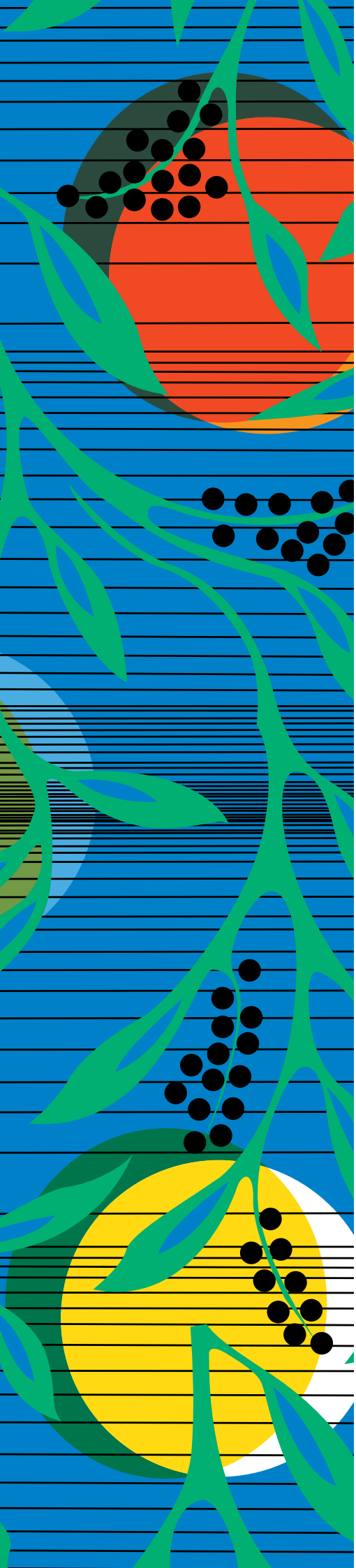

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WEST AFRICAN PAPERS

September 2017 **No. 08**

SAHEL AND WEST AFRICA Club Secretariat

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BETTER POLICIES FOR BETTER LIVES

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THE COST OF HIGH FOOD PRICES IN WEST AFRICA

THOMAS ALLEN
Sahel and West Africa Club Secretariat/OECD

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OECD BETTER POLICIES FOR BETTER LIVES

WEST AFRICAN PAPERS

The West African Papers series explores African socio-economic, political and security dynamics from a regional and multidisciplinary perspective. It seeks to stimulate discussion and gather information to better anticipate the changes that will shape future policies. The series is designed for a wide audience of specialists, development practitioners, decision makers and the informed public. Papers are available in English and/or French, and summaries are available in both languages. Initiated by the Sahel and West Africa Club (SWAC) to highlight and promote West African issues, the work presented is prepared by its Secretariat, Members and partners, other OECD departments, related international organisations, associated experts and researchers.

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Author contact: thomas.allen@oecd.org

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ABSTRACT

West African households were particularly affected by the food price crisis of 2007-08. As these households depend on markets for two-thirds of their food supplies, prices have become a key determinant of access to food. However, food prices are 30-40% higher in sub-Saharan Africa than in the rest of the world at comparable levels of per capita income. These price levels have a negative impact on the purchasing power of households and are a major factor of food and nutrition insecurity. Price monitoring systems need to be updated and strengthened. Increasing productivity, promoting regional trade and supporting food value chain development are three of the policy options available to decision-makers to drive down food prices sustainably.

Key words: food system, prices, food and nutrition security, regional trade, competitiveness

Codes JEL : Q11, Q13, Q18, F15, O11

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TABLE OF CONTENTS

EXECUTIVE SUMMARY 5

WHY DO FOOD PRICE LEVELS MATTER? 6

More net food buyers 6

Increasing market tensions 7

A critical determinant of competitiveness 7

EXPENSIVE ACCESS TO FOOD 9

How expensive? An international comparison 9

Which countries are more expensive? A regional perspective 12

Which products are more expensive? 13

POLICY IMPLICATIONS AND FOOD SECURITY 17

Monitoring food prices and affordability 17

Focusing on the productivity-price nexus 18

Supporting emerging value chains 19

Facilitating regional trade along new corridors 20

NOTES 22

REFERENCES 24

ANNEX: ECONOMETRIC ANALYSIS OF FOOD PRICE LEVELS IN SUB-SAHARAN AFRICA .. 25

EXECUTIVE SUMMARY

The 2007-08 food price crisis attracted serious policy attention following the political and economic turmoil and social unrest which took place in many countries and regions across the world. Poor urban households in West Africa were particularly affected during the price hike. Unable to afford food, people in cities such as Dakar and Abidjan vocally demonstrated their grievances. In a relatively short period of time, the social consequences resulting from dramatic changes in the price of food became very evident.

Price is an important indicator of market functioning and a key factor in determining a household's access to food. As the region urbanises, a growing number of West African households are more dependent on markets to meet their food needs and stand to lose from high food prices. Financial access to food has become a key factor in explaining food insecurity in the region.

Food prices in sub-Saharan Africa are 30 to 40% higher than in the rest of the world at comparable levels of per capita income. Higher food prices have a negative impact on purchasing power and result in a welfare loss for households. For example, a comparison with India reveals that the average West African household cannot afford the Indian food diet if purchased at West African prices. Furthermore, food is more expensive than non-food products in West Africa. These relative food prices provide allocation signals for households that can have important detrimental effects on food and nutrition security.

So, what should policy-makers do?

First, update and strengthen price monitoring systems to account for changes in dietary patterns and effectively track food affordability. There is a lack of systematic coverage of non-cereal commodities in many countries – more than three-quarters of the price series reported in existing monitoring systems focus on cereals – which prevents comprehensive monitoring of consumer food prices and food affordability.

Second, ensure that policies reflect changes in dietary patterns. There is a clear hierarchy of prices across all countries in the region in which dairy and fat/oil products are always the most expensive foods, and fish, cereals, fruits and vegetables, the least expensive. Processed foods are more expensive in absolute terms than in the United States for many West African countries, yet they are increasingly in demand. Cereals remain an important contributor to the overall household food budget, but focusing on cereal prices alone is no longer an adequate strategy to ease households' budget constraints. In some countries, paying more attention to other value chains, such as fruits and vegetables or processed foods, could lead to greater impact on food and nutritional security.

Third, develop the regional food market and unlock the intraregional trade potential. The high food price differential across the region – from -28% in Mauritania to +14% in Ghana compared to the regional average – reflects the inefficiencies of the regional food market. While regional trade does take place, its potential is far from captured given the high transaction costs of intra-regional flows due to poor transport and communication infrastructures, fragmented regional markets and unpredictable trade policies. A comprehensive trade corridor approach could provide the framework to overcome investment and institutional challenges and to facilitate trade in the region.

Fourth, increase productivity. Long-term food supply will be determined by the amount of resources available for production as well as the productivity of these resources. Raising productivity will have substantial impacts on prices, farmers' incomes and food affordability. More – and better – investments in the agro-food sector are increasingly required to respond to new and growing demand. This will happen if the business case for investing in increased productivity in the agro-food sector can be effectively demonstrated. Both public and private sector stakeholders need to be involved in the process.

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WHY DO FOOD PRICE LEVELS MATTER?

More net food buyers

The share of the urban population reached 42% in 2010 (Moriconi-Ebrard et al., 2016). As a consequence, today, more West African households are dependent on non-agricultural activities for their living. This includes most urban households, but it also comprises many living in rural areas where an estimated 25% of households are primarily engaged in non-agricultural activities (OECD, 2013). Economic diversification outside agriculture has changed how and from where households get their food. A growing number and share of West Africans rely on markets for their food supply and have become net food buyers.[1] Overall, markets now provide at least two-thirds of household food supply in West Africa (OECD, 2013). These structural changes require rethinking the impact and role of food prices.

As the majority of **West Africans are net buyers of food, the welfare outcomes of high food prices are changing**. Prices have mixed effects on the welfare of households. On the one hand, higher food prices mean improved incomes for producers, whilst on the other hand, they translate into higher food costs for consumers. The overall net effect depends on the structure of the economy. In predominantly agricultural economies, the majority of households are better off with higher food prices. However, with a majority of net food buyers, the balance of benefits between producers and consumers and the net impact on the whole economy has changed.

As markets are expanding, prices become a key determinant of households' access to food, and thus of food security. Food security is conceptually broken down into four components – availability, access, utilisation and stability – each capturing distinct, but overlapping dimensions. In subsistence economies, supply side drivers are the main factors in explaining food security outcomes. In this context, access to food is strongly dependent on the availability of food within the household or community, and shocks to agricultural production (drought, floods, pests and diseases) directly impact access. On the contrary, access to food for households relying on markets depends primarily on their ability to purchase food. A household's purchasing power is a function of prices.

Furthermore, given the high expenditure share spent on food, West African households are highly sensitive to prices. Food[2] represents on average 55% of a household's total expenditure, with differences between rural and urban areas. In urban areas, where higher densities of poor people are observed, affordability[3] is a serious problem. Constrained to pay for basic products and services that tend to be cheaper or free in rural areas, such as housing and water, urban dwellers incur extra costs that represent an additional strain on already limited budgets, especially for the poorest households. Food prices also tend to be higher in urban areas compared to rural areas, in particular for unprocessed foods. In West Africa, poor urban households spend USD 347 per capita per year on food compared to USD 297 per capita per year for poor rural households (Figure 1). This 17% differential could be due to a difference in prices.[4] In other words, poor urban households don't necessarily consume more food than their poor rural counterparts; they just pay more per consumption unit. As a result, any price increase reduces the capacity of these poor households to meet their food needs, both in rural and urban areas; in particular as caloric intakes are already below or barely above the minimum requirements for many of them.

Given the strong reliance on food markets, and the subsequent exposure and sensitivity to food prices, **access to food and food prices in particular have become key factors in explaining food insecurity outcomes**. Food availability remains a very important issue given the expected rate of demographic growth.[5] Yet, affordability highlights the diversity and complexity reached by the West African food system. Understanding price formation, transmission and impacts on accessibility are crucial to identifying new challenges for food security.

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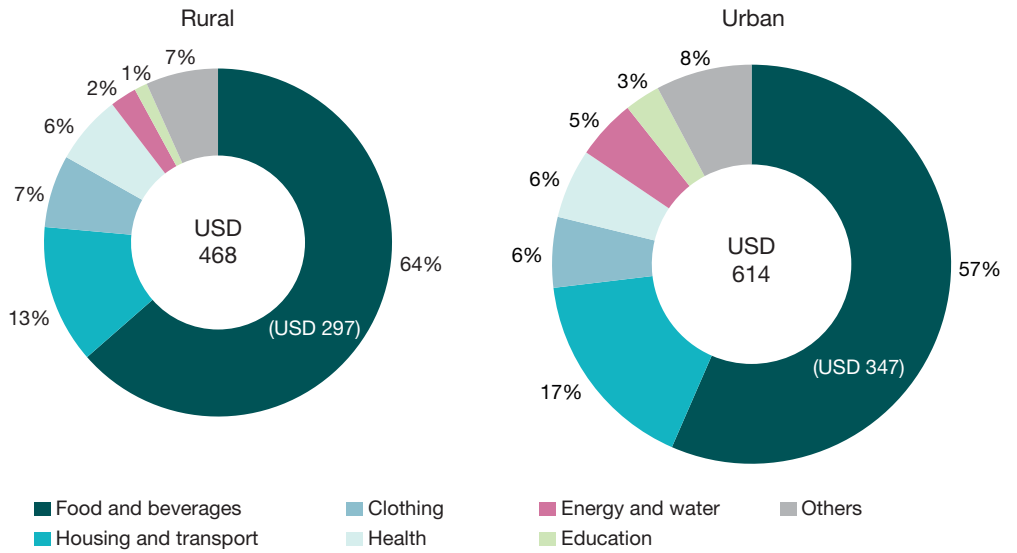
Figure 1
Urban-rural consumption structure: Lowest income group (2010)



Sources: GCD/World Bank, 2015 and author's calculations
Note: Lowest income group = less than USD 1087/capita/year [USD 2.97/capita/day].

Increasing market tensions

Driven by population growth, urbanisation and income growth, food demand has multiplied by six over the past 65 years (from about 62 trillion kcal in 1960 to 362 trillion kcal in 2015[6]). Consumption patterns have also considerably transformed. Consumers are increasingly looking for foods that are convenient to buy, prepare and consume. Consumption of processed foods is increasing rapidly, as is that of fruits, vegetables, meat and fish. Thirty-nine percent of all food consumed in West Africa is processed. These changes in consumption patterns are not restricted to cities; the rate is only slightly lower in rural (36%) than urban areas (41%) (Allen and Heinrigs, 2016). **Changes in the volume and structure of demand is affecting market conditions and impacting food prices**.

Food price dynamics are influenced by the confluence of a number of short- and long-term factors. At the global level, long-term food prices have continually declined with episodic or localised price spikes (Figure 2). In particular, technology improvements and trade have allowed global supply to outpace demand for most of the post-war period.

In West Africa, domestic production has proven able to meet a large share of the growth in food demand. Food imports represent a limited, although increasing, share of demand at 7% of the monetary value of food consumption in 2010 (Allen and Heinrigs, 2016). Still, growth in demand outpaced growth in local supply and regional food prices have been higher than historical averages coupled with more short-term volatility (Figure 2). On the demand side, price inelasticity of food demand[7] further aggravates upward price dynamics with small excesses in demand over supply causing more than proportional price increases. In the global context of long-term downward price trends, current market tensions in West Africa are deteriorating product competitiveness, potentially hindering emerging opportunities in the food economy.

A critical determinant of competitiveness

The food economy – encompassing all activities involved in producing food, from production to processing, transport and distribution – is the region's largest private sector. It was worth USD 178 billion in 2010, or 36% of the regional GDP (Allen and Heinrigs, 2016). The upstream (inputs, seeds) and downstream (processing, retail) activities of agriculture along food value chains already account for 40% of the value creation of the sector, and

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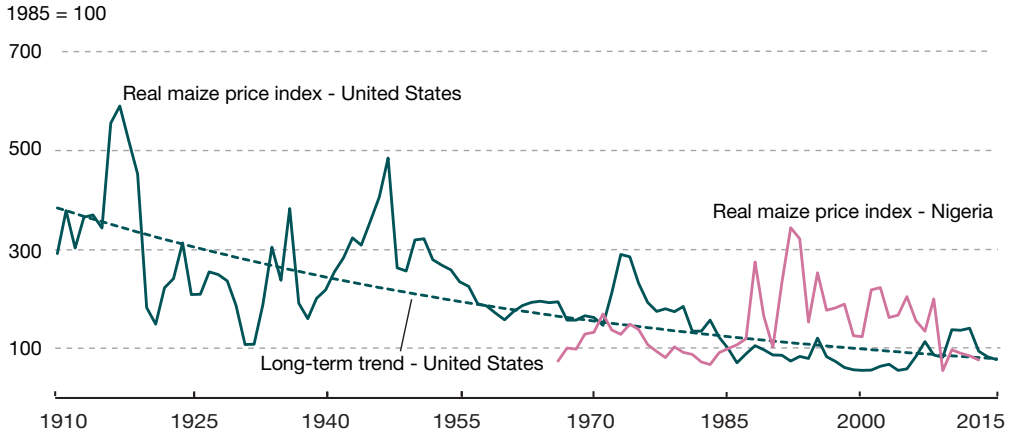
will continue to expand as demand evolves. Current trends indicate that demand for processed and/or high value-added foods will grow fastest (Staatz and Hollinger, 2016). **The development of these activities and products will also depend on the regional food economy's competitiveness**.

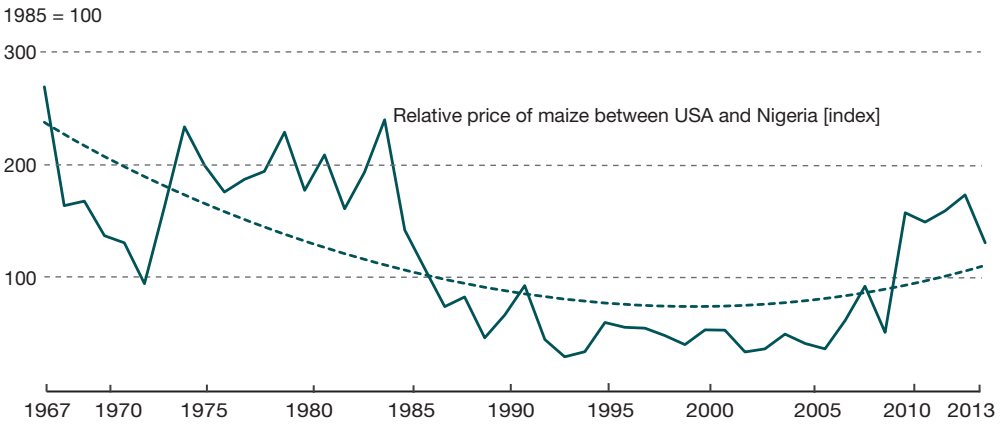
Figure 2
Long-term food price trends: Maize in the United States and Nigeria



Source: OECD-FAO, 2015; FAOSTAT, 2016; World Bank, 2016 and author's calculations

Prices are an essential element of competitiveness. Poor price competitiveness limits a country's capacity to sell its products abroad, but also hampers its ability to develop and compete on its domestic markets. Although non-price determinants, such as quality, also contribute to competitiveness, commodity goods and raw materials mostly compete on prices. The relative price of maize between the United States and Nigeria[8] provides an indication of the price competitiveness of West African agricultural products. The United States-Nigeria price ratio of maize decreased since the late 1960's, mirroring the continuous fall of agricultural prices on international markets (Figure 3). However, this trend has reversed since the 2008 crisis, and in particular following the declining value of the Naira relative to the USD.

Figure 3
The relative price of maize between the United States and Nigeria



Source: OECD-FAO, 2015; FAOSTAT, 2016; World Bank, 2016; and author's calculations

Besides increasing competitiveness in raw food products, such as rice, the region also needs to develop its competitiveness in more sophisticated and higher value products, such as processed foods and dairy products, to maintain and capture market shares in the high growth and high value added segments of the food value chains. The prices of these food products are increasingly influenced by a series of activities taking place along the value chain, from farming and breeding to processing and transportation. Many food value chains remain however plagued by poor co-ordination and limited trust among

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actors, exacerbated by underdeveloped marketing and transport infrastructure, and erratic electricity supplies (Staatz and Hollinger, 2016). Tackling the price competitiveness issue of West African food products will require addressing constraints and leveraging opportunities at every stage of the value chain.

Finally, it has to be noted that food prices play an important role in determining West Africa's competitiveness in non-agricultural activities, with high food prices driving up wage rates and undermining competitiveness in non-agricultural activities.

EXPENSIVE ACCESS TO FOOD

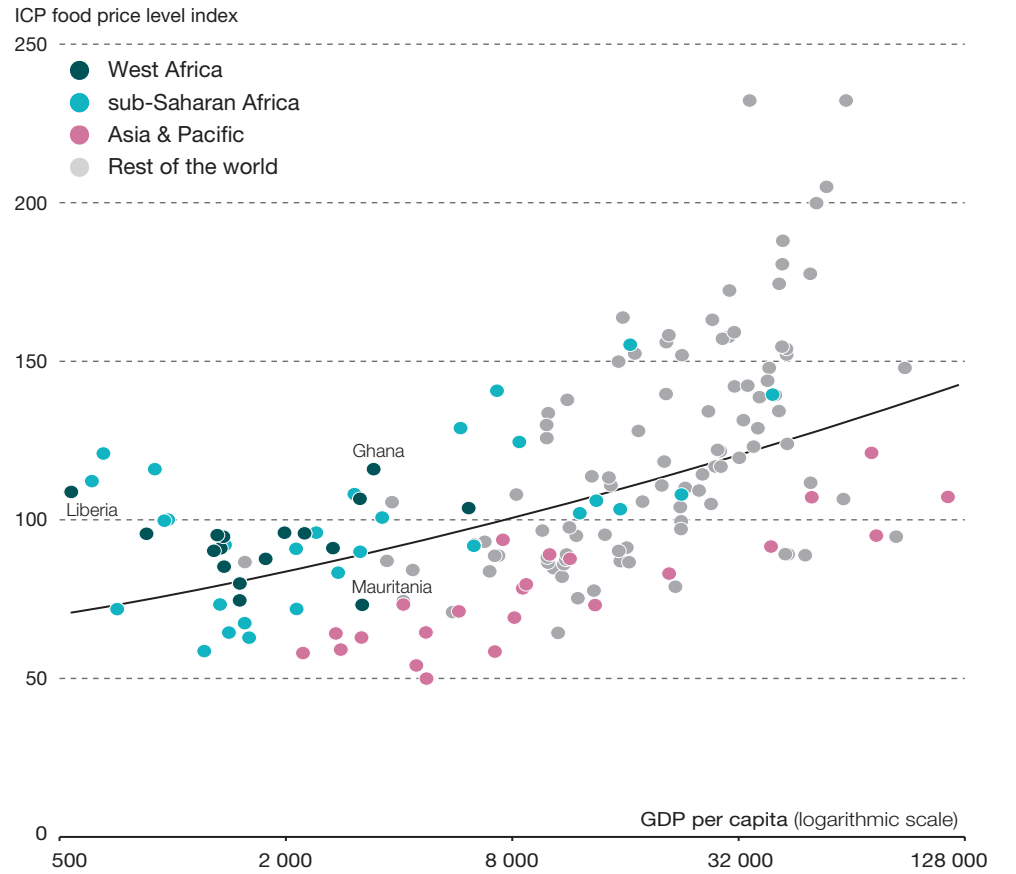
How expensive? An international comparison

A costly Africa

Food prices vary greatly across countries. Prices, and food prices in particular, tend to be lower in poorer countries. Empirical evidence suggests that there is a strong positive relationship between price levels and GDP per capita, known as the Balassa-Samuelson relationship or Penn effect. The overall price level increases as a country grows richer. The explanation for this is that productivity growth in the tradeable sector – activities whose outputs are traded internationally – exceeds that in the non-tradable sector. Productivity gains in the tradable sector then lead to higher wages that translate into higher relative prices of non-tradeables.

When it comes to food, price levels[9] also increase with GDP per capita (Figure 4). Plotting the relationship between the two variables shows that the majority of African countries are above the fitted line, indicating a higher level of food prices relative to other countries

Figure 4
Relationship between food prices and GDP per capita (2011)



Sources: ICP, 2011/World Bank; and author's calculations

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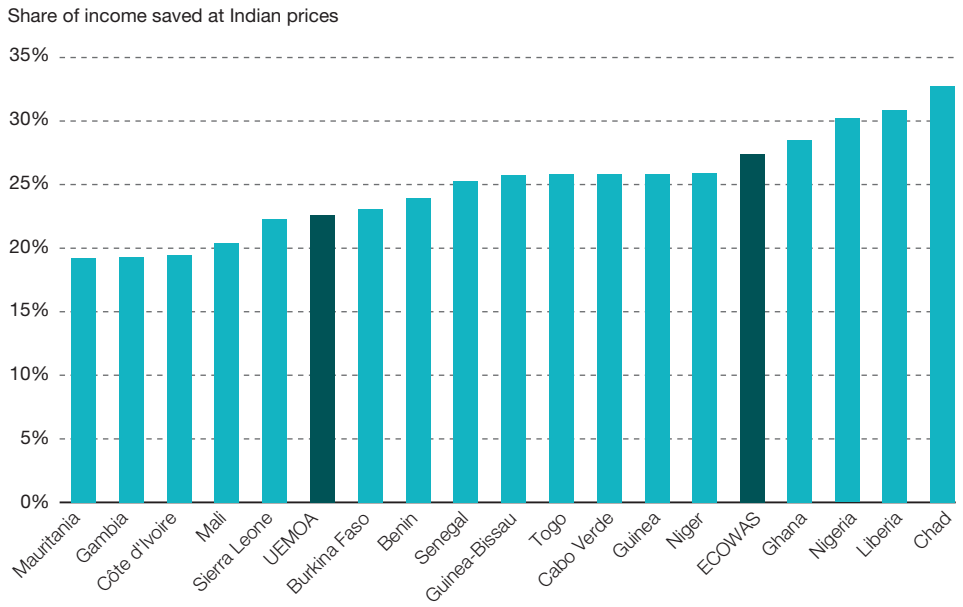
at a similar level of GDP per capita. Using the 2011 ICP data and controlling for income differences across countries, it is estimated in this paper that **food prices in sub-Saharan Africa are 30 to 40% more expensive than in the rest of the world at comparable levels of GDP per capita**.[10] West African countries appear within the overall group of sub-Saharan countries.

To show the impact of high food prices on purchasing power, India is used as a comparator country. Although very different in terms of population size, India (1.2 billion) and West Africa (370 million) share similar levels of GDP per capita (around USD 1 200). The price of an average food basket is calculated for each country at Indian prices (keeping quantities consumed constant but using Indian prices[11]) to provide an indication of the degree of household welfare loss that result from price differences between India and West Africa. Prices for food in West Africa are 50% to 130% above those in India. Depending on the country, households would save between 19 and 33% of their income if they bought their food at Indian prices (Figure 5). In countries like Chad, Liberia and Nigeria, household savings would be around 30%. This purely theoretical comparison doesn't control for the substantial substitution effects and changes in dietary patterns that would occur with lower prices.

Figure 5
West African food baskets at Indian prices: Share of income saved (2011)



Sources: ICP 2011/World Bank, 2015; GCD/World Bank, 2015; and author's calculations

Food is particularly expensive compared to non-food products

High food price levels (relative to the rest of the world) do not necessarily imply a less efficient food system; they may also reflect overall higher costs in the economy. To see if food is particularly expensive, food prices are compared to the prices of non-food products. Deflated by the overall price level, which includes non-food goods, relative food prices[12] – also called "real" prices – turn out to be higher in poorer countries (Figure 6). Lower relative prices of food compared to non-food products in richer countries is often reported in the literature (Lagakos and Waugh, 2013; Gelb and Diofasi, 2015; Hassan, 2016). The prices of non-food goods increase faster than food prices as a country develops; this takes place in parallel with the process of structural transformation that sees a reallocation of labour and capital towards the non-agricultural sectors of the economy.

In West Africa, food is between 50 to 130% above the overall price level index in 2011, the year of the ICP survey, indicating that **food is more expensive in real terms compared to non-food products** (Figure 7). These high relative food prices point to a less efficient

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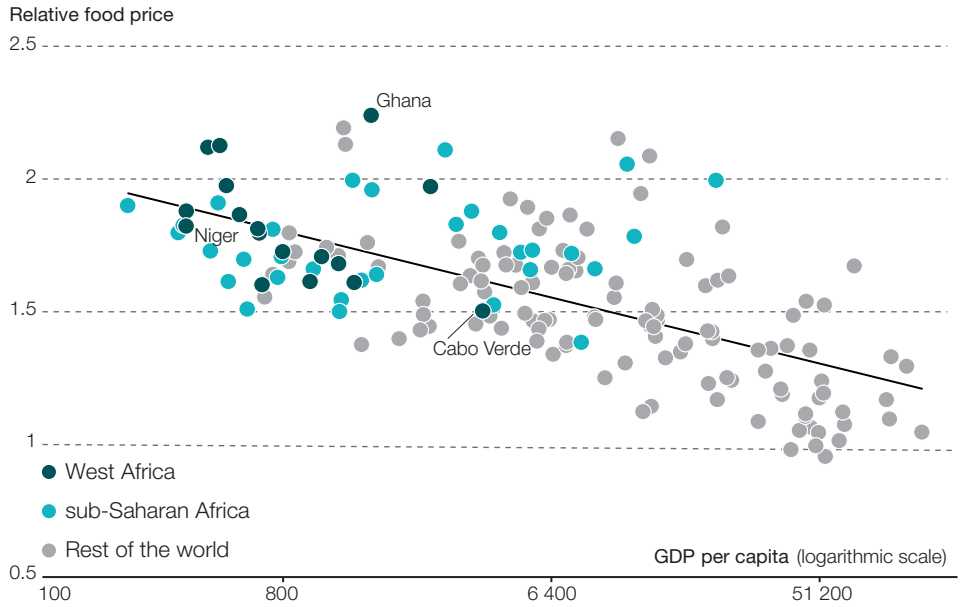
food system in West Africa. Relative prices provide information about relative scarcities and productivity differentials. The general principle suggests that the price of scarce goods rises until equilibrium is reached between supply and demand. Scarcity ultimately relates to the availability and use of productive resources. In a context of increasing demand, the main way to reduce scarcity is through productivity. Lower productivity in low-income countries contributes to higher scarcity of food goods and higher relative food prices.

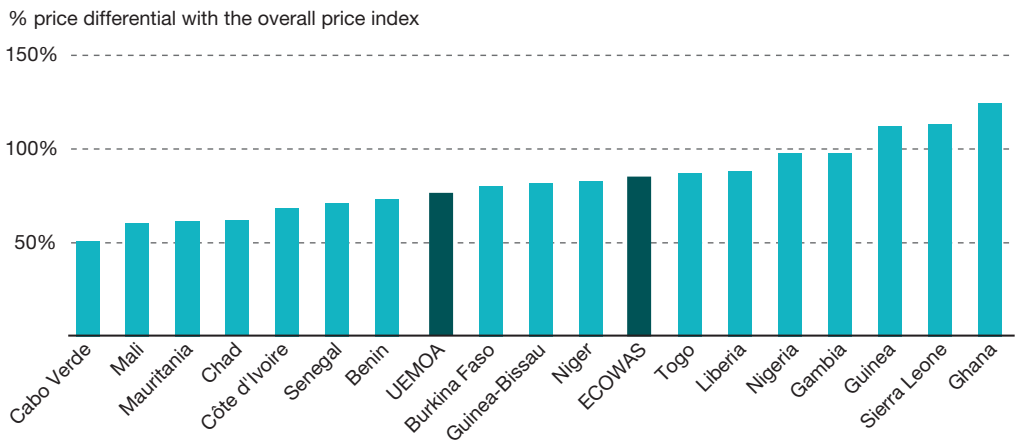
Figure 6
Relative food prices are higher in poorer countries (2011)



Sources: ICP 2011/World Bank, 2015 and author's calculations

In short, West African food products are not only expensive relative to developing countries in other regions,[13] but they are expensive relative to non-food goods. Relative food prices are signals that impact households' budget allocation. For instance, changes in relative prices alter households' purchasing choices. People consume more of what has become relatively less expensive and less of what has become relatively more expensive. These price differentials between food and non-food goods constrain households into making decisions that can be detrimental to food and nutrition security. On the contrary, reductions in relative food prices are likely to have strong beneficial effects on the poorest groups, with the highest price elasticities of food demand.

Figure 7
Price differential with the overall price index (2011)



Sources: ICP, 2011/World Bank, 2015 and author's calculations

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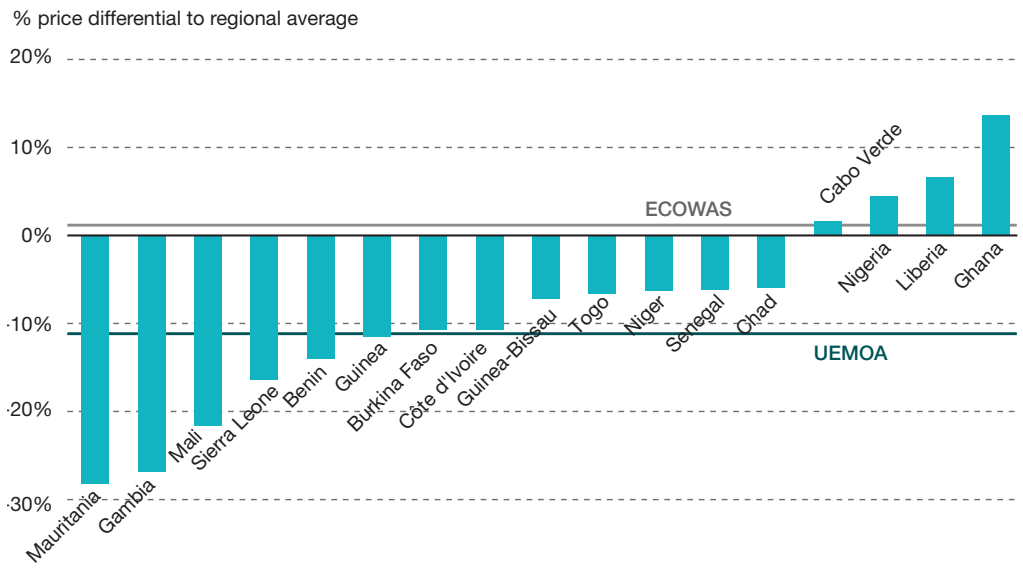
Which countries are more expensive? A regional perspective

The 2011 ICP data allows for the comparison of food prices levels across West African countries. Figure 8 shows this information for the 17 West African countries, where the level of food prices in each country is expressed relative to the West African average.[14] With the exception of Liberia, **the most expensive food prices are found in the region's richest economies**, i.e. Cabo Verde, Ghana and Nigeria. On the contrary, the countries with the least expensive food are amongst the poorest countries, with the exception of Mauritania. It is interesting to note that food prices are on average significantly lower in UEMOA countries, while Ghana, Liberia and Nigeria, all non-UEMOA countries, are pushing prices up. However, the lowest food prices are observed in two non-UEMOA countries (Gambia and Mauritania).

Figure 8
Price differential to the regional average (2011)



Sources: ICP, 2011/World Bank, 2015 and author's calculations

Affordability matters

As highlighted above, low food prices do not necessarily imply that food is more affordable. Food affordability can be defined as the cost of a household's diet relative to its income. In order to truly measure food affordability, price analyses have to take into consideration households' financial capacities. The ratio of food price and income[15] provides a different picture of the region and a different ranking of the countries (Figure 9). While a country like Ghana can compensate for its higher food prices by higher income level, in countries such as **Guinea, Liberia and Niger, food affordability is a most worrying issue**. Food prices in Guinea relative to the regional average are not low enough – or income high enough – to enable Guineans to have a similar level of access to food compared to its neighbours. Overall, this suggests that food affordability is of particular concern for UEMOA countries, even though lower food prices are reported on average in these countries. The two powerhouses of UEMOA – Côte d'Ivoire and Senegal – are nevertheless well placed, performing better than Ghana and Nigeria. Yet, the wide price/income differentials across the region already show the need and importance of closely monitoring food affordability and developing appropriate metrics.

Price differentials and the need for greater regional trade facilitation

The relatively high food price differentials across the region – from -28% in Mauritania to +14% in Ghana (Figure 8) – speak to the relative inefficiency of the regional food market. Mapping observed price differentials between countries shows that price differentials are lower between UEMOA countries, which share the same currency, than between UEMOA

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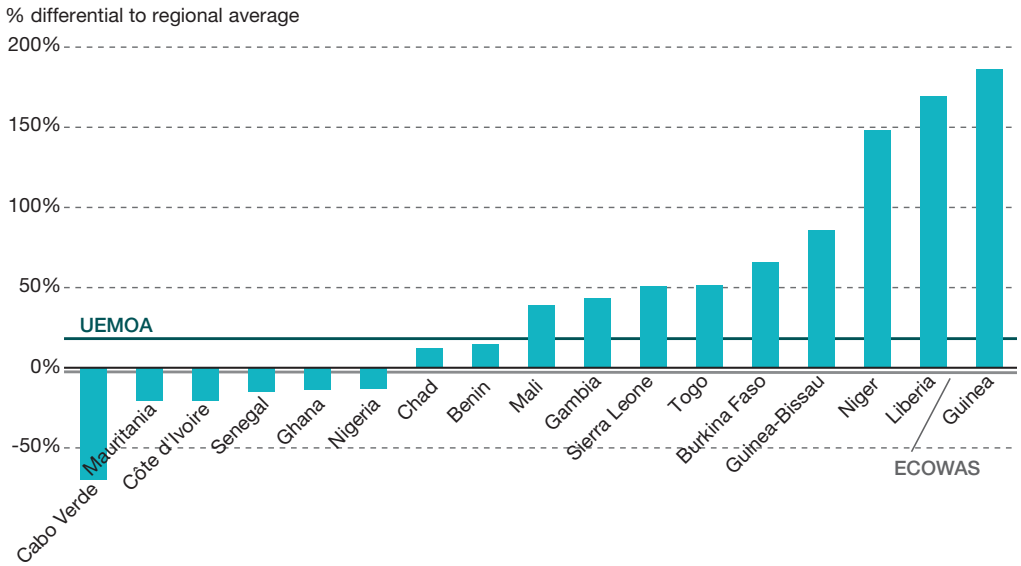
and non-UEMOA countries (Map 1). These are particularly low between Burkina Faso and Côte d'Ivoire, between Benin and Burkina Faso, and between Burkina Faso and Niger. Price differentials are highest between Ghana, Burkina Faso and Côte d'Ivoire. This is largely due to the high food prices in Ghana compared to the regional average.

Figure 9
Price-income ratio (affordability) differentials compared with the regional average (2011)



Sources: ICP 2011/World Bank, 2015 and author's calculations

Existing price differentials do not appear to be fully exploited by trade. High price differentials between two countries can be interpreted as an indication of high transaction costs or potential for further trade, where price differentials exceed transaction costs.[16] There are several border segments where price differentials exceed +/- 17% of the regional average. Many studies have stressed the high transaction costs of intra-regional flows in West Africa, largely due to poor transportation and communication infrastructures, fragmented regional markets and insufficiently implemented trade policies (Elbehri, 2013). Since the launch of the ECOWAS Trade Liberalisation Scheme (ETLS) in the early 1990s, there are no longer official barriers to trade in the ECOWAS area. Yet, its implementation remains haphazard with many remaining practical barriers.

Which products are more expensive?

Food price differences also vary by food group. Information at the most disaggregated level from the ICP database allows for the calculation of a price level index at the level of individual food groups. The average prices for six food groups (fish, meat, fruits and vegetables, cereals, dairy, oil and fats) have been estimated using the Èltetö-Köves-Szulc (EKS)[17] aggregation procedure (Figure 10). These prices are relative to a USD 1 equivalent in the United States.

This results in **a clear hierarchy of prices across all countries in the region** in which dairy products, oils and fats are always the most expensive foods, and fish the least expensive. Cereals, fruits and vegetables are among the cheaper food groups, yet their price differential varies by country. Two key elements should be highlighted. First, prices for dairy, oils and fats are more expensive in West Africa than in the United States in absolute terms. In other words, the same dairy products cost more in West Africa despite much lower purchasing power. Meat is rarely more than 20% less expensive compared to the United States. Relative to local income levels, these products are very expensive, thus explaining their lower shares in household consumption.

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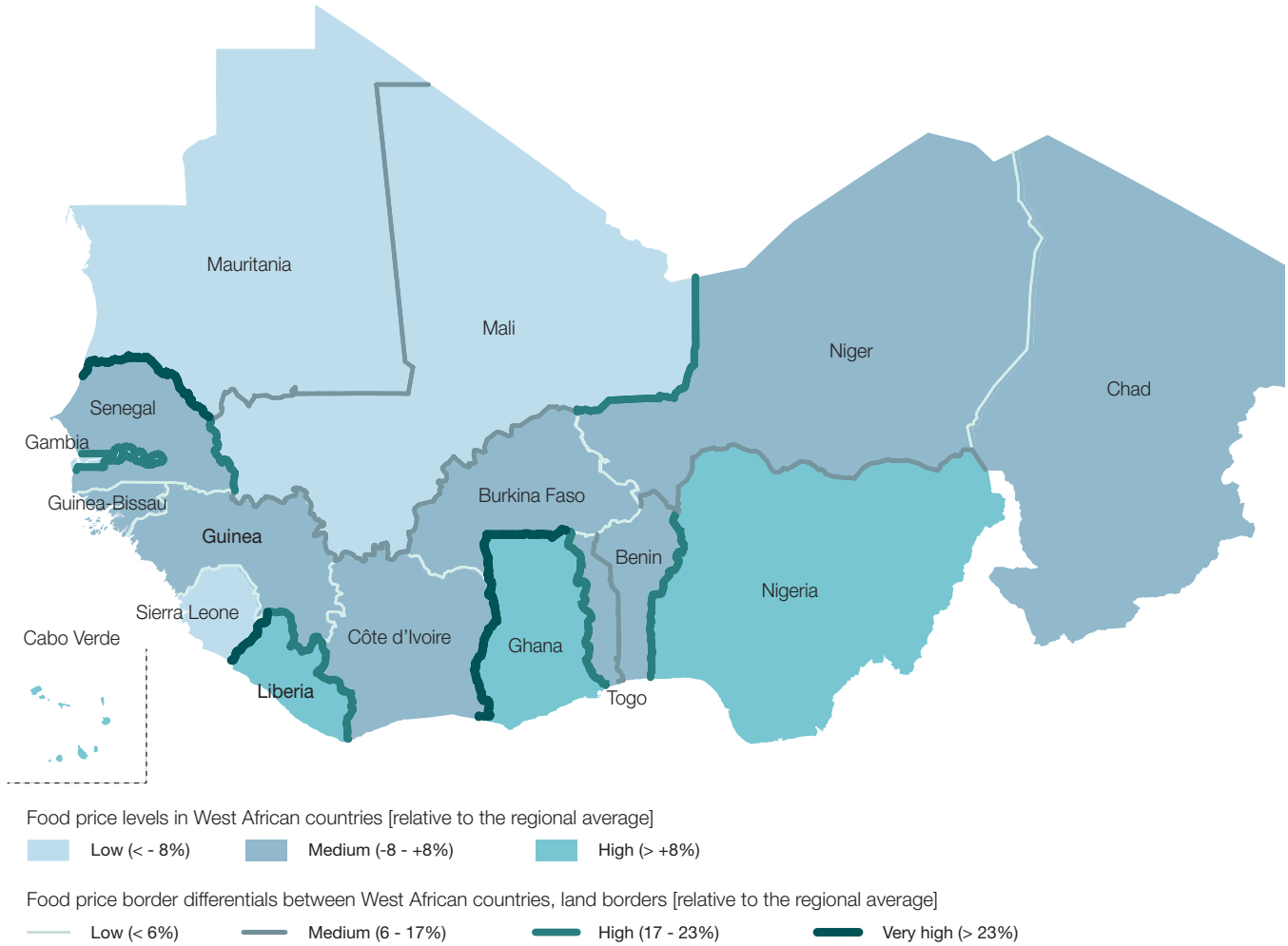
Map 1
Food price differentials between West African countries (2011)



Source: ICP 2011/World Bank, 2015 and author's calculations

Second, price patterns are inversely related to consumption patterns – the least expensive products relative to the United States are the most consumed. In many developing countries, non-animal based sources of protein are still dominant. Cereals remain the most important food source in West Africa, contributing 45% of kilocalories and representing at least 30% of total food expenses. Fruits and vegetables constitute the second, and in some countries account for the highest share of household expenditure on food. This group includes a wide range of plant families, including roots, tubers, leaves, stems, buds, flowers and fruits.[18] Households spend a high proportion of their income on these two food groups. Relative to US prices, West African prices are the lowest for these groups. Interestingly, in a very open and import-dependent economy such as Cabo Verde, the price gaps with US prices are more evenly spread across the different food groups, with less variance between food prices (except for fish which represents about 10% of household food expenditure and is mainly provided locally on the archipelago).

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Figure 10

Price differentials between West Africa and the United States by food group (2011)

% price gap with the US

Sources: ICP, 2011/World Bank, 2015 and author's calculations

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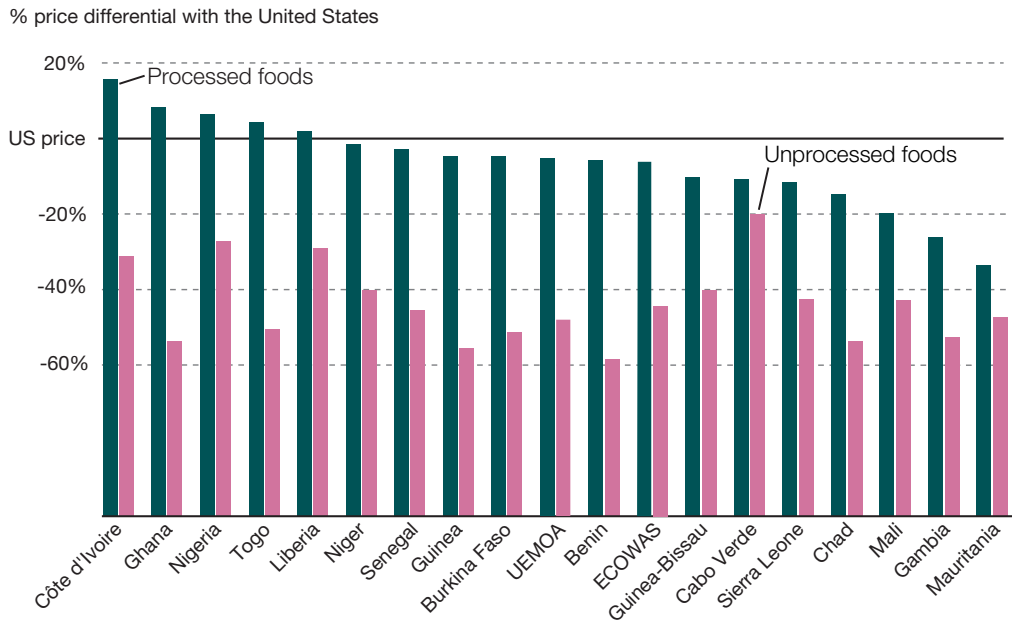
Grouping food items according to the degree of processing reveals, as expected, that **processed foods**[19] **are relatively more expensive than unprocessed foods** (Figure 11). More interestingly, the prices of processed foods are on average about the same or above US prices for 10 West African countries, including Côte d'Ivoire, Ghana, Nigeria and Senegal. This can be partly explained by the fact that some of these products are imported from outside the region. Yet, some region-specific factors related to the functioning of domestic value chains can contribute to these high relative prices. For instance, final prices for processed foods reflect post-harvest activities. These activities contribute to an increase in the value of foods and added transaction costs. More processed foods and longer supply chains have more production stages and more complex marketing processes. Furthermore, high electricity costs and expensive access to credit contribute significantly to the cost of producing food. All the inefficiencies along the value chains translate into higher final prices, reducing households' access to a wider range of these products (Box 1).

Figure 11
Prices of processed and unprocessed foods in West Africa relative to the United States (2011)



Sources: ICP 2011/World Bank, 2015 and author's calculations

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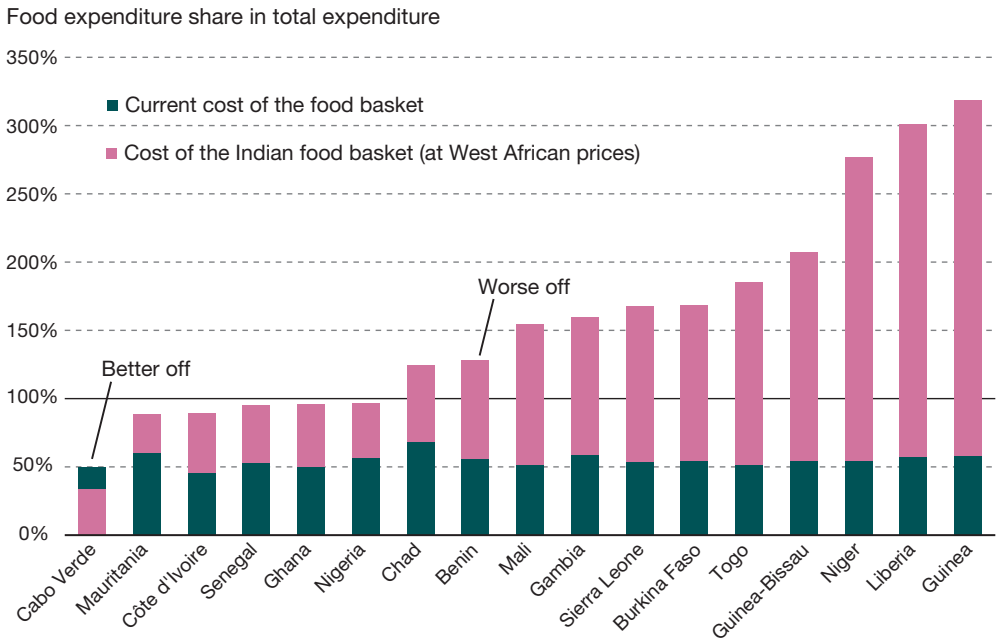
Box 1

West African households cannot afford the Indian food basket

Using price and income differentials and expenditure shares, it was possible to compute the Indian food basket at West African prices[20] (Figure 12). **The results show that most West African households cannot afford the average Indian food basket.** With the exception of Cabo Verde, which is better off, all other West African countries would have to spend more on food to have access to the average Indian diet. In fact, Benin, Burkina Faso, Chad, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Sierra Leone and Togo would have to spend more than 100% of their income on food. These countries are faced with high prices and low incomes relative to India. On the contrary, most of the extra costs incurred for households in Côte d'Ivoire, Ghana, Nigeria and Senegal come from price differentials (from 66 to 74% of extra costs are explained by higher prices). The income needed to afford the Indian food basket at West African prices provides an idea of the purchasing power gap between West Africa and a similarly developed region or country, such as India, that results from higher food price levels.

Figure 12

The Indian food basket at West African prices (2011)



Sources: ICP, 2011/World Bank, 2015; GCD/World Bank, 2015; and author's calculations

POLICY IMPLICATIONS AND FOOD SECURITY

Monitoring food prices and affordability

Policy makers need to **develop appropriate price monitoring systems that take into account both the wide range of food products consumed and households' financial capacities**. Existing systems in West Africa, such as the PREGEC[21] cycle organised within the RPCA[22] network, collect information on rainfall patterns, agricultural production as well as household food consumption, nutrition, income and the strategies to cope with difficult situations. PREGEC also monitors agricultural market prices using primarily data collected by WAMIS-NET,[23] which tracks a wide range of agricultural prices in ten countries in the region. Other commodity-specific systems provide information on prices. All these price monitoring systems struggle to maintain sustainable revenues. Yet, their mandate to provide up-to-date accurate price information is more important than ever. Given the current context, the scope of data collection must be expanded and analysis methodologies refined in order to fully capture affordability issues.

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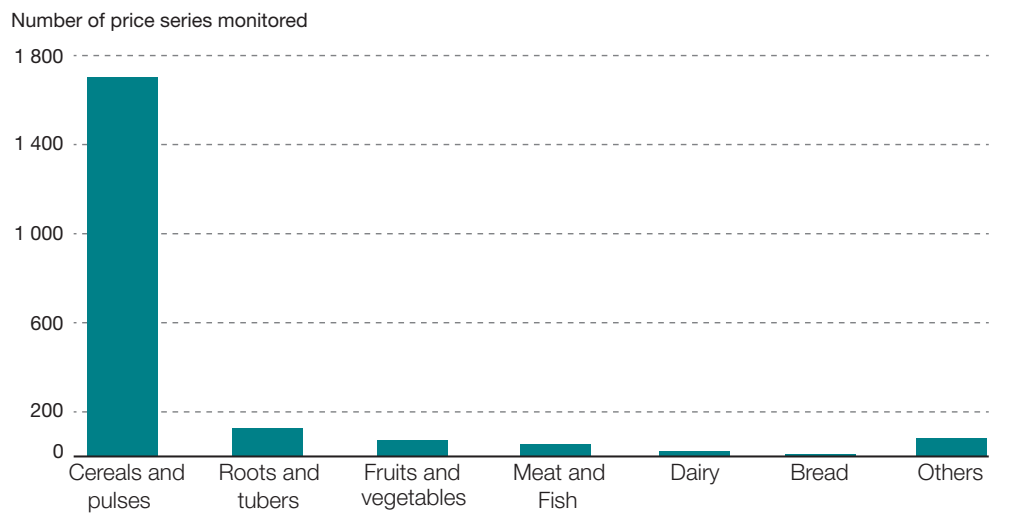
First, **the number of food products monitored needs to be extended**. There is a lack of systematic coverage of non-cereal commodities in many West African countries. For instance, in the World Food Program's Vulnerability Analysis Mapping (VAM) food and commodity price data system is one of the most comprehensive databases, reporting prices for 361 markets in 16 countries of the region. However, 85% of the price series cover cereals and grains (Figure 13). Only few fruit and vegetable prices are covered in only a few countries albeit their growing importance in nutritional intake, expenditure shares and future demand growth. Furthermore, apart from meat, bread is the only other processed food reported in the WFP database. The lack of coverage of non-cereal commodities and processed foods, which account for two-thirds of household's food expenditure, seriously impacts the analysis of food affordability. This is further aggravated by the limited geographic coverage of food prices. For instance, only one market in Guinea-Bissau and five in Nigeria are covered in the World Food Programme (WFP) database.

Second, food prices need to be analysed within the context of households' incomes to provide an appropriate measure of the affordability of food. This information is particularly important for identifying the most vulnerable households. Accounting for income also

Figure 13
Number of monitored price series for 16 countries (World Food Programme Vulnerability Analysis Mapping)[24]



Sources: WFP, 2016 and author's calculations

allows for a better understanding of the budget allocation decisions that arise within households to balance price increases, and of their impacts on nutrition and health. Yet, as highlighted in the recent FSIN[25] technical assessment (Lele et al., 2016), no "food affordability index (…) is currently offered by any major data provider". It recommends **assembling a consistent database of food affordability** and extending it to the prices of nutritious foods.

Focusing on the productivity-price nexus

Long-term food demand is driven by population growth, urbanisation and changes in food consumption patterns. Long-term food supply is determined by the amount of productive resources (land, water, labour, capital, etc.) available for production as well as the productivity of these resources. Increasing productivity is at the heart of achieving lower prices and increasing the incomes of farmers.

Taking advantage of available resources

One of the primary constraints to increased productivity in West Africa stems from the limited adoption of modern farming technology and production practices. Africa is, first of all, the region with the lowest share of cultivated area that is irrigated, with just 5%

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against more than 40% in Asia (AQUASTAT, 2014). This much larger share of irrigated agricultural land allows Asian countries, particularly in Southeast Asia, to produce multiple crops per year and farmers to be fully employed all year round. Irrigation is an important factor explaining higher labour and land productivity in Asia, and thus lower food prices. Quality seeds, fertilizer use and modern equipment have also been instrumental in increasing productivity. Extension services should provide widespread information on how to cultivate crops most efficiently and tailor the use of new technology to local conditions. The cost of these investments should lead to a renewed discussion among stakeholders on the optimal sizes of farms. Price increases cannot be the only driver of labour productivity. Production per worker has to improve and this implies increasing yields and cropping intensity, but also farm size. Increasing the average farm size is not incompatible with family farming and does not imply a "one size fits all" approach.

Need for improvement in food processing and marketing

Programmes and strategies for agricultural production and transformation need to be based on meeting final consumer demand. Processed foods are now an important part of food consumption across all income brackets, including low income households and are expected to experience the fastest growth in the years to come. Downstream activities of the food economy will play an increasing role in driving agricultural transformations, competitiveness and prices. This implies addressing constraints in downstream segments of the food value chains becomes increasingly important. Policies and programmes should clearly aim at stimulating the development of new activities and firms along the value chains, and enhancing commercialisation and marketing. **Tackling the price issue and leveraging the value added opportunities will depend on gains made at each stage of the value chain**.

A cross-sector policy review of agricultural production, processing, trade and infrastructure needs to be undertaken to identify key constraints and to determine the amount of support currently provided to value chains through the existing policy, regulatory, and institutional framework. National and regional institutions need to identify key infrastructure and skill needs for food value chain development. The development of rural roads, markets and storage capacities need to be based on an analysis of the strategic links between production zones and consumption markets. The construction of markets needs to be based on value chain requirements, such as cold storage and loading facilities. Public-private sector forums can be set up to identify areas for policy action. Improving the skills base required to meet the needs of simple supply chains will be essential in increasing end-product productivity.

Implementing these policies **will also be dependent on the level and quality of investments**. Both public and private-sector stakeholders need to work closer together to increase the amount and improve the mix of investments. Regional investors need to direct their savings and funds toward the agro-food sector. This can be attained if the business case and returns on investments in the agro-food sector are demonstrated. At the heart of this challenge lies the need to connect agricultural productivity to farmers' access to markets. The use of modern equipment will make harvests more efficient, but will also help move products to market more quickly and in a better condition. This implies adopting a value chain approach to agricultural development (Hollinger and Staatz, 2015).

Supporting emerging value chains

To decrease overall food prices, governments should target emerging value chains. The way food is produced, processed and sold is changing rapidly. Consumers increasingly want safe, convenient, higher value food products. This is creating opportunities for farmers, food processors, traders and retailers along food value chains. An important element is to assess the relative impact of the different prices on the overall food price level. It indicates the value chains that should be prioritised as most efficient in reducing the price of food.

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Using budget shares (GCD/World Bank, 2015) and price elasticities of demand (USDA, 2013), Figure 14 shows the impact on the overall food price level of two food groups: cereals and fruits and vegetables. In Côte d'Ivoire, Gambia, Ghana, Nigeria and Togo, a reduction in the price of fruits and vegetables will have a larger impact on the overall food price index and thus on household budgets than an equivalent reduction in the price of cereals. While a 1% decrease in cereal prices in Ghana would lead to a 0.19% decrease in the overall food price level, a decrease in the price of fruits and vegetables of the same amount (1%) would reduce the overall food price level by 0.35%. This is largely due to the inclusion of roots and tubers in the fruits and vegetables food group.[26] Roots and tubers, such as cassava and yams, are major starchy staples consumed in coastal countries. Between 1980 and 2014, cassava production, for example, more than quintupled, driven by technological change and rapid growth in demand for processed cassava products such as gari and attiéké (Staatz and Hollinger, 2016). In a similar way, **many coastal countries should put fruits and vegetables – as well as other foods in increasing demand – at the top of the policy agenda**. In other countries such as Niger, however, targeting cereals remains the optimal strategy to decrease the food price level for consumers.

Figure 14

Food price level reduction after a 1% decrease in prices of cereals or fruits and vegetables

Sources: ICP, 2011/World Bank, 2015; GCD/World Bank, 2015, USDA, 2013 and author's calculations

Facilitating regional trade along new corridors

Increasing and facilitating regional trade can reduce food prices. Expanding the regional network of trade corridors should be a key priority.

Map 2 shows the region's major trade corridors. These corridors are a collection of routes that link the region's seaports to major inland markets, thus offering international connections and outlet opportunities to its landlocked countries. **Many of the borders where food price differentials are high are not crossed by existing corridors**. The prioritised corridors of trade facilitation programmes such as ATP and Trade Hub,[27] are often north-south and were initially designed to leverage cash crop productions and foster extra-regional exports and imports. On many west-east trade routes, price differentials indicate the strong potential for regional trade. With the exception of the Abidjan-Lagos corridor, many of these horizontal corridors have not been the focus of

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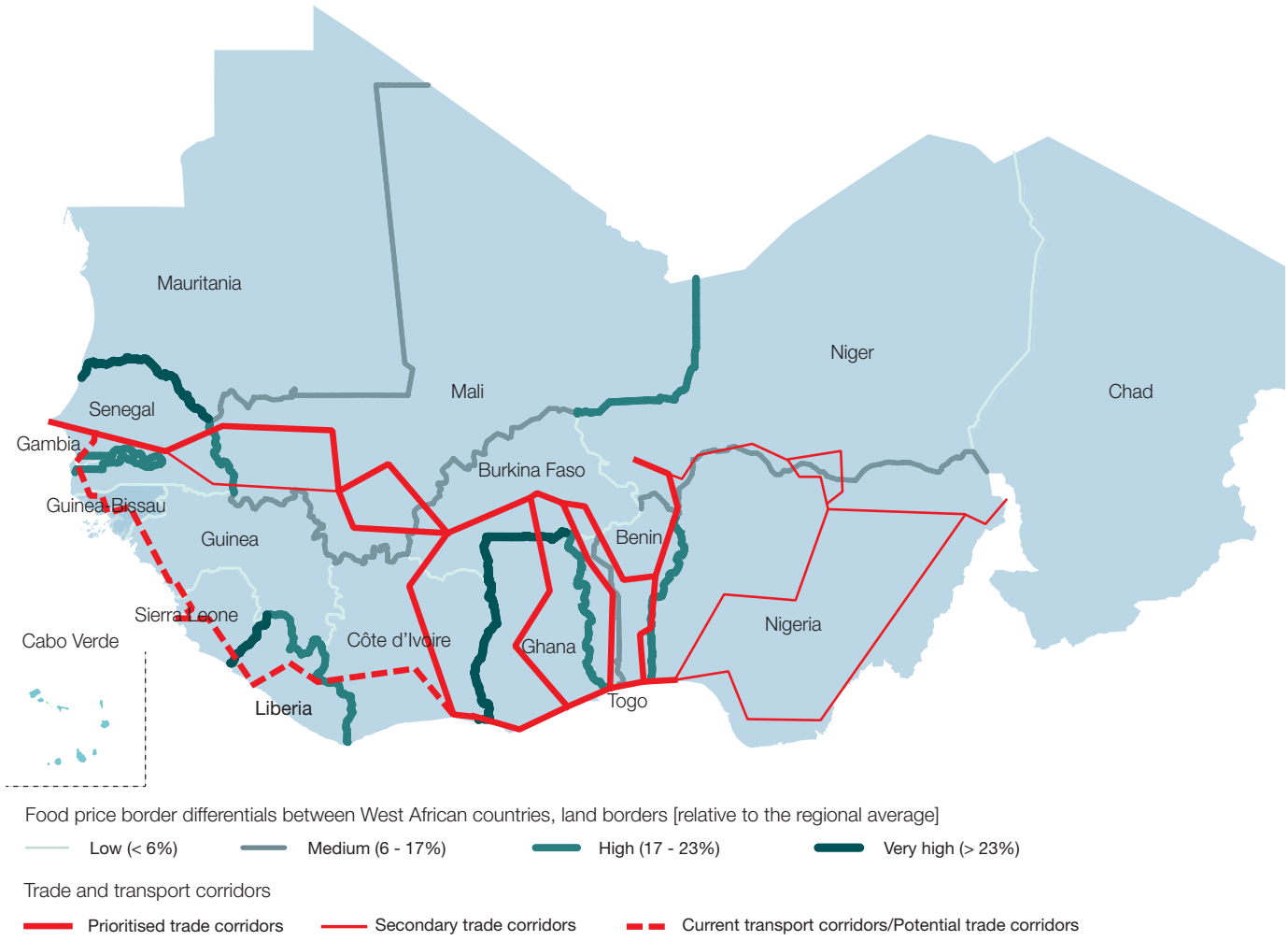
policy attention, in particular the Liberia-Sierra Leone-Senegal axis. As the domestic market expands, there is a need to facilitate trade along new corridors that better connect growing consumption and production zones.

However, in addition to improving physical infrastructure, it is necessary to enhance the efficiency of customs and enforce previously agreed regulatory mechanisms in order to lower trade costs. Furthermore, policies across countries should be aligned and harmonised.

Map 2
Food price differentials and major trade corridors in West Africa



Sources: ICP, 2011/World Bank, 2015; Borderless alliance, 2014 and author's calculations

Note: The ATP, Trade Hub and Abidjan-Lagos (ALCO) corridors which have received substantial attention from donors (USAID, World Bank, etc.) have been tagged as prioritised corridors.

The move from trade corridors to "development corridors" has recently been promoted as an efficient tool to overcome the multiple co-ordination problems and policy challenges that emerge from trade-enhancing initiatives (Box 2). The approach aims to increase regional trade through better physical and soft infrastructures, improved market access and engagement with investors. The necessary institutional setting should figure prominently under the leadership of the two regional organisations mandated to work towards closer economic integration, namely ECOWAS and UEMOA.

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Box 2
From transport corridors to development corridors

"The 'corridors approach' is fast gaining importance as an economic development strategy, particularly in Africa. Largely based on historical transport connections across the continent, corridors have moved from transport to so-called development corridors, embodying a range of development objectives aimed at overcoming co-ordination failures in investment and taking advantage of agglomeration and spill over effects to boost trade and productivity.

Development corridors target an increasingly wide array of policy challenges, with an increasing focus on agriculture. They aim to increase regional trade through better physical and soft infrastructures, improve markets for agricultural inputs and outputs, set out agricultural investment opportunities, engage with international investors, and promote the integration of small-scale producers into international value chains."

Byiers and Rampa 2013 - ECDPM

NOTES

1 They buy more than they sell.

2 Including food consumed away from home.

3 Affordability is the ability of an individual or a household to access food from a financial point of view. It relates to the cost of the diet for an individual or a household relative to its income.

4 Analyses conducted on urban-rural price differentials in other developing and emerging economies suggest that they range from 11% in India (Deaton and Dupriez, 2011) to 25% in China (Brandt and Holz, 2006).

5 West Africa's population is projected to double over the next 30 years, from 367 million in 2015 to 754 million in 2045 (UN World Population Prospects, 2015 Revision).

6 Using UN Food and Agriculture Organization (FAO) food supply data (1961-2013) and UN World Population Prospects (WPP) population data (1950-2015).

7 In general, demand for food declines less than proportionally with price increases.

8 I.e. the ratio of maize producer prices for both countries.

9 Food price level index: Based on purchasing power parities (PPP) calculated for the International Comparison Program by World Bank researchers.

10 See Annex for the details of the econometric regressions.

11 Formula: Food expenditure share x price ratio.

12 Relative food price refers here to the price of food relative to the overall price level, i.e. the ratio of the food price level and GDP price level indices.

13 Other regions outside Sub-Saharan Africa.

14 The regional average is an arithmetic average of food price levels in the 17 West African countries.

15 Per capita total expenses is used here as a proxy for income. Using the regional average as a denominator, one can derive a region-relative affordability index for each country.

16 In well-functioning markets, the supplier's marginal value is the opportunity cost of resources used in production, and the buyer's demand price reflects his own marginal value. Arbitrage and trade should occur when the value to the purchaser exceeds the marginal cost to the supplier, i.e. when the price differential exceeds transaction costs.

17 The Èltetö-Köves-Szulc (EKS) method has been used in the most recent phases of the International Comparison Program (ICP) and has thus been used here to compute price aggregates by food groups. It allows estimation of price aggregates based on all possible combinations of pairs of countries. An advantage of the EKS method is that it produces transitivity and makes use of all the price information available.

18 The ICP data nomenclature – based on the Classification of Individual Consumption According to Purpose (COICOP) classification – does not separate starchy roots and tubers from other vegetables.

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19 Processed foods include: dairy products, edible oils, bread, biscuits, pasta, meat, poultry (fresh, frozen or preserved), fish, seafood (dried, smoked or preserved), confectionary, chocolate, conditioned fruit and vegetable based products (jams, honey and concentrates). Cereal products in the form of flour or semolina are not included as processed products because the data used cannot differentiate them from non-processed products.

20 Formula: Food expenditure share India x price ratio x income ratio.

21 Regional system for the prevention of food crises (Dispositif Régional de Prévention et de Gestion des Crises Alimentaires)

22 Food Crisis Prevention Network (Réseau de Prévention des Crises Alimentaires-RPCA)

23 West African Market Information System Network (Réseau des Systèmes d'Information des Marchés en Afrique de l'Ouest-RESIMAO)

24 No information was available for Togo at the time of this study. Database available at http://vam.wfp.org/sites/data (accessed on 1 June 2016).

25 The Food Security Information Network (FSIN) is a global initiative co-sponsored by FAO, WFP and IFPRI to strengthen food and nutrition security information systems for producing reliable and accurate data to guide analysis and decision-making.

26 The ICP data nomenclature – based on the COICOP classification – does not separate starchy roots and tubers from other vegetables.

27 West Africa Agribusiness and Trade Promotion (ATP) and West Africa Trade and Investment Hub (Trade Hub).

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ANNEX: ECONOMETRIC ANALYSIS OF FOOD PRICE LEVELS IN SUB-SAHARAN AFRICA

Controlling for income, econometric analyses indicate that price level differences are statistically significant. Conducting econometric analysis using 2011 ICP data and controlling for endogeneity through instrumental variable, sub-Saharan Africa countries appear to have systematically higher food prices than expected. It is estimated that food prices in sub-Saharan Africa are 30 to 40% above prices in the rest of the world at comparable level of development (Table 1A).

Table 1A
Econometric analysis of food price levels in sub-Saharan Africa

Variable/Method	**OLS**	**IV-GMM**	**IV-GMM**
	(1)	(2)	(3)
GDP per capita	0.1854*	0.1443*	0.1527*
	(0.0137)	*(0.0255)*	*(0.0254)*
Sub-Saharan Africa	0.3459*	0.2574*	0.2978*
	(0.0391)	*(0.0552)*	*(0.0732)*
Instruments			
- Electricity access		x	x
- Secondary education			x
F test	0.000	0.000	0.000
Underidentification test[1]		0.000	0.000
Overidentification test[2]		0.000	0.656
Endogeneity test		0.107	0.058
no instruments		1	2
no observations	152	152	90
Interpretation	***41%***	***29%***	***35%***

Notes: Dependent variable is the 2011 ICP food price level. All variables and instruments are in log. Sub-Saharan Africa is a dummy. Except estimation (1), all estimations are two-step and standard error are heteroskedasticity-robust. Estimation (1) is OLS; estimations (2-3) uses the *ivreg2* (Baum, Schaffer and Stillman, 2003) command for Stata. Underidentification, overidentification and endogeneity tests report the *p*-value. All estimations include a constant not reported in the table. Standards errors are in parentheses. Significance at the 1%, 5% and 10% levels are denoted respectively by *, **, ***.

1 Kleibergen-Paap rk LM statistic
2 Hansen J statistic

Note: Controlling for endogeneity through instrumental variable.

Source: Author's calculations

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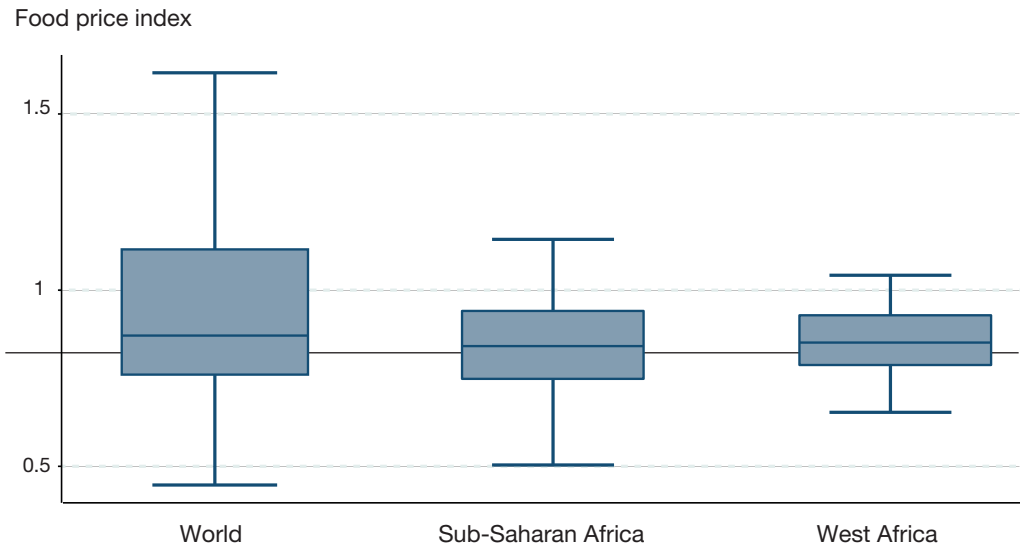
The econometric results are valid for all sub-Saharan countries, however West African countries appear within the overall group (Boxplot 1A).

Boxplot 1A
West Africa within the World and Sub-Saharan Africa



Sources: ICP, 2011/World Bank; and author's calculations

The West African median food price level index is close to the Sub-Saharan African median. West African maximum and minimum – i.e. the range – are within the Sub-Saharan African range. West African interquartile range is within the Sub-Saharan African interquartile range.

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