ESSP RESEARCH NOTE 42 • September 2015

ETHIOPIA
Strategy Support Program

ETHIOPIAN DEVELOPMENT RESEARCH INSTITUTE
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SYNOPSIS OF ESSP WORKING PAPER 74

Synopsis: Seasonality and household diets in Ethiopia

Kalle Hirvonen, Alemayehu Seyoum Taffesse, and Ibrahim Worku

The paper revisits seasonality by assessing how the quantity and quality of diets vary across agricultural seasons in rural and urban Ethiopia. Using unique nationally representative household level data for each month over one calendar year, we document seasonal fluctuations in household diets in terms of both the quantity of calories and the number of different food groups consumed. Households in both rural and urban areas consume less calories in the lean season, but interestingly, due to changes in the composition of diets, the diet diversity score increases towards the end of the lean season.

INTRODUCTION

An emerging body of literature emphasizes the role of diet quality on various health and nutrition outcomes. Despite a growing emphasis on the importance of diet quality for human development in developing countries, little evidence exists on how diet quality changes with the agricultural seasons. In this study we assessed how the quantity of food consumed and the quality of diets varied across agricultural seasons for households in rural and urban Ethiopia. Using a unique nationally-representative data set collected from households for each month over one calendar year, we examine seasonal fluctuations in household diets both in terms of the quantity of calories consumed and the number of different food groups which the study households included in their diets.

CONTEXT

About 80 percent of the 85 million Ethiopians reside in rural areas and more than 80 percent of employed people in the country engage in agricultural activities. Ethiopian farmers rely largely on rainfed agriculture, and, therefore, agricultural production in the country takes place in seasonal cycles. The main agricultural areas of the country have two rainy seasons: *belg* and *meher*. More than 90 percent of the total crop production takes place during the *meher* season (Taffesse, Dorosh, and Gemessa 2012).

The bulk of crop sales by farm households occurs in the months of December, January, and February following the *meher* harvest. Livestock sales are more evenly scattered across the year. However, April, typically the month just after the main Orthodox fasting season, records the largest sales.

In addition to weather-cycles, religion plays a central role in shaping diets during a calendar year. The Orthodox Church has a number of fasting periods, during which time devout Orthodox Christians follow a vegan diet. For Muslims, Ramadan is the main fasting period, although only the timing of meals is affected, rather than any restrictions on their content.

DATA AND DIET MEASURES

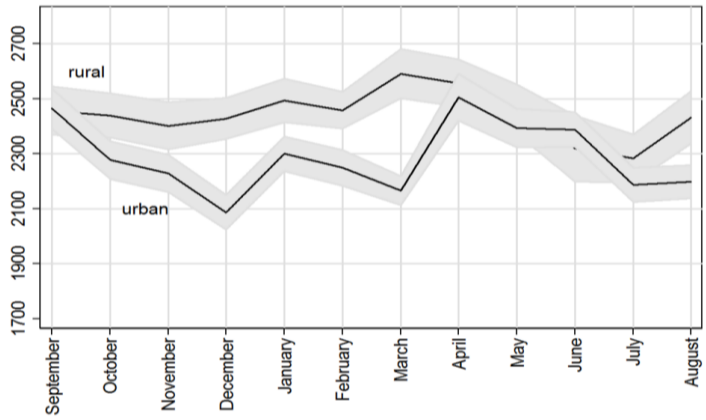
The primary data source used for the analysis is the Ethiopian Household, Consumption and Expenditure Survey (HCES). The HCES data are collected by the Ethiopian Central Statistical Agency (CSA) and serve as the official source for poverty statistics in Ethiopia (MoFED 2013). Data were collected in each month over one calendar year. Field teams of enumerators interviewed about 2,300 households in each calendar month in 864 rural and 1,104 urban enumeration areas in total, covering all 11 regions of the country.

Household diets were assessed using the extensive household consumption-expenditure module included in the survey. This module consisted of 275 food items and was used to record each sampled household's food consumption over the previous seven days. We used daily per capita calorie intake as our measure of diet quantity. This calorie consumption measure was computed using food quantities collected by the HCES and calorie conversion factors calculated by the Ethiopian Health and Nutrition Research Institute. The quality of diets was assessed using the Household Dietary Diversity Score (HDDS). In computing the HDDS, household consumption is categorized into 12 food groups: cereals; root and tubers; vegetables; fruits; meat, poultry and offal; eggs; fish and seafood; pulses, legumes and nuts; milk and milk products; oil and fats; sugar and honey; and miscellaneous foods. A household that consumed an item from each food group received the maximum score of 12. The HDDS score is designed so that a higher dietary diversity score implies a household diet with more diversity in terms of foods consumed and, by extension, in terms of macro- and micronutrients.

SEASONAL CALORIE CONSUMPTION

In line with the findings of Berhane et al. (2012) and the Central Statistical Agency (2012), rural households are seen to enjoy better diets in terms of calories consumed (Figure 1).

Figure 1 – Seasonal patterns in mean daily per capita calorie intake, by rural and urban



Source: HCE 2010/11 data from CSA.

Notes: The vertical axis measures daily per capita calorie consumption of households. Calorie intakes are measured in kilocalories. The solid line gives the mean for each calendar month. The grey areas represent 95% confidence intervals.

The mean daily calorie consumption for rural households is 2,444 kilocalories per capita, whereas urban households consume, on average, 2,287 kilocalories per capita. This difference in average calorie consumption likely reflects higher average calorie requirements in rural areas, partly due to the demands of more physical labor (Popkin 1999). More expensive sources of calories in urban areas may also play a role in these different patterns (Worku et al. 2015).

Rural households maintain a similar level of calorie consumption throughout the year, except for during the lean season (June-July) when calorie intakes drop sharply. In June and July, average daily per capita calorie intake is 10 percent lower than in the post-harvest period. Average calorie intake for the urban sample showed more volatility and seemed to be more affected by the Orthodox fasting events in December and March.

DIET QUALITY AND CONTENT

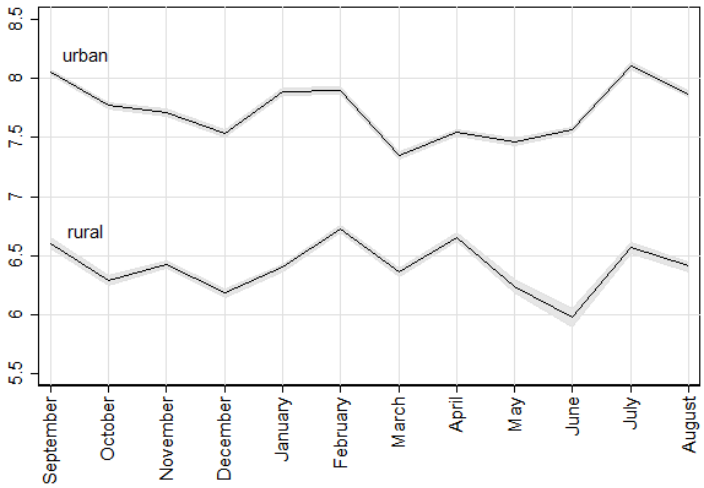
The number of food groups from which food is consumed varies across the calendar year (Figure 2), as does diet content. Urban households consume a more diverse diet than their rural counterparts. For urban households, the mean number of food groups from which food is consumed is 7.7 across the 12 months, while the corresponding figure for rural households is 6.4 out of the maximum of 12 food groups. For both rural and urban households, the two main fasting months of December and March induce a drop in the dietary diversity score. For rural households, dietary diversity is lowest at the beginning of the lean season in June, but urban households' diets seem less affected by the scarcity of food at this time. Urban households' HDDS seems less affected by the scarcity of food in the lean season. In fact, the diet diversity score is the highest in July when the urban household HDDS is 5.2 percent above the monthly mean value.

We also assessed seasonality in household calorie sources. Cereals are the main source of calories for both rural and urban households. On average, about 60 percent of the calories consumed by households come from cereals, with little difference between urban and rural households. However, there is considerable seasonal variation in the calorie sources in rural areas, less so in urban areas. Roots and tubers are the second-most important source for calories for rural households (15-20 percent), less so for urban households. Only between 2 and 3 percent of calorie intake in the full sample comes from animal source foods (meat, poultry, fish, and milk and milk products), with a significant decline is the consumption of animal source foods during the main Orthodox fasting months. Fruits and vegetables are an unimportant source of calories, especially in rural areas.

CONCLUSIONS AND POLICY IMPLICATIONS

The paper provides evidence that the quantity and quality of the food consumed by Ethiopian households remain subject to significant intra-annual variation. Agricultural production in most areas

Figure 2 – Seasonal patterns in mean household dietary diversity score, by rural and urban



Source: HCE 2010/11 data from CSA.

Notes: The vertical axis measures the number of food groups consumed by households. The solid line gives the mean for each calendar month and the grey areas represent 95% confidence intervals.

of the country is based on only one rain-fed agricultural season. Together with inadequately integrated food markets, this renders large parts of the country vulnerable to the seasonality of the local agricultural production. Policies that promote the expansion of irrigation, so that food can be produced during off-seasons, and improvements in market access are likely to increase the quantities of food produced and also enable households – and food markets – to be less dependent on food produced from the main agricultural season alone.

We found in this study that the composition of diets varies across the seasons. The dietary diversity score is relatively high at the height of the lean season – a period characterized by lowest calorie intakes in rural areas. Previous literature has considered dietary diversity as a good indicator of food security (Hoddinott and Yohannes 2002; Swindale and Bilinsky 2006). This decoupling of the diet quantity and diversity measures observed in the lean season suggests that the seasonal validity of this indicator cannot be taken for granted. Indeed, at least in Ethiopia and other similar contexts, researchers should, as a matter of routine, measure food security through different indicators, not only through the dietary diversity score.

REFERENCES

Refer to **ESSP Working Paper 74** for a full list of references used in this study.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
2033 K Street, NW | Washington, DC 20006-1002 USA
T: +1.202.862.5600 | F: +1.202.457.4439
Skype: ifprihomeoffice | ifpri@cgiar.org | www.ifpri.org

IFPRI–ESSP ADDIS ABABA
P.O. Box 5689, Addis Ababa, Ethiopia
T: +251.11.617.2000 | F: +251.11.646.2318
mahlet.mekuria@cgiar.org | http://essp.ifpri.info

ETHIOPIAN DEVELOPMENT RESEARCH INSTITUTE
P.O. Box 2479, Addis Ababa, Ethiopia
T: +251.11.550.6066; +251.11.553.8633 | F: +251.11.550.5588
info@edri-eth.org | www.edri-eth.org

The Ethiopia Strategy Support Program (ESSP) is financially supported by the United States Agency for International Development (USAID) and the Department for International Development (DFID) of the government of the United Kingdom and is undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) led by the International Food Policy Research Institute (IFPRI). This publication has been prepared as an output of ESSP and has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, the Ethiopian Development Research Institute, USAID, DFID, PIM, or CGIAR.

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