.1
Urban	11.4	78.8	4.7	5.1
Central rural	47.8	45.9	1.8	4.5
Central urban	5.8	83.8	6.5	3.8
Eastern rural	59.3	35.8	0.7	4.2
Eastern urban	13.1	78.4	3.5	5.0
Northern rural (not IDP)	50.4	43.2	0.5	5.9
Northern urban (not IDP)	15.9	73.5	1.3	9.4
Western rural	66.3	30.2	0.4	3.1
Western urban	27.4	66.0	2.4	4.1
Internally Displaced Person (IDP) camp residents	12.8	27.8	0.4	58.9
Karamoja	25.8	64.5	0.3	9.4
Consumption, income, and welfare				
Poor	50.9	37.7	0.3	11.0
Urban poor	18.4	71.7	0.8	9.0
Non-poor	48.7	45.0	1.7	4.6
Low pc income	48.9	43.5	0.5	7.1
Moderate pc income	55.9	37.6	1.1	5.3
High pc income	33.8	56.9	4.2	5.1
Main income source - subsistence farming	65.0	31.3	0.4	3.3
Main income source - commercial farming	62.9	33.1	0.7	3.2
Main income source - wage employment	25.4	63.9	3.1	7.5
Main income source - non agricultural enterprises	28.5	64.5	3.1	3.9
Net buyer/Net seller categories				
Broad definition - Significant Net Seller	67.4	26.8	0.6	5.2
Broad definition - Non-subsistence Significant Net Buyer	35.5	57.5	2.0	5.1
Broad definition - Subsistence Significant Net Buyer	74.0	11.3	0.2	14.5
Broad definition - Similar value sales & purchases	78.7	17.3	0.4	3.5
Staples only definition - Significant Net Seller	60.9	23.3	0.7	15.0
Staples only definition - Non-subsistence Significant Net Buyer	20.0	73.2	2.4	4.4
Staples only definition - Subsistence Significant Net Buyer	68.1	23.8	0.5	7.5
Staples only definition - Similar value sales & purchases	78.5	17.3	0.7	3.6
Demographic and educational characteristics				
Male head of household	50.5	42.9	1.5	5.0
Female head of household	44.8	45.2	1.0	9.0
Small household – 1-3 persons	31.8	54.1	2.5	11.5
Medium household – 4-7 persons	47.2	45.1	1.4	6.3
Large household – 8 persons and more	57.4	37.8	1.1	3.7
Low dependency ratio	40.7	50.5	2.6	6.2
Moderate dependency ratio	51.1	43.2	1.3	4.4
High dependency ratio	52.3	39.7	0.9	7.1
Household head - No formal education	53.2	38.6	0.8	7.5
Household head - Primary	52.7	40.1	1.1	6.1
Household head - Secondary	41.3	51.5	2.7	4.5
Household head - Post secondary	26.1	66.1	3.1	4.7

Source: 2005/06 UNHS, analysis by authors.

The results of this calorie assessment are presented in Table 8. Overall, about half of all calories consumed in Uganda come from food produced by the household. However, there is considerable variation among population groups as to where they obtain their calories. Households living in rural communities in Western region have the highest proportion of calories coming from home consumption, whereas IDP camp residents, as should be expected, are reliant on in-kind contributions of food. While the reader is left to examine the patterns in Table 8 more closely, we would highlight that, with regards to definitions of net buyers and net sellers, over two-thirds of the calories consumed by households that are categorized as "subsistence significant net buyer" come from home production. Although net buyers, these households are more likely to be concerned about shocks to their agricultural production than about shocks that emanate from food price increases.

The source of calorie data can be broken down further to consider the proportion of calories supplied by individual food groups and where those calories were obtained. Table 9 shows this information. For the eight population groups presented, the first column shows the calorie composition of the diets of households in these groups using 15 food groups. The second column under each group reports on the percentage of calories reported consumed from each food group that were obtained from the production of the household.

Table 9 provides several insights pertinent to assessing the likely impact on Ugandan households of global food price rises.

- The main staple foods that Uganda imports, rice and wheat for bread, make up a relatively small proportion of all calories consumed, 2.6 and 1.0 percent, respectively.

- The two most important food groups for calories supplied are matooke and tubers & potatoes. We observed earlier that these foods are not traded in significant quantities outside of Uganda, even to regional markets. Ugandans produce these foods for their own consumption, principally, or for local Ugandan markets.

- Maize is something of a cash crop. Less than half of the maize consumed by Ugandan households comes from own production. However, as will be discussed, it is a significant staple for several vulnerable groups – those in IDP camps, Karamoja, and the urban poor.

Table 9: Calorie composition of diet and calories consumed from food group that come from home production, by population group, percent.

Food groups	National Calorie compo-sition of diet	National From home product-ion	Rural Calorie compo-sition of diet	Rural From home product-ion	Urban Calorie compo-sition of diet	Urban From home product-ion	Poor Calorie compo-sition of diet	Poor From home product-ion	Non-poor Calorie compo-sition of diet	Non-poor From home product-ion
Matooke	18.9	76.0	19.8	82.9	14.0	22.3	9.4	77.0	21.5	75.9
Tubers, potatoes	22.6	71.2	24.4	75.2	12.7	29.4	34.6	70.6	19.4	71.5
Rice	2.6	7.6	1.9	11.2	6.2	1.6	0.8	13.6	3.1	7.2
Maize	16.1	36.2	16.3	41.0	15.0	7.5	19.7	30.8	15.1	38.0
Bread	1.0	1.1	0.6	1.9	2.8	0.1	0.1	5.0	1.2	1.0
Millet & sorghum	4.2	70.6	4.6	74.0	1.9	25.6	5.9	69.3	3.7	71.1
Meat & eggs	2.1	13.1	1.9	16.0	3.1	3.0	1.2	12.2	2.3	13.2
Fish	2.5	4.1	2.3	4.5	3.4	2.5	2.2	2.1	2.6	4.5
Dairy	2.7	44.0	2.6	52.4	3.2	7.2	0.9	52.8	3.1	43.3
Oil	3.5	2.4	3.1	3.1	5.6	0.2	2.8	1.7	3.7	2.5
Fruit & vegetables	2.5	43.2	2.5	48.1	2.3	13.9	2.7	34.8	2.4	45.7
Pulses	13.1	50.6	13.2	57.2	12.4	12.5	15.4	46.2	12.5	52.1
Sugar	4.2	0.5	3.6	0.4	7.6	0.6	2.2	0.8	4.8	0.4
Drinks	1.1	16.0	1.1	19.0	1.4	2.6	1.1	11.0	1.1	17.3
Other	3.0	7.8	2.0	9.7	8.4	5.3	1.0	14.3	3.5	7.3
	100.0	49.2	100.0	56.1	100.0	11.4	100.0	50.9	100.0	48.7

Food groups	Urban poor Calorie compo-sition of diet	Urban poor From home product-ion	IDP camp residents Calorie compo-sition of diet	IDP camp residents From home product-ion	Karamoja Calorie compo-sition of diet	Karamoja From home product-ion
Matooke	3.9	36.0	0.1	0.0	0.0	0.0
Tubers, potatoes	27.2	35.5	11.2	63.1	5.8	0.0
Rice	3.2	0.0	0.3	30.5	1.2	0.0
Maize	26.1	11.0	41.3	2.3	31.1	17.6
Bread	0.8	0.0	0.1	0.0	0.2	0.0
Millet & sorghum	3.6	48.9	4.5	16.2	23.3	50.2
Meat & eggs	0.8	9.2	0.4	3.9	4.8	19.5
Fish	2.5	4.4	1.9	1.4	0.3	0.0
Dairy	0.5	5.8	0.0	0.0	5.5	56.7
Oil	5.6	0.0	9.2	0.0	3.2	16.7
Fruit & vegetables	2.1	14.0	2.4	22.9	1.7	35.8
Pulses	17.0	11.1	24.1	13.3	11.9	20.8
Sugar	4.0	0.3	2.1	1.7	1.4	0.0
Drinks	1.1	0.5	0.7	3.7	6.0	11.8
Other	1.6	20.6	1.6	7.2	3.5	8.1
	100.0	18.4	100.0	12.8	100.0	25.8

Source: 2005/06 UNHS, analysis by authors.

The broad finding here is that, at least when one considers staple food consumption, which provides the bulk of calories for Ugandan households, rising global food prices in the short term should not be expected to directly affect the access of most Ugandan households to these foods or significantly alter consumption patterns. However, as noted earlier, it is more
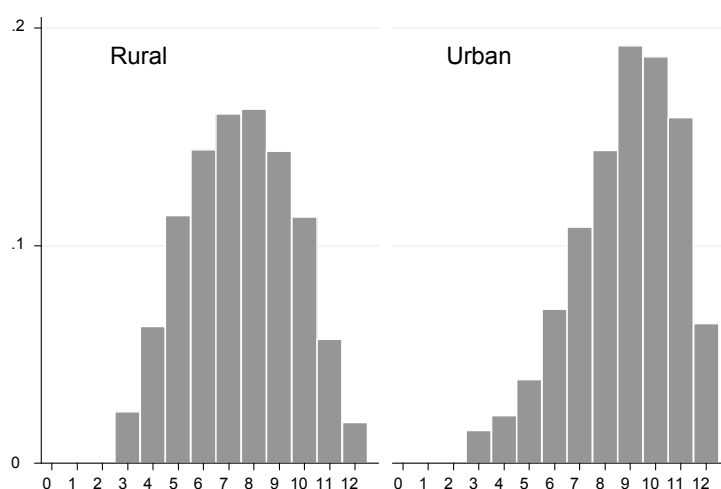
unclear what the secondary effects of sustained higher global food prices might be on the access of Ugandan households to their preferred staples.

In this regard, to extend and strengthen the earlier discussion on page 24 on the effects of a 10 percent rise in general food prices on the purchasing power of households, we can use the information in Table 9 to estimate the actual rise in the price of a basket of staple foods for an average Uganda households. A national staple food basket can be specified using the information in Table 9 on the proportion of the diet of Ugandans that is made up by the seven staples examined earlier (combining bean and groundnut as pulses). We then use the base weekly price information used to construct Figure 1 to determine the overall increase in price for this staple food basket between the first week of January 2008 and the last week of May, weighting the price increase for each staple by the proportion of consumption of that staple that comes from the market. Through these calculations, we estimate that the price of this average basket of staple foods acquired at the market increased by 12.1 percent over this five-month period. The loss that this price rise will cause to the real purchasing power of Ugandan households can be computed. We use the figure from Table 4 of 54.8 percent of cash income being used on food. Analysis of the UNHS data shows that staples make up 36.7 percent of all expenditures on food acquire at the market for consumption at home – Uganda households rely on the market more for non-staple foods. Using these figures, this 12.1 percent price increase in the staple food basket is estimated to result in a 2.4 percent loss in real purchasing power for the average Ugandan household. While this average figure hides the burden rising prices will have on households that are dependent upon the market for the staples they consume, it does provide evidence that a general response to rising staple food prices is not warranted. Any responses to rising food prices should be targeted at the household-level and should be guided by the degree to which households are reliant on the market for acquiring their staple foods.

Household dietary diversity and income

The final analysis of the UNHS data focuses on the quality of diet consumption. We examine whether there is a relationship between household diet quality and the per capita income of the household. The motivation for this analysis is to determine how significant the decline in household diet quality may be expected to be with real declines in the purchasing power of the household. If there is a positive relationship between household income and the quality of a household's diet, we should expect to see that diet quality will decline as higher food

Figure 8: Histograms of Household Dietary Diversity Scores (HDDS), rural and urban households.
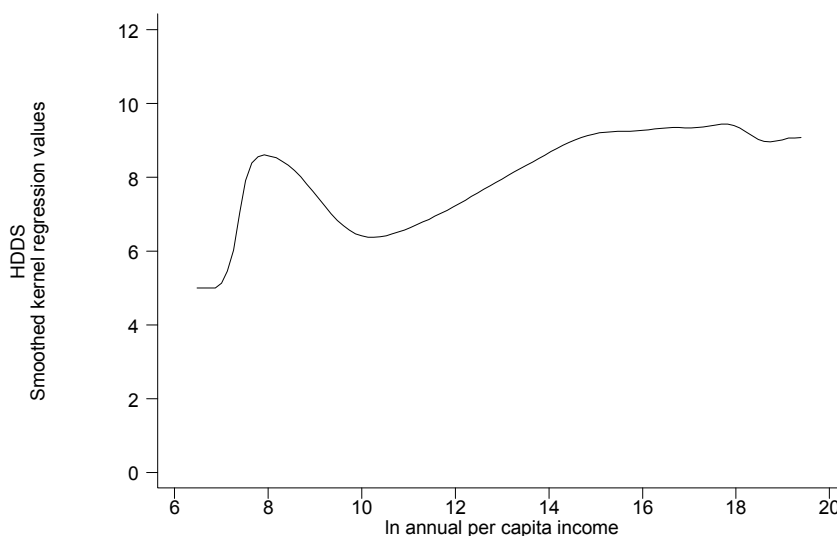
prices lead to a reduction in household purchasing power and erosion in the real value of household income.

In considering the food security of Ugandan households, households should have access to food in both sufficient quantity and quality. The calorie measure considered in the previous section is a useful indicator of the quantity of food consumed, but does not provide much information on the quality of diets of Ugandan households. As a diversified diet is an important component of household food security, a Household Dietary Diversity Score (HDDS) can be computed for each household by determining the number out of twelve different food groups the households consumed food from over the previous week (Swindale & Bilinsky 2005). While the HDDS was designed as an indicator of *household access* to food – one dimension of household food security – it is correlated with the dietary diversity of individuals in the household and, as such, the quality of their diets.

The food groups considered are cereals, roots & tubers (including matooke), vegetables, fruits, meat & poultry, eggs, fish, pulses & legumes, milk & milk products, oils & fats, sugar, and miscellaneous foods. The weighted mean HDDS for all Ugandan households is 7.67, with a median value of eight. Figure 8 presents histograms of the HDDS for rural and urban

Figure 9: Kernel regression plot of ln of household annual per capita income against HDDS.

households, respectively. The rural mean HDDS is 7.46, while for urban households it is 8.77.[9]

To assess the relationship between household income and HDDS, we first do a kernel regression plot of the relationship between the natural log of a household's per capita annual income and the HDDS for the household, shown in Figure 9.[10] This plots a moving average of HDDS against an ordered distribution of the log of income. Something of a positive relation is seen in this plot, but it is not a constant trend. The large increase in HDDS at lower income levels seen in the plot may reflects rural households who report relatively low incomes but who have access to a relatively diverse range of foods.

We then regressed income on the HDDS score for selected groups of households. Table 10 presents the results of these analyses. The coefficients on the income term in all of the

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[9] To place these HDDS scores for Uganda into context, average scores for households recently surveyed in rural Burundi and Haiti were 6.6 and 8.9, respectively, while the average for coastal households in rural Sri Lanka was 10.0 (D. Wiesmann, personal communication). However, the HDDS cannot be used for comparisons between populations that have different food consumption patterns. It does not provide a common scale for such comparisons. For instance, many Asian societies have diets in which foods from many different food groups are consumed, but in small quantities. This results in relatively high HDDS scores for many Asian households. In contrast, many African societies will rely on greater amounts of food from fewer food groups and have low HDDS scores. However, the nutritional quality of Asian diets will not necessarily be better than those of the African societies considered. The HDDS is best used for comparisons between households within a population with the same dietary patterns, as we do here for Uganda. However, even within Uganda, the association of HDDS with diet quality will not be strong, given the variation in the types of staples and pulses and in the significance of animal-source foods in the diets consumed in different zones across the country.

[10] The natural log of household per capita income is used as this variable is more normally distributed in a statistical sense than the untransformed income variable. As a result, improved statistical results are obtained and the effect of outlier cases on these results is reduced.

Table 10: Regression of ln of per capita annual household income on HDDS, by population group.

	Descriptive statistics			Regression results			
	Mean HDDS	Mean ln income		Coeffi-cient	Stnd. error	R-squared	Observa-tions
All	7.67	12.68		0.7407	0.0313	0.124	7132
Rural	7.46	12.56		0.7894	0.0331	0.119	5569
Urban	8.77	13.24		0.3518	0.0017	0.049	1563
Poor	6.30	11.86		0.2718	0.0696	0.010	1966
Urban poor	7.10	11.89		0.3422	0.0059	0.037	216
Non-poor	8.19	12.98		0.4796	0.0367	0.051	5166

Source: 2005/06 UNHS, analysis by authors.
Standard errors are corrected for the sample design.

regressions were significant and all coefficients are positive, confirming that there is a direct relationship between income and dietary diversity as shown in Figure 9. However, while significant, the coefficient values are quite small across all of the groups considered; suggesting that even large declines in household income will not lead to great reductions in the diversity of the diets of Ugandan households. Moreover, the R^2 for these regressions are quite low. There are many other factors than the level of household income that explain the diversity in the diets of Ugandan households. Nonetheless, one should expect some decline in the quality of the diets of Ugandan households with erosion in the real value of household incomes, such as might result from a significant rise in food prices.

Characteristics of Ugandan households whose principal staple food is maize

The one staple that supplies a relatively large proportion of all calories consumed by Ugandan households that principally is acquired through the market is maize – maize provides about 16 percent of all calories consumed by Ugandan households, with just under two-thirds of this maize coming from the market. Here we investigate which Ugandan households significantly rely on maize for a large proportion of their calorie consumption. Relative to other households that are not so reliant on maize, these households are exposed to greater risk to their food and nutrition security and general welfare due to rising food prices. Figures on the proportion of calories that come from maize and the portion of these calories that come from home production for various household groups is presented in Table 11.

Even without household survey analysis, two populations in Uganda can be singled out as being particularly dependent upon maize. First, households that are resident in the IDP camps that are found principally in the Northern region are dependent for a sizable portion of their diets on foods provided by the World Food Programme and its local partners. The

population in Karamoja region also is currently receiving considerable assistance from WFP. Table 11, reporting on the situation in 2005/06, shows that IDP camp residents relied on maize for 41 percent of the calories they consume, while households in Karamoja used maize to supply 31 percent of their calorie consumption.

Table 11: Maize consumption – percent of total calories reported consumed and proportion from home production, by population group.

Household grouping	Calories from maize as proportion of total calories consumed	Proportion of maize calories from home production
National	**16.1**	**36.2**
Residence		
Rural	16.3	41.0
Urban	15.0	7.5
Central rural	17.4	27.4
Central urban	13.8	2.1
Eastern rural	21.4	63.7
Eastern urban	19.9	19.6
Northern rural (not IDP)	8.4	42.5
Northern urban (not IDP)	17.2	9.2
Western rural	11.3	35.1
Western urban	11.3	10.8
Internally Displaced Person (IDP) camp residents	41.3	2.3
Karamoja	31.1	17.6
Consumption, income, and welfare		
Poor	19.7	30.8
Urban poor	26.1	11.0
Non-poor	15.1	38.0
Low pc income	18.3	33.0
Moderate pc income	15.6	43.2
High pc income	12.3	25.3
Main income source - subsistence farming	15.1	52.0
Main income source - commercial farming	13.5	54.0
Main income source - wage employment	16.5	16.3
Main income source - non agricultural enterprises	16.5	19.4
Net buyer/Net seller categories		
Broad definition - Significant Net Seller	14.7	62.2
Broad definition - Non-subsistence Significant Net Buyer	17.0	24.8
Broad definition - Subsistence Significant Net Buyer	15.2	52.0
Broad definition - Similar value sales & purchases	13.5	66.4
Staples only definition - Significant Net Seller	16.9	42.3
Staples only definition - Non-subsistence Significant Net Buyer	18.6	10.1
Staples only definition - Subsistence Significant Net Buyer	13.4	50.1
Staples only definition - Similar value sales & purchases	13.3	80.7
Demographic and educational characteristics		
Male head of household	15.9	37.5
Female head of household	16.6	31.8
Small household – 1-3 persons	15.7	24.4
Medium household – 4-7 persons	16.3	35.2
Large household – 8 persons and more	15.9	41.3
Low dependency ratio	14.7	29.5
Moderate dependency ratio	15.5	40.5

Household grouping	Calories from maize as proportion of total calories consumed	Proportion of maize calories from home production
High dependency ratio	17.3	36.1
Household head - No formal education	17.0	33.6
Household head - Primary	16.5	37.5
Household head - Secondary	15.7	37.2
Household head - Post secondary	10.0	21.2

Source: 2005/06 UNHS, analysis by authors.

The staple food distribution system of WFP is tailored to handle food most efficiently in the form of grain or flour, as opposed to roots, tubers, and matooke. Consequently, WFP in recent years has been a dominant source of demand for maize in the Uganda market. With rising prices for maize in Uganda, the costs of maize to WFP rise, reducing their ability to supply the needs of the vulnerable households they serve. WFP reports that at present most of the tenders that they have awarded in the past month to wholesale grain traders to supply maize are proving problematic and, in some cases, not being honored. This appears to be due both to lack of available stocks and to heightened expectations of wholesalers on future high maize prices – with increased demand from Kenya, prices may not come down with the maize harvest of June and July quite as much as normal (K. Wanda, personal communication).

Secondly, institutions in Uganda – boarding schools and universities, prisons, military facilities, hospitals, and so on – typically are reliant on maize, generally with beans, to feed the population residing in these institutions. (Institutional populations are not covered by the UNHS, so no analysis can be provided here on this population.) Reports in the Ugandan press noted that schools have justified recent increases in fees as being necessary to meet the higher food prices they face.

Of the population groups considered in Table 11, the only other group that appears to be particularly reliant upon maize is the urban poor. As might be expected, virtually all of this maize is acquired from the market. More broadly, maize appears to be associated with groups with lower consumption-based welfare levels. The poor in general derive almost 20 percent of their calories from maize, while the non-poor consume maize for 15 percent. Similarly, figures in Table 11 show that the significance of maize as a calorie source declines with increasing income. However, it is the urban poor who particularly consume considerable amounts of market-procured maize as a proportion of their diets. Consequently, in considering which population groups in Uganda might be particularly at risk to adverse

effects from rising generalized food prices, the urban poor should be singled out for close monitoring of their food and nutrition security status and trends in general welfare. According to the 2005/06 UNHS data, the urban poor are estimated to number just over 90,000 households nationally.

6) Current efforts in Uganda to address effects of rising global food prices

Included in the tasks under the terms of reference for this assessment was to review efforts currently underway in Uganda to address any potential adverse impact from rising global food prices. Over the course of conducting this research, it became clear that while very much is being said about price rises in Uganda, usually in an anecdotal fashion, there has been virtually no systematic examination of the issue. Studies, including this one, now are being undertaken. Workshops are to be held to develop response strategies. However, given the poor level of insights developed into the likely impact of rising global food prices on Uganda, so far very little has been done programmatically.

This is not necessarily a bad thing. While sustained, significant general rises in food prices will have deleterious effects on many households, the evidence that we have presented here calls into question whether such sustained price rises will be experienced in Uganda. Uganda is quite isolated from global food markets and prices from those markets are not transmitted very effectively to Uganda. Several of Uganda's key staples are not traded on international markets. Moreover, Uganda has an important regional comparative advantage for food production that it can continue to exploit. While we do not have a clear indication of the level of food production expected from the current cropping season in Uganda, no observers have indicated any emerging problems. While increases in demand from regional markets are and likely will continue to put upwards pressure on particular Ugandan food crops, it is uncertain whether this increased demand will significantly reduce Ugandan households' access to food from the market or bring about significant changes in household food consumption patterns.

Moreover, the actions of neighboring countries, particularly Kenya, to address their food needs through mechanisms that do not involve food produced in Uganda will also slow or reverse recent increases in food prices in the country. In early May, the government of Kenya announced that it had approved the importation of 270,000 mt of maize to meet its expected significant shortfall in maize production (RATIN, 2008). While it is not clear from

where Kenya will acquire this maize, given low global maize stocks, or when it will arrive at Mombasa, once this imported maize is made available to Kenyan consumers, a sharp decline in demand in Kenya for Ugandan maize can be expected. Ugandan consumers should then see declining or at least more stable maize prices in local markets. As such, maize prices in Uganda later in 2008 should only deviate from normal seasonal expectations to the degree that demand from Kenya remains high.

In part because food prices may move down just as quickly as they rose over past months, the perceptions of leaders in the Ugandan government are that Uganda is not at risk from rising global food prices. If their principal concern is the political risk they might face, they are quite likely right. Most Ugandan households have a wide range of options for staple food consumption. It is unlikely that the urban poor will take political action to maintain their access to maize if there are alternative staples available at much lower prices. In this, Uganda differs from many of the countries where there have been political repercussions from rising food prices: These countries typically do not have the diversity of staples seen in Uganda and many of their most important staples are imported.

However, Uganda's leaders also argue that rising food prices provide an opportunity for Ugandan producers that should be seized. Our analysis shows that it is a relatively small segment of Ugandan households that might benefit directly from rising food prices – the net sellers of food crops. Consequently, for broad economic growth and poverty reduction from this and other opportunities, consideration must be paid to how the increased income these relatively few households realize from higher food prices is invested privately to result in significant economic growth in their communities and the nation as a whole. Many of these benefits can be extended in a pro-poor fashion more widely through rural communities through the effects of the increased income from the higher prices on wages in local labor markets and on demand for non-farm goods and services (Aksoy & Isik-Dikmelik, 2008). As with any potential source of economic investment, government has a role in providing incentives for those who stand to benefit from higher food prices to invest those proceeds appropriately for increased employment and broad economic growth.

Yet, these net food sellers and the exporters who trade the crops they sell face a range of basic production, marketing, and export constraints that have been and continue to be significant challenges to Uganda's agricultural and broader economic development. Two are noted here. First, low public investment in agriculture for much of the past ten or fifteen years has resulted in continuing low levels of agricultural productivity in Uganda and often

unsustainable farming practices. While a period of higher commodity prices can enable farmers to employ more productive technologies, increased public investment in agriculture in the medium to long-term is a necessary condition for sustained growth in agricultural production. Secondly, the high transaction costs that Uganda faces as it participates in regional and international markets must continue to be addressed as a priority. Higher food prices will increase returns for Ugandan producers and exporters in the short term. However, Uganda will never be able to translate its immense agro-ecological potential into economic success until it can assure that its agricultural products can be supplied to the global market at significantly lower costs. The opportunities offered Uganda's food producers by higher food prices are unlikely to be fully realized without continual and substantial efforts to address these constraints. These are not short-term efforts. High prices or low prices, these two issues must be addressed for Uganda's continued economic growth and broad improvements in household welfare.

7) Recommendations

To conclude, we present a brief set of recommendations for action that are arranged according to the time frame involved – immediate to long-term.

- An alert, informed wait-and-see attitude is recommended in the short-term. We found no evidence to support any strong call to action by government and its international relief partners to enhance the access to food for Ugandan households outside of their current areas of concern in Karamoja and with the IDP populations in northern Uganda.

- The Ugandan government should not impose any restriction on trade in food. There are substantial benefits Ugandan producers can realize under the current situation by supplying regional markets. Many of these benefits may extend more widely through rural communities to benefit net-buyer households as well. Moreover, the food security of Uganda's neighbors is dependent to some degree on trade in food from Uganda, while Uganda's provision of part of its neighbors' food requirements is unlikely to affect significantly the food security of Ugandan households.

- Nevertheless, we cannot fully exclude the chance of substantial adverse effects on Ugandan households arising through increased regional demand for Uganda's food crops as an outgrowth of the effects of rising global food prices on Uganda's

neighbors. Consequently, monitoring of the food and nutrition security of vulnerable households must continue and possibly be expanded to include surveillance of households who are particularly dependent on the market for their access to food. Poor households in urban areas are an obvious candidate for expanded monitoring efforts. The nutritional component of such monitoring is important because of the possibility of household coping strategies in the face of rising food prices that may involve reducing expenditures on nutrient-dense foods in order to purchase energy-dense staples.

▪ The potential for increases in global food prices having substantial adverse effects on Ugandan households and the attention paid to this risk serves to highlight the lack of a comprehensive social protection system in Uganda. With such systems in place, if the risk to Ugandan households of these price rises were realized, government and communities could respond relatively efficiently. This price threat serves to highlight the continuing importance of government dealing seriously with designing sustainable social protection mechanisms for the most vulnerable in Uganda's communities.

▪ Systems for collecting, analyzing, and disseminating timely, (ideally) district-level, seasonal information on agricultural production is a pressing need for Uganda. The lack of such data is an important limitation for both food security and general agricultural policy analyses. Without a reliable sense of what recent levels of food production have been in the country, our level of confidence in our findings in this report is somewhat less than it should be. The Agricultural Census now being undertaken by UBOS and MAAIF must be adequately financed and high expectations placed on the implementers, since the results of the census will provide the foundation for the development of a sound system for estimating seasonal agricultural production.

In the existing price monitoring systems of UBOS, the commodities for which prices are collected should be expanded to cover wheat or bread, since they are among the most important of Uganda's food imports.

▪ In monitoring trade in the region, systems that have been oriented principally to monitor trade with Kenya and Tanzania now need to expand to pay equal attention to trade with Uganda's other neighbors. With increased political stability, those

countries will be both important sources of demand for Uganda's food production, as well as important competitors in supplying regional markets.

- In the medium to long term, Uganda must increase its supply of food. While we can expect a supply response next season for the commodities experiencing higher prices, sustaining this increased supply requires long-term investment. General agricultural productivity enhancements are required – fertilizer and other soil fertility management techniques, improved seed, sustainable control of pest and disease, and knowledge. Uganda is well positioned agro-ecologically to significantly enhance its farm output. Market incentives and ready access to finance for farmers will also be required. Substantial and sustained increases in public investment in agriculture are needed.

Finally, one of Uganda's key development challenges is completing the investments needed to enable it to participate on a competitive basis in global markets for both food and other commodities. While its inability to do so fully to date likely will prove to have insulated Ugandan consumers from the direct effects of higher prices for food seen in global markets presently, this short-term benefit is far outweighed by the longer term costs to the welfare of Ugandan households of the high transaction costs for Uganda's participation in global markets. The results of this analysis, when placed within the broader context of Uganda's economic development, should be seen as providing additional support to those efforts that are being made to better integrate Uganda's producers, traders, and consumers into these broader markets. There are risks with such market integration, but given the advantages in human capital and agro-ecological conditions that Uganda possesses, the potential benefits that can accrue with Uganda's engagement in such markets far exceed the potential costs.

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