

# Observing Ghana’s food system transformation through an assessment of processed food retail in four major cities

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## Abstract

This paper describes key features of processed food retail within the context of food system transformation in Ghana—the spread of supermarkets, the sources of processed food products, and the use of traditional and modern retail outlets as marketing channels. The data come from retail inventories of packaged products—poultry meat and eggs, processed tomatoes, and milled grains, roots, and tubers—in four major cities. We find that the interplay of urbanization, imports, and domestic processing and packaging has led to some surprising outcomes. Imports are dominant, as expected, especially for products such as milled rice and tomato paste. Yet, remarkably, import shares are lower (63 percent) in Accra, the principal city, compared to more than 70 percent in three smaller cities, and imported products have higher shares in traditional retail outlets than in modern retail outlets.

**Keywords:** Africa, food system transformation, supermarkets, processed food, food imports

**JEL Codes:** L66, O14, Q10

## **Introduction**

Developing countries are going through significant changes in their food systems (Reardon et al., 2009; Regmi and Meade, 2013; Reardon, 2015; Tschirley et al., 2015a). These changes are generating new market opportunities and policy challenges. Diet shifts and growing demands for processed foods create opportunities for adding value to primary agricultural products. At the same time, macro-economic challenges may arise from increases in food import bills, and changing diets can lead to new public health challenges (Rischke et al., 2015). A new food system paradigm also has implications for education and employment policies, as labor markets shift to respond to changing production systems both on- and off-farm (Tschirley et al., 2015b).

In the midst of these changes, policy-makers can benefit from reliable data to help determine whether, and how, to enable developing economies to take advantage of new opportunities and address new challenges posed to farmers, processors, and consumers (Timmer, 1997). However, in many developing countries, such data are not available. While ministries of industry may track production of processed foods by selected state firms, and ministries of agriculture tend to track development projects engaged in food processing, data on processed food imports, domestic production, and retailing are not usually recorded in official statistics. This lack of data is particularly noticeable for African countries—a recent review of the food processing sector focused primarily on Asian countries, partly because Asia has been the subject of most existing research (Reardon, 2015). Existing accounts of food system transformation in Africa tend to focus on changes occurring in Eastern and Southern Africa (D’Haese and Huylenbroeck, 2005; Minten and Reardon, 2008; Minten et al., 2013; Ijumba et al., 2015; Tschirley et al., 2015a; Hassen et al., 2016). Relatively little attention has been paid to West

Africa, with the exception of a recent review by Hollinger and Staatz (2015). However, important changes are occurring in West Africa, which has urbanized at a faster rate and also tends to have a broader diversity of staple diets compared to the rest of Africa.

This paper contributes to the emerging literature on food system transformation by analyzing processed food retail in four major cities in Ghana. The study collected information on the range of retail outlets and processed foods for sale, following the approach used for recent inventories in Tanzania (Snyder et al., 2015; Ijumba et al., 2015). As a rapidly-urbanizing, lower middle-income country, Ghana has conditions that are favorable for growth in consumer demand for processed foods. Ghana is ahead of most African countries in the urbanization process—the urban population is now 54 percent of the total population (United Nations, 2014)—and incomes have been rising steadily in recent years. In comparison, the rest of Africa south of the Sahara has an urban population of 37 percent, and Asia is 46 percent urban. As in most African countries, Ghana’s stated policies and public investments have seek to build a food processing sector to add value to raw outputs and compete against imports<sup>1</sup>, but the effects of these policies have not been closely examined.

The rest of the paper is organized as follows. The next section provides a brief background and highlights the Ghanaian context. After that comes a description of the study methods, followed by the findings and a conclusion.

## **Background**

The literature shows an increase in modern retail systems and supermarkets in developing regions, as part of food system transformation (Timmer, 2004; Timmer, 2009; Reardon et al.,

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<sup>1</sup> Promoting agro-processing is one of the main goals of Ghana’s Shared Growth and Development Agenda (GSGDA II) for 2014-2017 (National Development Planning Commission, 2014).

2010; Minten et al., 2013). Supermarkets serve as middle agents, collecting processed food products from around the world and making them available and accessible to urban consumers. Supermarkets can also serve as vehicles for increasing consumer welfare via reduced prices and sources of diet diversity (introducing consumers to new products) and better food safety (Reardon et al., 2010). Supermarkets can lead to higher consumption of processed foods and, adversely, may be associated with higher rates of obesity among adults (Rischke et al., 2015). The extent of supermarket penetration in food markets is therefore relevant for food policy.

Food policy formulation, however, is fraught with complexities arising from the process of food system transformation. Due to these complexities, researchers and policy-makers need better data and research on the transformation process. For example, the diversity of a country's traditional diet may affect its food system transformation and policy challenges. Minten et al. (2013) and Hassen et al. (2016) have documented how changes in Ethiopia's food system were driven in part by public investments to develop modern varieties of *teff*, the main staple cereal. However, for setting Ghana's public research priorities in crop technologies, Ethiopia's experience may not be easily transferrable. Instead of one dominant staple in rural and urban diets, Ghana's traditional diets are based on a variety of staple crops including cassava, maize, millet, plantain, rice, and sorghum. Ghanaian diets are also shifting across these staples as people move to cities (Hollinger and Staatz, 2015). Dealing with the new challenges of the changing food system will require research specific to each country's food system and pre-existing diet patterns.

### ***Processed foods: the Ghanaian context***

Concerns about processed food imports have been part of economic policy debates in Ghana for decades. Ghana's post-independence industrialization program established state-run

enterprises to promote domestic food processing (Ackah et al., 2014). These policies are considered to have failed due to inefficiencies with state intervention, and recent policies recognize the need for private-sector involvement. However, the state still supports specific industries such as tomato and cassava processing. The food processing sector has expanded, with manufactured products based on maize, rice, cassava, yam, plantain, cowpea, oil palm, groundnut, cocoa, fruits, and fish. Nevertheless, the agricultural sector does not seem to achieve the high productivity levels required to provide agro-industry with adequate and reliable supplies of raw material (Robinson and Kolavalli, 2010). Although there are few reliable official statistics on the performance of the food processing sector, the broader manufacturing sector<sup>2</sup> has declined over the years. The contribution of industry<sup>3</sup> to Ghana's economy has increased, but the contribution of manufacturing to total industrial gross domestic product (GDP) fell from 70 percent in the 1980s to less than 10 percent in the mid-2000s.

Ghana is experiencing demographic changes that will have implications for the country's food system. Two trends germane to this discussion are rapid urbanization and income growth. From 2000 to 2015, the urban population growth rate averaged 3.9 percent. The urban population surpassed the rural population in 2009 and now stands at 54 percent of the total population. Ghana's population is also growing richer—per capita nominal gross domestic product (GDP) increased from about US\$1,100 in 2009 to more than US\$1,400 in 2014. These types of trends are typically associated with the spread of modern retail and greater availability of processed foods in other countries (Minten and Reardon, 2008; Reardon et al., 2009; Reardon et al., 2010; Reardon et al., 2015), in particular diet shifts and the realization of Bennett's Law, which holds

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<sup>2</sup> Manufacturing includes food and beverages, but also textiles, tobacco, and construction materials.

<sup>3</sup> In official data the industrial sector consists of the following subsectors: Manufacturing, mining and quarrying, electricity, water and sewerage, and construction.

that as household incomes increase, the share of food expenditure on food staples decreases. Households then seek for more diverse and exotic foods, which are supplied by supermarkets (Reardon et al., 2010). This paper provides some insights on the nature and extent of these expected changes in Ghana.

## Methods

### *Study cities*

We conducted inventories of processed foods in Accra in May-June 2015 and in Kumasi, Sekondi-Takoradi, and Tamale from May to July 2016. These are the four most populous cities in Ghana and they represent different aspects of the economic geography of Ghana (Table 1, Figure 1). Accra, Ghana's administrative and commercial capital, is one of Africa's emerging mega-cities<sup>4</sup>. Kumasi is the commercial center of the country's middle belt. Sekondi-Takoradi, on the western coast, is the center of Ghana's new oil industry. Tamale is the main urban center in northern Ghana.

**Table 1.** Profiles of survey cities.

City	Population (2010)	Estimated population (2016)*	Average population growth rate (1970 – 1984)	Average population growth rate (2000 – 2010)	Poverty incidence** (2012/2013)
Accra***	2,591,970	2,982,107	3.0	2.2	2.6
Kumasi	1,730,249	1,956,767	2.6	5.7	5.3
Sekondi-Takoradi	559,548	679,901	1.8	6.5	12.9
Tamale	233,252	268,937	4.9	6.3	24.6
National	24,658,823	28,308,301	2.6	2.5	24.2

*Source:* Derived from data of the Ghana Statistical Service (2012, 2014, 2015).

\* Own estimates based on population projections for administrative regions.

\*\* Poverty incidence is defined as share of population living below US\$1.83 per day.

\*\*\* Includes outlying suburbs.

<sup>4</sup> Source: <http://www.megacities-africa.com/>; <http://www.blog.kpmgafrika.com/africas-7-megacities-the-catalysts/>

**Figure 1.** Map of Ghana showing survey cities.



*Source:* Administrative boundaries based on map from Wikimedia Commons (Available at: [https://upload.wikimedia.org/wikipedia/commons/7/7b/Ghana\\_location\\_map.svg](https://upload.wikimedia.org/wikipedia/commons/7/7b/Ghana_location_map.svg))

### ***Retail inventory approach***

We identified six types of food retail outlets that cover all types of traders operating from fixed structures<sup>5</sup> in Ghanaian cities: (1) Stalls in open air markets; (2) Street-side vendors, operating in sheds outside markets; (3) Traditional, non-self-service shops; (4) Self-service

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<sup>5</sup> In addition to traders operating from fixed structures, processed foods are sold by transient street traders who typically carry their stock around in trays. We do not include these traders in the study because (1) it would be difficult and disruptive to undertake inventories of transient traders; (2) products found on the street are usually also available in retail outlets, since street traders tend to buy small amounts of products from retail outlets and resell in streets.

grocery stores with one register; (5) Self-service standalone supermarkets with two or more registers; and (6) Self-service supermarkets with two or more registers that are part of a store chain. Retail outlet types 1-3 can be classified as traditional retail outlets, while retail outlet types 4-6 are modern retail outlets.<sup>6</sup> We conducted pre-inventory exploratory visits, using city maps and key informants to identify retail outlets in major commercial areas of each city.

The food products were selected from three processed food groups within the UN Inventory of Classifications<sup>7</sup>—processing and preserving of meat, processing and preserving of fruits and vegetables, and manufacture of grain mill products, starches and starch products. Within each group, we selected product types and products based on Ghana’s policy and market context (Table 2).

**Table 2.** Product types recorded during inventory.

UN Inventory of Classifications (ISIC) Category	Product types selected for inventory	Examples of processed foods
ISIC Group 101: Processing and preserving of meat	Packaged chicken meat and eggs	<ul style="list-style-type: none"> <li>• Frozen chicken, cut parts</li> <li>• Frozen chicken, whole</li> <li>• Packaged eggs</li> </ul>
ISIC Group 103: Processing and preserving of fruits and vegetables	Processed tomatoes	<ul style="list-style-type: none"> <li>• Chopped tomatoes</li> <li>• Tomato paste</li> <li>• Tomato puree</li> <li>•</li> </ul>
ISIC Group 106: Manufacture of grain mill products, starches and starch products	Milled grains, roots, and tubers	<ul style="list-style-type: none"> <li>• <i>Fufu</i> flour</li> <li>• <i>Gari</i></li> <li>• Maize cereal</li> <li>• Plantain chips</li> </ul>

Source: Authors

<sup>6</sup> The Accra retail inventory, which was conducted a year earlier than the inventories in the other three cities, used different terminology for the retail outlet types. The definitions were generally comparable.

<sup>7</sup> Source: ISIC Revision 4, Code 10 (Available at <http://unstats.un.org/unsd/cr/registry/regcs.asp?Cl=27&Lg=1&Co=10>)

Packaged chicken meat and eggs are included because of the keen attention paid to the poultry industry's performance against frozen meat imports, and processed tomatoes are included because tomato processing is a focus of Ghana's industrial policy. The milled grains, roots, and tubers category includes milled rice, maize flour, and some product types that are specific to West Africa (*gari*<sup>8</sup> and *fufu*<sup>9</sup> flours).

It is important to distinguish between product type and product. We do so using definitions proposed by Tschirley et al. (2016). Product type is derived from the intersection of the processed food groups identified by the study, the raw materials used, and the type of processing. Product, on the other hand, refers to a particular brand of a product type that has been manufactured by a company. In each retail outlet, enumerators, with assistance from shop attendants, identified the range of products, took pictures of the product, taking care to capture labeling information and packaging, and later transferred details into a database.

For the inventories in Kumasi, Sekondi-Takoradi, and Tamale, we aimed for an exhaustive list of products within each product type that were available for sale within each type of retail outlet<sup>10</sup>, to allow for comparisons across outlet types<sup>11</sup>. Therefore, the inventories started from one type of retail outlet and continued within that retail outlet type until few or no new products were to be found within that outlet<sup>12</sup>. Inventories started from commercial centers,

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<sup>8</sup> *Gari* is a ready-to-eat meal made from cassava that is grated, fermented, and fried.

<sup>9</sup> *Fufu* is a starchy staple made from boiled and pounded tubers such as cassava, plantain, and yam. Processed *fufu* flour consists of smooth milled tubers that can be boiled and used to prepare *fufu* without pounding.

<sup>10</sup> For the inventory in Accra, enumerators aimed at exhausting the products across the city, rather than within each type of retail outlet as was done for the 2016 inventories in the other three cities. Therefore, we exclude Accra in the comparisons of retail outlets.

<sup>11</sup> For example, for milled rice, the goal was to record all the milled rice products (brands) found in open air stalls, all the rice products found in traditional shops (even if some of these were the same as those in open air stalls).

<sup>12</sup> For packaged chicken meat and eggs, the inventory could not identify any new products in any of the cities by the end of the survey. For processed tomatoes, when the inventory ended enumerators could identify less than one new

where food retail activities are typically concentrated, and moved on to other parts of the city when few new products were encountered, usually after two or three days of inventory.

Enumerators visited 320 retail outlets in Kumasi, Sekondi-Takoradi, and Tamale<sup>13</sup>, including 115 open-air stalls, 27 street vendors, 121 traditional shops, 37 grocery stores, 14 non-chain supermarkets, and 6 chain supermarkets. During the 2015 inventory in Accra, the team visited 98 retail outlets.

## **Findings**

### ***Has the supermarket revolution taken off in Ghana?***

Contrary to the perception that a supermarket boom will accompany rapid urbanization and per capita income growth, we find modest supermarket growth in all four cities, with around one supermarket per every 60,000 residents. Among the four cities, Accra has seen the most growth—from a baseline of three supermarkets before 2005, three additional supermarkets opened in the period 2005-2010, and ten more have started operating in the city since 2010. In Kumasi, the first ten supermarkets opened in the past 20 years. Sekondi-Takoradi has seven supermarkets. Tamale experienced a brief spurt in modern retailing between 2001 and 2006, when four supermarkets were established, but there have been no supermarket openings since then.

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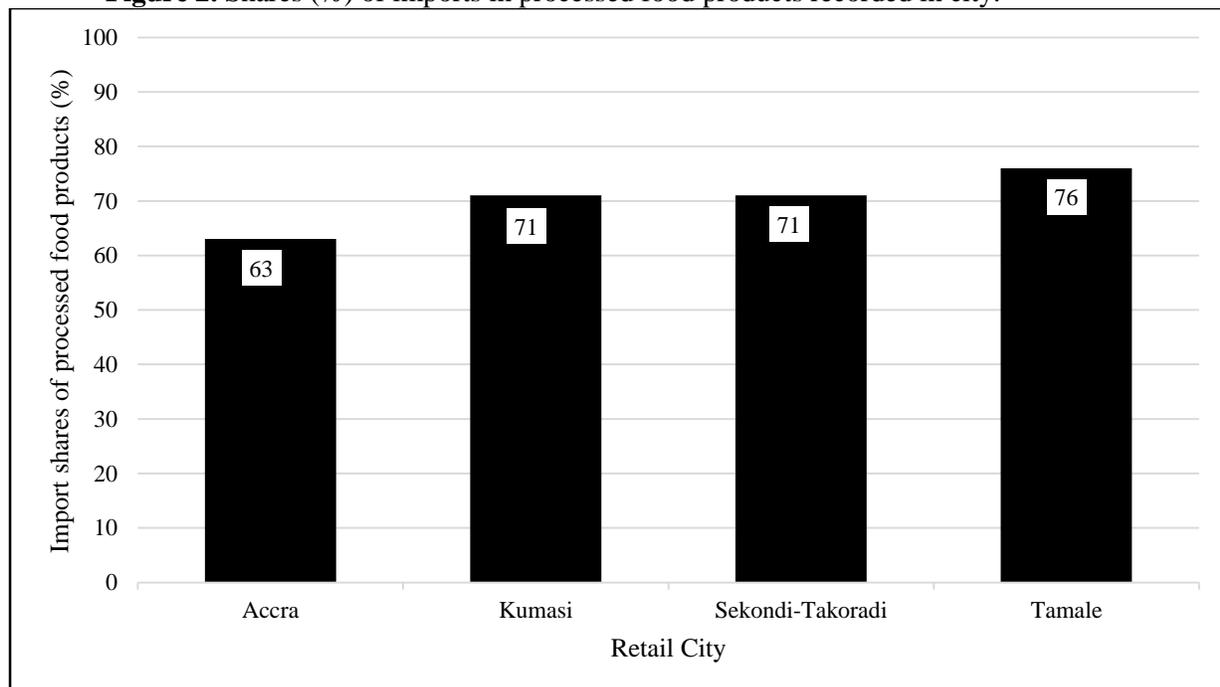
product per every three retail outlets surveyed. For milled grains, roots, and tubers, which was the broadest food category, enumerators encountered on average less than one new product per store visit by the end of the inventory.

<sup>13</sup> This excludes retail outlets that declined the request to conduct the inventory of their products (five in Kumasi, three in Sekondi-Takoradi, and two in Tamale).

***What are the main sources of processed foods (imports and domestic products)?***

We recorded 539 unique products in Accra, 379 in Kumasi, 282 in Sekondi-Takoradi, and 173 in Tamale. Imports dominate the processed foods sector in all four cities (Figure 2). Import shares range from 63 percent to 76 percent of all products, and 71 to 83 percent of processing firms are located outside Ghana<sup>14</sup>. Surprisingly, although Accra, as the principal city, would be expected to have higher shares of imports than the other cities, we find the opposite result. In Accra, 63 percent of the products were imported, while Tamale, the smallest city and the one farthest away from coastal ports, had the highest share of imported products at 76 percent.

**Figure 2.** Shares (%) of imports in processed food products recorded in city.



Source: Authors' calculations from inventory data.

<sup>14</sup> Imports were identified through manufacturer's locations. For about 5 percent of imported products, the final stages of processing and packaging were carried out by firms in Ghana. These products included chicken, tomato paste, milled rice, and maize flour.

We offer two possible explanations for this unexpected finding. First, domestic food manufacturers, in the initial stages of competition against imports, may be targeting the larger market in Accra. A second, rival explanation is that retailers in smaller cities such as Tamale tend to sell domestic processed foods in unpackaged form while retailers in larger cities carry packaged, domestic products. Indeed, this seems to be the case in Ghana with the sale of processed grains such as milled rice and loose maize.

Import dominance is evident in the poultry and processed tomato categories (Table 3). For tomato pastes, which made up 76 percent of the processed tomato products, import shares ranged from 83 to 98 percent. Milled grains, roots, and tubers—the products with the least value-added after the farm—show the lowest import shares from 58 percent in Accra to 73 percent in Tamale. These figures are mainly driven by milled rice, which accounted for about 61 percent of the products, with import shares ranging from 79 to 98 percent. For non-rice products in the milled grains category, import shares are much lower (35 percent for Accra, and less than 10 percent for the other three cities).

**Table 3.** Shares of imported products, by food product category and city.

<b>Product category</b>	<b>Accra</b>	<b>Kumasi</b>	<b>Sekondi-Takoradi</b>	<b>Tamale</b>
Packaged poultry meat and eggs	53	71	89	100
Processed tomatoes	87	97	94	98
Milled grains, roots, and tubers	58	61	61	68

*Source:* Authors' calculations from inventory data.

Imports come mainly from East Asia (Table 4). Vietnam, China and Thailand accounted for two-thirds of imports. Remarkably, we did not find much evidence of regional imports. In Accra, excluding imports from South Africa (representing 6 percent of imports), only 3 percent of

imports came from African countries. Products imported from other countries in Africa are nearly non-existent in the other three cities (less than 3 percent of imported products in Kumasi, Sekondi-Takoradi, and Tamale were from other SSA countries). In contrast, a recent inventory in Tanzania recorded high shares of imports from other SSA countries (Snyder et al., 2015).

**Table 4.** Main sources of imported milled rice and tomato paste.

Processed food group	Source of imports	Number of products	Share of imports (%)
Milled rice	Vietnam	157	17
	Thailand	125	13
	India	35	4
Tomato paste	China	121	13
	Italy	30	3
	United States	25	2

*Source:* Authors' calculations from inventory data.

Domestic processing appears to be carried out primarily in Accra and secondarily in the city in which the product is found (Table 5). In each city, around 50 percent of domestic products in the milled grains, roots, and tubers category come from Accra, and about one-quarter from the city in which the product was found. There appears to be little movement of processed food products across Ghana other than from Accra to other cities.

**Table 5.** Manufacturer's location for domestic products: milled grains, roots, and tubers.

Manufacturer's location	Share of products from location found in inventory city (%)			
	Accra	Kumasi	Sekondi-Takoradi	Tamale
Accra/Tema	95	50	54	53
Kumasi	1	36	8	4
Sekondi-Takoradi	0	7	23	2
Tamale	0	0	0	26
<b>Other Cities and Towns</b>				
Southern Ghana	3	4	3	4
Middle Belt	2	4	0	2
Northern Ghana	1	0	1	0

*Source:* Authors' calculations from inventory data.

### *Is the presence of imports more evident in modern retail outlets?*

One would expect to find higher shares of imported products in modern retail outlets than in traditional outlets, because supermarkets tend to cater towards wealthier customers (Traill, 2006), and also because entry into modern outlets tends to be difficult for domestic processors (D’Haese and Huylenbroeck, 2005). However, we find that this is not the case. Surprisingly high percentages (87 percent to 93 percent) of products in traditional outlets were imported, while only 68 percent of products in modern grocery stores, non-chain and chain supermarkets were imported (Table 6)<sup>15</sup>. The picture is even starker when we compare domestic and imported product shares across outlets for the milled grains, roots, and tubers. While 81 to 91 percent of those products were imported in the traditional outlets, the corresponding figures for modern outlets is around 55 percent to 58 percent (Table 7). The data confirm the notion that supermarkets contribute to product diversity (Reardon et al., 2010). Supermarkets sold an average of 21 to 32 products per outlet in the defined food categories, while non-supermarkets sold 3-8 products per outlet (Table 8).

**Table 6.** Shares (%) of imported products, by city and retail outlet.

<b>Retail Outlet type</b>	<b>Kumasi</b>	<b>Sekondi-Takoradi</b>	<b>Tamale</b>	<b>Average</b>
Stalls in open air markets	90	88	100	93
Street vendors	85	83	100	89
Traditional Shops	90	81	90	87
Grocery stores	56	75	72	68
Non-chain supermarkets	54	73	78	68
Chain supermarkets	66	62	76	68

*Source:* Authors’ calculations from inventory data.

<sup>15</sup> As noted above, comparisons across retail outlets are restricted to Kumasi, Sekondi-Takoradi, and Tamale.

**Table 7.** Shares (%) of imported milled grains, roots, and tubers, by city and retail outlet.

<b>Retail Outlet type</b>	<b>Kumasi</b>	<b>Sekondi-Takoradi</b>	<b>Tamale</b>	<b>Average</b>
Stalls in open air markets	87	87	100	91
Street vendors	83	81	100	88
Traditional Shops	86	73	85	81
Grocery stores	46	64	64	58
Non-chain supermarkets	41	60	70	57
Chain supermarkets	50	53	63	55

*Source:* Authors' calculations from inventory data.

**Table 8.** Number of products per retail outlet.

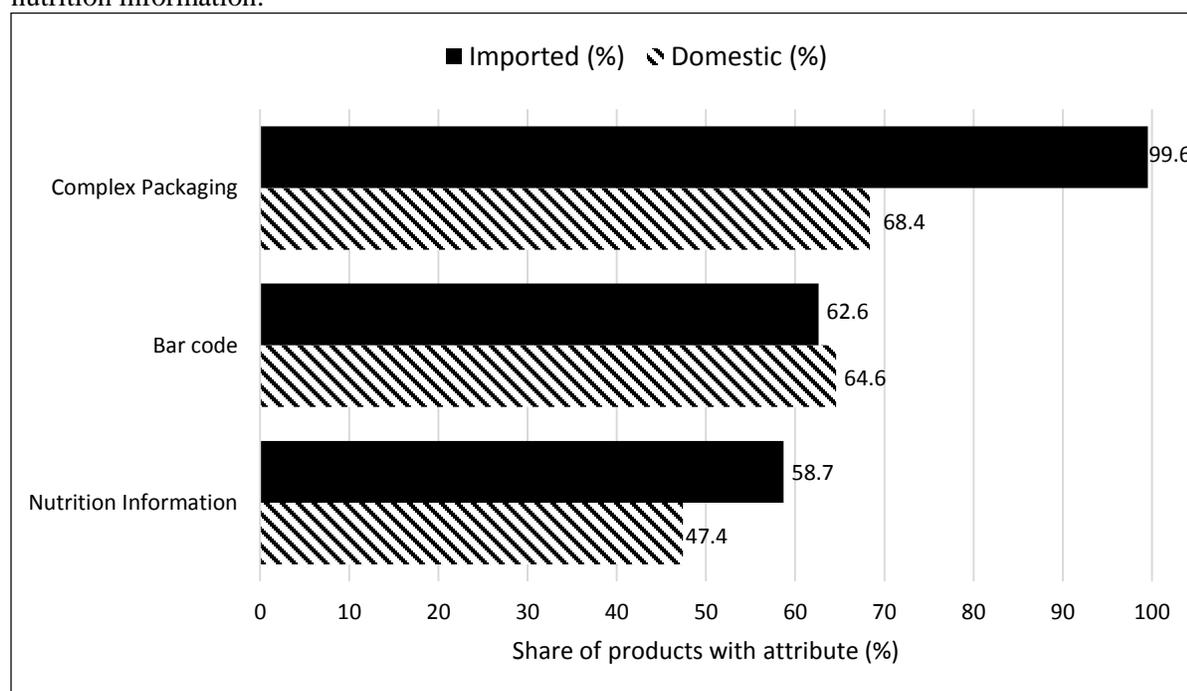
<b>Retail Outlet type</b>	<b>Kumasi</b>	<b>Sekondi-Takoradi</b>	<b>Tamale</b>	<b>Average</b>
Stalls in open air markets	3	3	5	4
Street vendors	3	4	4	4
Traditional Shops	2	4	2	3
Grocery stores	6	8	6	7
Non-chain supermarkets	22	27	21	23
Chain supermarkets	32	25	29	29

*Source:* Authors' calculations from inventory data.

### ***Do imported products have better packaging?***

Since urban consumers in Ghana care about packaging as a sign of product quality (see Hollinger and Staatz (2015) for results of a survey in Accra), we examined products using three measures: (1) simple and complex packaging (based on an assessment of the ease with which a product could be opened without detection, accidentally opened during transportation or handling, or attacked by pests during storage); (2) presence of a bar code; and (3) presence of nutritional information. Almost 100 percent of imports have complex packaging, compared with 68 percent of domestic products. Equal shares of domestic and imports have bar codes (63 percent and 65 percent respectively), and nutritional information is shown on more imports (59 percent) than domestic products (47 percent).

**Figure 3.** Measures of packaging quality: Shares (%) of products with complex packaging, bar codes, and nutrition information.



*Source:* Authors' calculations from inventory data.

## Conclusion

This paper's analysis of processed food retail in four major cities in Ghana highlights the following aspects of food system transformation: (1) Supermarket growth in these cities has been modest; (2) Imports dominate the processed foods sector in all four cities. Notably, the highest shares of imported products are found in processed tomatoes, a sector where the government has promoted domestic processing for decades (Robinson and Kolavalli, 2010); (3) Few products within the food categories in this study were imported from other African countries. For policy-makers and development agencies promoting intra-regional trade, this may be a cause for concern; (4) Surprisingly high percentages of products in traditional retail outlets were imported, compared to the shares of imported products in modern retail outlets. Imported products hold a

higher share in the smallest, most interior city (Tamale), and the two coastal cities (Accra and Sekondi-Takoradi) do not show meaningfully higher import shares than the two interior cities; and (5) local processing takes place primarily in Accra and secondarily in the city in which the product is sold.

More detailed analyses of food system changes in Ghana and elsewhere in Africa will require comprehensive surveys to understand farm-processor-retail-consumer linkages. Nevertheless, this study contributes initial findings on the food retail sector and points out issues for future research. The study's findings indicate that, beyond the spread of modern retail systems and changes in food sources (Timmer, 2009), food system transformation will also lead to unexpected and counter-intuitive outcomes in food retail in developing countries.

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